Steam trawling on the south-east continental shelf of Australia
An environmental history of fishing, management and science
in NSW, 1865 – 1961

Submitted to fulfilment of the requirements of the Degree of Doctor of
Philosophy, School of Geography and Environmental Studies, University
of Tasmania

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Abstract

As many of the world’s fish stocks are fully or over-exploited there is an urgent need for governments to provide robust fisheries management. However, governments are often slow to implement necessary changes to fisheries practices.

The will to govern is an essential factor in successful marine resource management. Studies of historical documents from State and Commonwealth fisheries authorities involved in the steam trawl fishery on the south-east continental shelf of Australia illustrate different expressions of intentional management and how a more ecological responsible view has emerged.

Motivated by Sydney’s insufficient supplies of fish, the objective of early fisheries management in the state of New South Wales (NSW) was to improve the industry. Driven by state developmentalism, efforts were focused on increasing the productivity of already existing coastal fisheries through fisheries legislation, marine hatching and marketing.

As this failed, an alternative development vision emerged of exploiting the untouched resources on the continental shelf, which at the time were believed to be inexhaustible. During 1915 to 1923 the NSW Government pioneered steam trawling on the shelf through the State Trawling Industry with the aim of providing the public with an affordable supply of fish. Although an economic failure, the State Trawling Industry paved the way for a private steam trawling industry. The industry expanded throughout the 1920s until falling catch rates of tiger flathead forced the industry to scale down and reorganise.

A Commonwealth fisheries research organisation was established in 1937 to aid industry growth, but shortly afterwards marine scientists began challenging the development driven fishery policy. Instead they advocated sustainable resource management based upon scientific recommendations.

The Second World War provided financial relief for the industry, as the Royal Australian Navy leased the ageing trawler fleet for minesweeping. After the war a complex system of overlapping State and Commonwealth authority evolved. Different management objectives and lack of legislative framework blocked conservation efforts.
Fazed by evidence of depletion of stocks in the post-war period and unable to pass legislation for fishing in extra-territorial waters, the NSW Fisheries Branch used market reform to regulate the industry. Increased costs and changes in species composition of catches caused by overfishing forced the steam trawling companies to gradually close down between 1954 and 1961.

The history of the management of the steam trawling fishery shows the considerable difficulties associated with implementing responsible resource management in a multi-governmental system and the power of bureaucracy in policy decisions.
Declaration

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Anne Lif Lund Jacobsen

Date:

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Date:
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## Abbreviations, acronyms and guide to terms and language

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<tr>
<td>CFRC</td>
<td>Cronulla Fisheries Research Centre of Excellency, Department of Primary Industries, New South Wales</td>
</tr>
<tr>
<td>CoML</td>
<td>Census of Marine Life</td>
</tr>
<tr>
<td>CPUE</td>
<td>Catch Per Unit Effort</td>
</tr>
<tr>
<td>CSD</td>
<td>New South Wales Chief (Colonial) Secretary’s Department</td>
</tr>
<tr>
<td>CSIR</td>
<td>Council for Scientific and Industrial Research</td>
</tr>
<tr>
<td>CSIRO</td>
<td>Commonwealth Scientific and Industrial Research Organisation</td>
</tr>
<tr>
<td>FAO</td>
<td>The Food and Agriculture Organisation of the United Nations</td>
</tr>
<tr>
<td>Fisheries Branch</td>
<td>New South Wales Fisheries Branch</td>
</tr>
<tr>
<td>inland fisheries</td>
<td>All freshwater fisheries in New South Wales</td>
</tr>
<tr>
<td>inshore fisheries</td>
<td>All coastal and estuary fisheries in New South Wales</td>
</tr>
<tr>
<td>HMAP</td>
<td>History of Marine Animal Population</td>
</tr>
<tr>
<td>NAA</td>
<td>National Archive of Australia</td>
</tr>
<tr>
<td>NSW</td>
<td>New South Wales</td>
</tr>
<tr>
<td>PCLJ</td>
<td>Private Collection of Lif Jacobsen</td>
</tr>
<tr>
<td>PSB</td>
<td>New South Wales Public Service Board</td>
</tr>
<tr>
<td>RAN</td>
<td>Royal Australian Navy</td>
</tr>
<tr>
<td>SEF</td>
<td>South East (Trawl) Fishery</td>
</tr>
<tr>
<td>SLNSW</td>
<td>State Library of New South Wales</td>
</tr>
<tr>
<td>SMH</td>
<td>Sydney Morning Herald</td>
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<tr>
<td>SRNSW</td>
<td>State Records of New South Wales</td>
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<tr>
<td>STI</td>
<td>State Trawling Industry</td>
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Two people, whom I first met in Denmark, are (unwittingly) responsible for some of the directions that this thesis has taken. Anthony Harrison’s seminar on Australian fisheries management at University of Southern Denmark, Esbjerg in 2003 inspired me to look at management issues. Since I began my studies at University of Tasmania he has generously shared information, including his knowledge about all things related to Australia’s fisheries management. Neal Klaer (CSIRO, Hobart), whom I met several times through HMAP, first made me aware of the existence of the NSW steam trawling industry and helped me put together the original research proposal.

During my visits to the Cronulla Fisheries Research Centre I have received helpful assistance from many people; in particular Dennis Reed, who enthusiastically shared his knowledge about Harald Dannevig with me, and went beyond the call of duty providing me with accommodation and introducing me to his family. In addition, thanks to Kevin Rowling for allowing me to scavenge through his collecting of old trawling documents and Kathy Bown who helped track down relevant material in the library.

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Last but not least I would like to thank my partner Asger for unfailing support.
When I began working on the history of the NSW steam trawl fishery I would travel to archives and libraries in Sydney, Canberra or Melbourne to collect data. Upon arrival at my destination I would sit in air-conditioned reading rooms with fluorescent overhead lights and immerse myself in hundreds of boxes containing documents about fisheries. Sometimes the records were carefully organised and labelled but often they were unordered - put away by a government clerk who had been given the task of shipping absolvent records away to oblivion; the original purple strings, signalling the closure of the case, were often still wrapped around the parcels. I would turn the dusty pages with ill-fitting white cotton gloves, systematically tracing people, events, concepts and ideas, and minutely recording my observations on my laptop. Most of the documents I read were official records about mundane administrative matters, but over time I learned to associate certain phrases, tones or handwriting with individual people and I would take pleasure in getting to know them, laying bare their thoughts and ambitions to my scrutiny, and creating story lines and cultural patterns for them. Sometimes, after hours of sifting through impersonal records there was joy in finding a letter or other documents that revealed views supporting my theories.

After periods of intense archival research I would return to Hobart and begin to piece together my new found knowledge by reference to previously collected information. Then I would return to the archives and libraries again with new questions. This pattern of short and intense research visits, bridged by long periods of writing and contemplation continued for nearly three years.

I could have written the story about the management of the NSW steam trawl fishery and associated ecological changes without ever contemplating the scene of the events; without ever engaging with the actual place where these events occurred, basing my history upon the account of managers and scientists who had experienced the fishery from the distance of their offices. Yet to undertake this research away from its setting might risk producing a story that would be as disembodied from the sea as the historical documents I used. Thus, once in a while my research would take me to the library at the Cronulla Fisheries Research Centre of Excellence, the NSW Department of Primary Industries headquarters for recreational and commercial fisheries research and management in New South Wales. The Research Centre is
situated at Gunnamatta Bay overlooking the Port Hacking estuary. From the tranquillity of the flat rocks behind Harald Dannevig’s unmistakable Norwegian styled marine laboratory, one encounters many of the features that characterised this region’s interaction with the sea. From my examination of the historical records I know that the estuary was named in April 1796 by Matthew Flinders and George Bass who explored the place and decided to name it after the Colony’s game hunter Henry Hacking. The Gwiyagal, the local aboriginal people, called the estuary Deeban. I also know that across the estuary, at Maianbar on the south shore, are the sparse remains of Australia’s first marine hatchery, which was the forerunner of the Research Centre. The south shore of the inlet also marks the boundary of The Royal National Park, Australia’s first national park, established in 1879. I am aware that the laboratory and fish pound behind me originated from the State-owned marine hatchery completed in 1908, and that the site had been headquarters for CSIRO’s Fisheries Division for nearly 50 years, until it became the home of NSW Fisheries research in 1985. On the site of the Research Centre I have found aboriginal middens of sun-bleached shells overlapped by newer deposits of shellfish used as feed in the hatchery’s fishponds or discarded after being used in tagging programs. At Jibbon Head near the town of Bundeena on the south shore are large rock engravings made by the traditional owners showing rays and whales. While sitting and drinking coffee on my rock I can witness the pull of the ocean on the foreshore, and I know that when I look past the entrance of the estuary out to the sea, I am looking at the ‘Home Grounds’, the first fishing grounds to be depleted by steam trawlers in the late 1920s.

In my mind all these landmarks come together, weaving a complex tapestry of cultural and natural marine heritage back and forth through time and space. But this place also exists beyond the meaning I give it. Sitting on the warm rock with a good coffee from the lunch wagon in hand, lazily observing a cormorant on the pier drying its plumage, listening to the distant traffic noise and the sound of lapping water smelling of salt and decomposing seaweed, I nearly ‘get it’. I get a sense of this place.

To create truly meaningful stories about the environment, one needs to ground the knowledge found in archives and libraries with the particularity of place. Although this thesis is about fishing and people’s struggle to understand and come to terms with the sea’s limited capacity for sustainable fisheries, I also seek to offer an account that describes the significance of
place – the south-east continental shelf of Australia – and how it was forever transformed by activities of the NSW steam trawlers.
Chapter 1
Introduction

The history of the origin, development and decline of steam trawling on the south east continental shelf of Australia from about 1865 to 1961 demonstrates the power of government initiatives and policies in establishing long-term patterns for marine exploitation, and reveals how such systems are highly resilient to change. By using historical documents from government institutions, public media, private archives and industry records it has been possible to study the origin and decline of steam trawling in NSW from multiple viewpoints and to document its management over time. This study addresses a significant gap in Australian environmental history which, as a discipline, has largely overlooked the sea and the life within it. In particular, the aims are to examine how the NSW Government changed from being the operator of a resource-extractive fishing industry to the manager of an ecosystem, and to ask how a public will to govern the steam trawl fishery evolved.

This chapter presents a review of select writings and research that have informed this study, documents the research design and methodological considerations that underpin that design, and gives an overview of the ecological changes that occurred on the shelf between 1915 and 1961. This last task provides the reader with an environmental ‘reading’ from which to understand certain economic, social and policy changes presented in chapters one to seven and that typified management of the fisheries over that period.

The study is motivated by my concern about the state of the world’s marine resources. Globally the world’s fisheries have reached a critical level of exploitation and the future looks bleak; sound management is crucial. According to the Food and Agriculture Organisation of the United Nations (FAO) today 80 percent of the world’s fish stocks, for which assessment information is available, are fully or over-exploited. It is FAO’s assessment that the maximum potential for wild-capture fish from the world’s oceans has been reached and there is still an over-capacity in the global fishing fleet, despite decades of

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1 The term ‘will to govern’ has a complexes meaning in Foucauldian theories about governmentality. See e.g. Dean, M 2004. I use the term in its colloquial sense where ‘a will to govern’ is to be understood as a government or organisation’s determined intention to govern, the rationale behind the intent and the means through which this intention was expressed.
efforts to limit the growth of fishing capacity in order to protect aquatic resources. Without exception, fisheries management poses challenges for all national governments and when attempts at international fisheries governance are made the implementation of agreements is often stalled by those same governments and manifests as an apparent lack of political will to implement decisions in a timely manner.  

Lack of knowledge and implementation deficits are also severe problems in fisheries management in Australia. Take, for example, the NSW Department of Primary Industries, which currently estimates that of 92 key species found in the State’s waters, 24 are fully fished and another seven species can potentially be fished more intensively. Three species are overfished and another seven are fished to a degree where harvesting is economically inefficient. Of the rest, for 52 species there are not enough data to determine exploitation status: despite more than a century of fisheries research and management we still know little about even the most common species.

One species for which there is robust biological information is tiger flathead (Neoplatycephalus richardsoni) upon which the early NSW steam trawl fishery was founded. According to NSW Department of Primary Industries fisheries research, tiger flathead is today considered fully fished (but not overfished), and it is estimated that current stock is about 40 percent of its original biomass measured from when steam trawling commenced.

Stock decline can almost certainly be attributed to overfishing, mainly by members of the steam trawling industry, which was founded by the NSW Government in 1915 and which continued to operate under private ownership until 1961.

An in-depth study of the origin and management of the NSW steam trawl fishery on the Australian south-east continental shelf will provide valuable insight into why the industry was able to continue to exploit the resource for nearly five decades, despite such activity being both ecologically unsustainable and uneconomical. It is apposite to ask why State and Commonwealth management failed to protect the previously untapped marine resources. As FAO statistics show, many of the world’s aquatic resources are subjected to intense exploitation and, as the number of under-exploited wild fish stocks are reduced, the pressure

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2 FAO 2008.
on exploited stocks increase. Although the NSW steam trawling fishery was small by international standards it provides an object lesson in problems facing marine resource management. If patterns of resource extraction are to comply with the best available information, knowledge and practice of environmental management, it is crucial to understand socio-economic behaviours, practices and policies that have typified fisheries development and management over time.

The project also adds to knowledge about the past and our relationships with the sea. Almost without exception, marine environmental historians have argued that oceans have largely been ignored by historians and have stressed the need to historicise the oceans if we are to explain what happened in the sea. Internationally, the history of the NSW steam trawl fishery fits into a larger and mutually constitutive history of oceans and human culture. Australia’s maritime history, especially history of fishing, has received very little attention in scholarly writing and environmental history – in Australia at least – is nearly always land-based; therefore a history of the NSW steam trawl fishery fills a significant gap in Australian scholarship. It addresses an overlooked topic in maritime history and has the potential to open up a new branch of environmental history by placing the sea alongside studies of the land-based environment. Finally, a history of the NSW steam trawl fishery on the south-east Australian continental shelf is also part of the history of the European settlement of Australia and the European relationship with indigenous nature.

The sea was one of the last frontiers to be conquered and made productive; its exploration follows a pattern similar to that of Australia’s inland, with state initiated development driven by a belief that science could improve productivity. When trawling was first considered in NSW waters during the second half of the nineteenth century the ecology of the continental shelves was largely unknown and marine resources were unexploited. The prospect of harvesting seemingly unlimited marine resources of vast commercial value, and developing a formal fishing industry, prompted the NSW Government to get involved in fisheries development and later to establish its own steam trawling industry in 1915 – with aspirations to provide inexpensive fish to consumers and open up the sea to exploitation. The industry was privatised in 1923 but it was gradually realised that it was unsustainable, which forced State and Commonwealth authorities to reconsider their objectives for fisheries management and turn to scientific investigation in order to address the apparent failure of the industry.
Fisheries scientists were already embedded in the complex interplay of shifting management and governance strategies, and their standpoint changed from a wholly pro-development approach to a more cautious attitude to fisheries.

**A review of select writings and research**

Environmental history may be described as the study of people’s interactions with nature, of which they are a part. Marine environmental history is a specialised part of the larger field of environmental history, focusing on marine and maritime environments and their social and institutional dimensions, and studying how people have affected the oceans and the oceans have affected us.

Geologists and biologists since Darwin have been indebted to environmental history, in particular by constructing narratives and chronologies to explain nature. But it was not until the early 1970s that an anthropocentric environmental history, focusing on the cultural components of the field gained momentum\(^5\), with its roots in history and geography as well as ecology and biology. The American historian Donald Worster is regarded as one of the founding figures of environmental history, and his views have been extremely influential in the discipline. He found that environmental history emerged alongside rising public awareness of environmental problems and was partly linked to the rise of the green movement in the 1970s, maturing into scholarly enterprise without a singular political agenda to promote. In his view the aim of environmental history involved “deepening our understanding of how humans have been affected by their natural environment through time and, conversely, how they have affected that environment and with what results”.\(^6\) Worster strongly advocated that historians should reach out to different disciplines and work towards a cross-disciplinary approach, in order to produce a complete history of the environment.\(^7\)

Arthur F. MacEvoy’s pioneer study of the Californian anchovy fishery\(^8\) exemplifies Worster’s stance. In his study MacEvoy broke with the traditional historical view of nature as a passive environment and instead described the dynamic process in which marine ecology, industry and legal practices interacted and evolved over time. Since his research was

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\(^5\) Griffiths, T., 2000, pp.189-190.  
\(^8\) MacEvoy, A. F., 1986.
published in 1986, a number of works on fisheries from a broadly environmental point of view have been published. Some works, such as *Making Salmon* by Joseph E. Taylor III, have focused on the changes in cultural responses to the ‘salmon crisis’ of the Northwest US since colonisation. Other works, such as *Fishing the Great Lakes* by Margaret Beattie Bogue, report on the US and Canadian Great Lake fishery from 1783 to 1933. Bogue, for example, described the destructive exploitation of the lakes fisheries resources and the inability of succeeding governments in Canada and the USA to adopt legislation that ensured long-term sustainable harvests.

A number of marine scientists have also ventured into the field of marine environmental history. One of the first to attribute environmental awareness to marine sciences was marine biologist Rachel Carson, best known for *Silent Spring*, in which she describe how pesticides are harmful to the environment, and particularly destructive to birds, and then criticises DDT’s uncontrolled use in the US. The viewpoints in *Silent Spring* were controversial at the time and the publication is considered to be among the seminal texts of the modern environmental movement. Less well known is that Carson was already a successful writer of popular marine science; her books *Under the Sea Wind*, *The Sea Around Us* and *The Edge of the Sea* were all bestsellers in the US in the 1950s. Depicting life in the sea as well as the life of the sea through her writing Carson displayed the sensibility of a deep-ecologist. More recent accounts, such as Jeremy Jackson’s work on long-term changes in the Caribbean coral reef ecosystem have pushed the boundaries between ecology and history. Using quantitative historical sources, Jackson’s team of researchers has developed a model for reconstructing coral reefs ecosystems from the time of Spanish contact. Although his findings are considered controversial among ecologists they show that fisheries are the single most intrusive factor in marine ecosystems, and establish that even subsistence fisheries can have devastating effects on the upper levels of the marine food web.

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13 Carson, R., 1941.
14 Carson, R., 1951.
Work by historian Sean Cardigan and marine biologist Jeffrey Hutchings\textsuperscript{17} on the expansion of the Newfoundland cod fishery in the nineteenth century demonstrates that what seems to be a move by Newfoundland fishermen to expand their fishery into Labrador waters on the basis of socio-economic impulses was caused by declining productivity in inshore waters.

Such studies have taken marine environmental history in new directions, where scientists have used historical data and historical methods in their research of ecological changes and historians have started using scientific models to find environmental explanations for cultural changes. One of the main inspirations for the present study, Neal Klaer’s \textit{Changes in the Structure of Demersal Fish Communities of the South East Australian Continental Shelf from 1915-1961}\textsuperscript{18}, is a product of the discourse just described. Using historical and material evidence in trawling logbooks and data kept now at the CSIRO Marine and Atmospheric Research, Klaer has been able to quantify and qualify changes in fish abundance caused by the trawling and has used the information to refine modern stock assessments that provide reference points for management; a scientist by training, he has adopted the methods of an historian.

Many of these and other similar initiatives are linked to an international research program known as HMAP (the History of Marine Animal Population program), which is a sub-component of the Census of Marine Life (CoML), funded by the Sloane Foundation, of which I am a participating member. HMAP was founded in 2000 and runs until 2010, and through an interdisciplinary approach its participants seek to study past ocean life and human exploitation of the sea through time. The program focus is exclusively on marine animals, especially fish, and on changes in their abundance, the impact of fishing and its historical importance for society. The aim of HMAP is to build a new discipline, by integrating marine ecology, history and paleo-ecology into a single multidisciplinary study.\textsuperscript{19} By supporting research projects, workshops, conferences and publications, scholarly contributions by HMAP researchers have expanded the knowledge base on marine environmental history, but most significantly have been instrumental in quantifying ecological loss in the oceans due to human activity. The success of this approach led HMAP Chair Poul Holm to declare in his

\textsuperscript{17} Cardigan, S., and Hutchings, S., 2001.
\textsuperscript{18}Klaer, N., 2006.
\textsuperscript{19} www.hmapcoml.org [08.03.2010].
keynote lecture at the first World Congress of Environmental History in August 2009, that “We now know the basic outline of the origins of commercial fisheries in Northern Europe; we have a good sense of developments in many regions around the globe during the last 500 years ranging from the Caribbean to the White Sea, from the American Pacific to New Zealand”. As HMAP enters its final phase in 2010 more emphasis will be placed on synthesis and asking how to influence decision makers to secure more sustainable methods of governing the oceans.

The approach to marine environmental history championed by HMAP has proven a challenge to both maritime history and environmental history. In the other seven tenths, for example, van Sittert criticises those historians involved in the program for focusing their research on ‘hard’ data (that is, for instance, catch statistics) and for their extensive use of scientific (ecological) models: his critique is that their work ignores the point that both science and nature are temporally and spatially shifting cultural constructions, thereby rendering “the humanists the data serfs of ‘scientist’ model lords”.

In response to van Sittert’s paper, environmental historian W. Jeffrey Bolster wrote Opportunities in marine environmental history to support HMAP’s research approach and to define marine environmental history as different from historical marine ecology, bridging the gap between marine environmental history oriented to scientific expositions and environmental history in general. Bolster’s main argument is that historians have mythologised the oceans as timeless and unchangeable – a narrative proved wrong by marine science. He also asserts that historians need to accept that great changes in the sea are attributable to cultural transformations as well as ecological ones. While ecologists are looking into the past for ecosystem trends and baselines (for example, measures of the abundance and distribution of species) and may only see humans as instruments of change, Bolster proposes that environmental historians have a responsibility “to create compelling accounts of the changing nature of marine environments in which contradictory human

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20 Keynote lecture by Professor Poul Holm, First World Congress of Environmental History, 5 August 2009, Copenhagen.
21 In 2007 Australia scholars joined the HMAP research initiative with a regional project call HMAP-ASIA, on fisheries in the Australasia region. A monograph by the members is expected to be published in 2010.
22 Sittert, L. van, 2005.
aspirations, values, behaviours, and institutions play central roles”. Marine environmental historian René Taudal Poulsen and his colleagues take the argument a step further in *What Can Fisheries Historians Learn from Marine Science? The Concept of Catch per Unit Effort (CPUE)*. Through a case study of nineteenth century Swedish North Sea fisheries, they demonstrate how the application of CPUE, an analytical tool from fisheries science, can provide marine historians with radical new insights and a capacity to quantify central concepts informing fisheries history.

Another of René Taudal Poulsen’s works, *An environmental history of North Sea ling and cod fisheries, 1840-1914* and that by Bo Poulsen, *Dutch Herring – An environmental history c. 1600–1860*, also demonstrate the emergence of a ‘new school’ of marine environmental history whose practitioners argue the possibility of reconstructing past exploitation patterns of the sea and differentiating between natural and human impacts using historical and scientific data, thereby making marine environmental history “a bridge over the otherwise wide gap between history and ecology”. On such matters, Steve Mullins argues that while environmental scientists have recognised that a historical perspective is useful, establishing ‘retrospective data’ is often done by non-historians who find the task intellectually unsatisfying. He suggests that an equal meeting of scholars based in different disciplines and engaged in the same projects is only possible if each group focuses on its own strengths: environmental scientists should produce scientific knowledge about nature and environmental historians should ground ecological/environmental knowledge in local communities by telling stories about people and places.

**Australian perspectives**

It is clear that Australia has a rich scholarly tradition in environmental history, but marine environmental history (or marine history for that matter) has largely been ignored. In European environmental history the focus has often been on urban areas and cultural landscapes. In American and African environmental history, wilderness or sparsely populated

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30 Brown et al., 2008.
areas have taken a more prominent place.\textsuperscript{32} In Australia, studies of environmental history have often emerged out of the need to address problems of sustainability and government practices,\textsuperscript{33} and in much scholarship there has been a geographical concentration on the British settlement of the south-east of the Australian continent.\textsuperscript{34} Less attention has been given to pre-settler societies and the scarcely populated areas of mid- and northern Australia.

One of the few examples of Australian marine environmental history is Richard J. Gowers’ Selling the ‘Untold Wealth’ in the Seas: A Social and Cultural History of the South–east Australian Shelf Trawling Industry, 1915-1961.\textsuperscript{35} Using Klaer’s data from Changes in the Structure of Demersal Fish Communities, Growers traces the impact of a ‘culture of consumerism’, documenting how trawled fish was marketed as cheap food and attributes the decline of flathead on the continental shelf to such a culture. Part of his argument is that the NSW Government was able to increase the consumption of trawled fish species to the point of ecological disaster, first through its state-owned trawling industry and later by renaming fish more attractively and promoting the health benefits of seafood. Grower convincingly demonstrates that the NSW Government’s early involvement in the fishing industry was ideological, but his argument that the cultural preference of consumers was the driving force behind the exploitation of the continental shelf is less developed.

While works on marine environmental topics are rare, the history of nature and science in Australia has received some attention among environmental scholars. The importance of such works to marine environmental historians is apparent when one considers that most of our knowledge about what happens under the surface of the sea stems from scientific studies: as methods developed and knowledge grew so did understandings of the sea.

One of the most prolific authors of the history of science is Libby Robin who, with Tom Griffiths, edited Ecology and Empire. The book brings together a collection of chapters about how European settlers in South Africa, America and Australia brought with them particular understandings of ecology which were products of imperial thinking, and about how they viewed the settled country as inferior and in need of improvement. In her contribution to the

\footnotesize{\textsuperscript{32} Winiwarter, V., 2004. \\
\textsuperscript{33} Robin, L. and Griffiths, T., 2004, p. 452. \\
\textsuperscript{34} Robin L., Smith, M., 2008, p. 137. \\
\textsuperscript{35} Gowers, R., 2008.}
monograph, Robin examines the politics of the science of ecology in Australia and traces how the discipline evolved, arguing that a strong relationship existed between science and politics. She continued this line of argument in *How a continent created a nation*, in which she explores the connections between and among science, nature and nation in Australia, and shows how governments have used science for both economic development and to create national identity.

Similarly, James Bowen and Margarita Bowen draw upon the link between science and culture in *The Great Barrier Reef – history, science, heritage*[^36] in which they relate the history of Western discovery and settlement on the Great Barrier Reef and the responses of scientists to it: from early voyages in the eighteenth century to the present time, in which the reef is managed according to its World Heritage status. They illustrate how political agendas and scientific discoveries had impacts upon marine environmental management. This situation is especially true for fisheries science, where politics has always played a central role in directing research efforts.[^37] In Australia, which has a strong tradition of government-funded scientific institutions and scientific based development, this is likely to also be the case.

The topic of fisheries science and scientific management in Australia has been studied by former Tasmanian fisheries director and historian Anthony J. Harrison, who has written several articles and bibliographies (some unpublished) about marine biologists, fisheries science and institutional development in Australia and Tasmania in particular.[^38] His emphasis on scientific bureaucracy in fisheries management shows that through a trans-national network of scientists Australians had access to current thoughts on fisheries science but personal and political agendas often delayed or avoided the implementation of scientifically based management. Harrison’s work *The Commonwealth Government in the administration of Australian Fisheries – A sort of mongrel socialism*[^39], about the history of the role of the Commonwealth in the administration of fisheries, gives unique insight into the origin and

[^36]: Bowen, J & Bowen, M., 2002
[^37]: See also Smith, T., 1994, p. 3. In which Smith advocates that a historical understanding of the development of fisheries sciences is essential or scientists will always be at the mercy of “political forces, which have always directed fisheries research towards the next most pressing problem as defined by economic concerns”.
[^38]: A collection of Anthony J. Harrison’s writing is found at his webpage: http://www.users.on.net/~ahvem/ [15.03.2010].
development of Commonwealth fisheries management from 1901 to 1990. He concludes that—despite the fact that the constitution gave the Commonwealth responsibility over fisheries beyond three miles offshore—there was little real interest in fisheries management until the 1970s. For most of the period fisheries management and conservation was the practical responsibility of the states, as it had been in colonial times.

Writings about Australia’s maritime history are also relatively sparse. In Island Nation. A History of Australians and the Sea, Frank Broeze notes that “the role of the sea as an integral and vital part of our national experience has remained largely unexplored”. Broeze offers a narrative of Australian history from the alternative viewpoint of an island settlement, seeking to integrate maritime history into the broader national history. While Libby Robin seeks to explore the link between nature and nation in How a Continent Created a Nation, Broeze explores the link between sea and society. In particular he identifies three main themes in Australians’ relationships with the marine sphere: controlling sea space, taming distance and living with the sea. While the first theme refers to the exercise of naval power and international relations, the second theme refers to shipping and how the sea acts as a surface for the transport of goods and people. Both themes have especially appealed to writers of popular publications and are significant features in most of Australia’s maritime museums.

The third theme ‘Living with the sea’ engages with how Australians have interacted with the sea for exploitation and recreational purposes. Although Broeze mentions marine environmental history as a way to write about the sea itself, he does not pursue this angle further and settles with providing a cultural history of human relationships with the sea. His chapter on Australia’s fishing industries gives a brief account of nineteenth century whaling and sealing before sketching out the main themes that have characterised the history of twentieth century commercial fishing in Australia: the lack of a market for fish due to the abundance of cheap meat, the part governments played in opening up new fisheries and the role of Mediterranean immigrants in developing the fishing industry particularly after 1945. He concludes that fishing remains a small-scale industry constituted by small enterprises created by non-Anglo-Saxon immigrants and closely linked to local communities.

Similar thoughts on the reason for the slow development of Australia’s fishing industry have previously been expressed by Malcolm Tull in *The Development of the Australian Fishing Industry: A Preliminary Survey*. Tull outlines the history of commercial fishing in Australia with a focus on its economic and social importance. According to Tull, apart from whaling and pearling, Australia showed little general interest in its fisheries until the 1940s. Until then the industry could have been considered a ‘Cinderella industry’. The turning point came when a fishery for pelagic species was developed in the 1940s and 1950s, but the industry remained comparatively small and dominated by individual skipper owners. Tull attributes the slow growth of the Australian fishing industry to four factors: because of the abundance and low price of meat, there was no market for fish; the Australian diet was biased towards meat as a source of protein; there was a lack of private entrepreneurship in the fishing industry; and finally in the sea, low levels of nutrients and a narrow continental shelf meant that the productivity of the marine environment was small. Tull points out that the role of state governments in fisheries development and regulation has been overlooked by historians and merits more attention. One of the problems recognised by Tull in writing fisheries history in Australia is the lack of company records and severe deficiencies in statistical data (especially data on catch and effort) collected by State and Commonwealth authorities. A preliminary review of sources for historical studies of ecological processes and the impact of human exploitation in Australia and New Zealand is found in Malcolm Tull and Tom Polacheck *The Potential for Historical Studies of Fisheries in Australian and New Zealand*, in which the south-east Australian trawl fishery is identified as one of the most promising case studies. Because of its long history and position as primary supplier of fresh fish to south-east Australia, there is “good prospect of reconstructing the complete history of exploitation”.

While historical studies about Australia’s fishing industry remains scarce, several have been made of fisheries adjoining to Australia. In *The Closing of the Frontier – A history of the Marine Fisheries of Southeast Asia c. 1850–2000*, John G. Butcher describes the expansion of fisheries in Southeast Asia, mainly from the perspective of an economic historian with an

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awareness of ecological issues. His recording of the introduction of new technologies in the fisheries and multinational management issues provides important benchmarks for other fisheries historians studying the region. Another example is Henry T. Chen’s study of Taiwan’s distant-water fisheries from 1936 to 1977.\textsuperscript{46} Chen makes extensive use of oral history to give an account of the political, economic, technological and social elements behind the development of Taiwan’s distant-water fishing industry.

Insights and inspiration can been drawn from other nations’ fisheries history. David Johnson’s \textit{Hooked}\textsuperscript{47} about the New Zealand fishing industry since white settlement accounts for many of the same experiences faced by the NSW trawling industry. Robb Robinson’s \textit{Trawling the rise and fall of the British Trawl Fishery}\textsuperscript{48} describes the development of deep-sea fishing in nineteenth and twentieth century Britain. Robinson focuses on the driving forces between the massive expansion of the British trawling fleet in the nineteenth century and the subsequent decline in the twentieth century. Part of the book is based on the research he did for his PhD dissertation from 1984. For a broader account of English sea fisheries from Middle Ages to present, David J Starkey et al (ed.): \textit{England’s Sea Fisheries. The Commercial Sea Fisheries of England & Wales since c.1300}\textsuperscript{49} offers an overview of the technological and cultural history of fishing. It addresses a diverse range of issues concerning the development of the large British fisheries, including the impact of social, technological, market and political changes on the fishing industry. Furthermore, the book clearly documents that fishing was an integral and highly important component of the British economy for centuries. Both works provide a ground for comparison and contrast, because early fisheries development in Australia was modelled on the British experience.

For an international perspective on fisheries history \textit{A History of the North Atlantic Fisheries, Vol. 1} offers a broad view of the changes in North Atlantic fisheries from the early times to the mid-nineteenth century. Each chapter is the work of different authors and looks at such issues as changes in fishing technology, organisation, access to fishing grounds, market and the importance of fishery as an economic activity. When possible information on catch and

\textsuperscript{46} Chen, H., 2009.  
\textsuperscript{47} Johnson, D., 2004.  
\textsuperscript{48} Robinson, R., 1996.  
target species are provided and attempts are made to give an ecological perspective on the fisheries.50

**State entrepreneurship and state developmentalism in Australia**

Tull has argued that states played a large role in fisheries, and has called the NSW Government’s decision to become a fisheries entrepreneur and operate its own steam trawling industry “an unusual venture into ‘colonial socialism’”.51 The notion of Australian’s sub-national governments as developmental in nature is generally accepted within economic history, but the concept has also attracted attention from environmental historians. The examples below present some of the main themes in the discipline’s understanding of Australian state developmentalism.

The notion of state development and state entrepreneurship in Australia was discussed earlier in the twentieth century by economic historian William Keith Hancock52, who in *Australia*53 first linked states and development together. He emphasised the role economy had played in Australian politics, introducing the concept of *Australian state socialism* to explain the economic policy exercised by governments in Australia.

His analysis of Australian state socialism is found in Chapter VII ‘State Socialism’, wherein he provides examples of state-funded schemes – such as railroads, land development and the educational system – and discusses the political decision-making behind the various schemes elaborating upon how the public has lost on these schemes. Hancock is of the opinion that state and business should be separated, because the duty of the state is essentially an ethical matter, aimed at creating the setting for the ideal society. Business on the other hand is about balancing costs and income and this objective will always conflict with the integrity of the state. In his view state-driven businesses could be an instrument for government to meet its ethical duty, but would inevitably corrupt the state’s ethics.54 Australia was especially prone

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52 Although an economic historian Hancock’s approach to history in *Australia* was very much infused with a sense of place and the significant role nature play in shaping the nation. One of his later books: *Discovering Monaro: a study of man’s impact on his environment* from 1972 is today regarded one of Australians’ first studies in environmental history.
53 Hancock, W., 1931.
54 Hancock, W., 1931, p. 145.
to state socialism, to quote Hancock: “Thus Australian democracy has come to look upon the
State as a vast public utility, whose duty it is to provide the greatest happiness for the greatest
number”. He reaches this conclusion by arguing that traditional class structure and socio-
economic relationships found ‘in the old country’ do not exist in Australia, since migration
has destroyed these connections. According to Hancock Australia was a nation of individuals
only bound together by their collectivity, where people looked to the state for the fulfilment
of their rights. By channelling their expectations towards the state they politically empower
their governments to act as entrepreneurs in all aspects of public life for the benefit of the
collective. Hancock wrote from a new liberal position and saw state-funded development
schemes as political projects that violated the integrity of the state. By doing so he rejected
state socialism as part of a discredited socialist agenda and put forward liberalism as a new
direction for Australian politics.

While the term state socialism was used to describe a radical political tradition, rooted within
the socialist movement, later historians suggest that the term is too narrow, only partly
captures the processes that were operating within the Australian states, and lost its purchase
in the public political discourses during the 1930s. However, after World War II there was a
renewed interest internationally about economic development without the heavy political
overtones with which it had been burdened during the interwar period. As Keynesian social
liberalism became the western governmental tool of choice for social development in the
post-war period, there was a renewed scholarly interest in the history of state development
and state entrepreneurship.

The economic development of nation-states was the theme of a 1956 conference under the
auspices of the Committee of Economic Growth chaired by Simon Kuznets. During the
conference economic historian Noel George Butlin presented a paper on economic growth
and the Australian government from 1860 to 1900. The conference papers were later
published in The State and Economic Growth. In his article Butlin analysed the history of
economic development in Australia in the second half of the nineteenth century, and found

55 Hancock, W., 1931, p. 72. The quote is so well used that my copy from the University library on the contents
page has a handwritten note saying: “The quote you’re looking for is in page 72”.
that the strong role of the colonies in developing economic growth in Australia preceded any ideas derived from the Labor party or any other socialist political movements.\textsuperscript{60} He showed that the public sector had been a main factor behind the growth of the Australian economy and that the partnerships formed between government and private institutions were a cornerstone in politics.\textsuperscript{61} He argued that the partnerships was based upon \textit{ad hoc} solutions in order to develop local resources in a harsh environment, and not motivated by radical political thoughts, as the new liberal writers had claimed.\textsuperscript{62} According to Butlin state development policy went through two stages in the second half of the nineteenth century. The first reorganisation happened around 1850, when colonial governments became increasingly responsible for the growth of the free society as the importance of convict transportation began to decline.\textsuperscript{63} The second reorganisation happened following the financial crisis and economic depression of 1889–1900, and led governments to focus on stable development policies and to formulate sound principles for private businesses.\textsuperscript{64} This new take on early state development in Australia he called \textit{colonial socialism}, to distinguish it from later national and sub-national intervention policy.

Later Butlin and his colleagues continued the argument in \textit{Government and Capitalism}\textsuperscript{65} focusing on the decline of colonial socialism and the changing relationship between the public and private spheres in the twentieth century. They argued that \textit{colonial socialism}, under which the colonial governments took a general management role in the economy with a view to attracting British capital and labour, began to decline from the mid-nineteenth century. The system of public intervention in the economy further declined in the early twentieth century, although public investment remained high. Between 1900 and 1914 government intervention often took the form of direct intervention to develop, support or direct private industries. The Depression of the 1930s fundamentally changed the relationship between public and private activities, as Australian state governments began to depend less on macro-regulation and more on centralised Commonwealth interventions, but the public and private sectors continued to be closely linked through mutual decision making and

\textsuperscript{60} Butlin, N., 1959, p. 37 and Moore, T. and Walter J., 2006, p. 28.
\textsuperscript{61} Butlin, N., 1959, p. 27.
\textsuperscript{62} Butlin, N., 1959, p. 35.
\textsuperscript{63} Butlin, N., 1959, pp. 37-38.
\textsuperscript{64} Butlin, N., 1959, pp. 76-78.
\textsuperscript{65} Butlin, N., et al. 1982.
protection of activities. Government intervention in the post-war period was further centralised, and until the 1960s the Commonwealth Government’s preferred method of economic management was to impose import restrictions and fund research and development to increase production.  

In the early 1990s environmental scholars began applying the idea of *state developmentalism* to Australian environmental history, in order to explain the governance behind environmental changes in Australia since colonisation. The scholars were motivated by a need to address current political practices, and often came from a background within government, geography or environmental studies.  

Scholars such as Kevin Frawley described in *Evolving visions: environmental management and nature conservation in Australia* how environmental management in Australia from colonisation to present has transpired in three phases, each with its own environmental vision. The focus of his article was not state developmentalism as such, but the broader concept of nature management in Australia. Nevertheless he found that the dominant social paradigm throughout all three eras was developmentalist, characterised by policies that focused on the instrumental values of nature, and a belief that resource development would lead to economic development. The first management phase Frawley identified spanned from 1788 to the mid-nineteenth century and was characterised by ‘exploitative pioneering’ supported by colonial governments, with little concern for the environment. The second phase began around the late-nineteenth century and continued into the mid-twentieth century. It focused on ‘national development’ and a natural resources practice of ‘wise use’, often imposed by governments to protect capital investments and political interests. The political doctrine of progress through development saw for the first time “development being organised through a public policy framework designed and managed by experts who increasingly tried to apply scientific and economic principles to the efficient utilisation of resources”. From 1960 onwards the prevailing pattern of escalating exploitation became challenged by the rising political power of environmentalism. The aim of the article was to question the

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68 Frawley, K., 1994, p. 60.
69 Frawley, K., 1994, p. 66.
70 Frawley, K., 1994, p. 60.
environmental ethics displayed by Australians and make a case for the need for modern environmentalists to change these inherited ethics.

At the same time Ken Walker published an article with a similar theme. His *Irrigation: A History of Conflict* was a case study of management of irrigation in the Murray-Darling basin from the 1840s to 1966.\(^{71}\) In it he examined the political doctrines employed by state governments in order to trace the origin of the legal, political, economic, and environmental conflicts related to irrigation schemes.

Walker found that government’s eagerness to support development played a dominant role in the conflict. From colonial times inadequate legislation made irrigation a government issue because the “Lack of legal framework for assignment of water rights and protection of riparian rights catapult[ed] the problem into politics.”\(^{72}\) There was also significant political pressure to provide land for new settlers, especially after the gold rushes in the 1850s and 1860s. As a result irrigation schemes were enthusiastically supported by changing state governments, despite the fact that irrigation provided technical difficulties and was highly expensive, and that there was an obvious lack of scientific knowledge.\(^{73}\) Later on “Adequate knowledge was available for evaluating the likely success of irrigation, [but] this was ignored as successive governments succumbed to political pressure and enthusiasm for ‘development’.”\(^{74}\) In short, irrigation became a solution to a political problem, not an economic one.\(^{75}\) Walker found that the developmental mindset was so embedded in the political system that irrigation schemes continued to be supported by governments, even when it was clear that there would be no return on investment. In his view Australian government developmentalism was nurtured through political pressure by local communities\(^ {76}\) and took a number of forms. In the case of the Murray-Darling irrigation projects, states supported the development through legislative, financial and political processes; firstly by securing water rights from other states, secondly by ensuring investment in irrigation schemes and ongoing political support. As a development scheme irrigation was

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\(^{71}\) See also Walker, K., 1992. about the conflict between political short-term objectives and ecological sound practices in the development of irrigation projects.  
\(^{72}\) Walker, K., 1994, p. 103.  
\(^{73}\) Walker, K., 1994, p. 96.  
\(^{74}\) Walker, K., 1994, p. 102.  
\(^{75}\) Walker, K., 1994, p. 100.  
\(^{76}\) Walker, K., 1994, p. 98.
problematic because it was driven by politics not ecology,⁷⁷ and the managers themselves appear to have been more concerned about powerful local interests than good management practices.⁷⁸ The disastrous consequences of this policy was that the ecosystems of the Murray Darling River System were detrimentally affected due to changes in water flows, loss of habitat and breeding grounds, introduction of non-native species and intensive farming.⁷⁹

Walker later developed his thoughts in Statist Developmentalism in Australia where in a more theoretical manner, he traces the origin and different guises of state developmentalism in Australia. His aim was to bring together environmental and economic historical contexts to create a fuller understanding of Australian development policy since 1788.⁸⁰ Having established Australian Government’s penchant for (economic) development, he continued to assess its implications for modern (environmental) policy. Walker’s classification of Australian development policy regimes is largely based upon the style of economic policy exhibited by governments. Therefore his periodising loosely follows the ones described by economic historians such as Butlin and his colleagues, but includes interpretation about how different regimes impacted upon Australian nature. To environmental historians his description of the different forms of developmentalism according to their environmental and geopolitical makeup is of most interest.

The pattern of public development in Australia originated within the imperialistic mindset of translocated European settlers. Settler societies in Australia relied on governments to build infrastructure and ‘open up the country’⁸¹ for use. As a resolute development policy in Australia was institutionalised, a style of political regime emerged which Walker named Statist developmentalism and which he said occurs in four different periods.

The first period occurred during early settlement and continued to the second half of the nineteenth century. The period was characterised by radical environmental modifications, authoritarianism in government and a high degree of convergence between public and private interests.⁸²

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⁷⁷ Walker, K., 1994, p. 87.
Walker adopted Butlin’s concept of ‘colonial socialism’ as characteristic of the second phase of developmental policy which continued until about 1918. He adds to the theory of colonial socialism by noting its emphasis on physical development that was irreconcilable with Australia’s unique and fragile ecosystem.\(^{83}\) The third period covers the period from 1918 to the beginning of the 1980s, which Walker calls a period of ‘half-hearted developmentalist Keynesianism’.\(^{84}\) This long period is characterised by continued development in infrastructure and the stimulation of economic growth by governments in the form of Keynesian interventionism. However economic policy did not necessarily create economic growth or increase welfare because of the inherent confusion over political responsibilities in a multi-government federal system.\(^{85}\) The final period, ‘state-assisted marketisation’, covering the period from the 1980s to present; it is one in which governments adopted open-market policies and deregulation inspired by New Right economic philosophy. Despite the intentions of partial withdrawal of governments from regulations, liberal policy has had very little impact on developmentism, which remains government-influenced and growth oriented.\(^{86}\)

In general the contribution of environmental scholars to the debate about statist developmentalism in Australia was to point out that state development and state entrepreneurship was not necessarily a top-down policy driven by economic rationalism but often based on community and public calls for governments to become involved in local, regional, state and national development projects, and that ecological considerations were often (and sometimes deliberately) overlooked in the process.

The tendency to developmentalism was not unique to Australia, although it was unusually entrenched in government policies and characterised public–private relationships well into the second half of the twentieth century. An example of similar trends elsewhere is found in Miriam Wright’s study of the Newfoundland fishery from 1934 to 1968\(^{87}\) which focuses on different manifestations of state-oriented developmental ideology adopted by politicians to industrialise the Newfoundland fishing industry. One of her conclusions is that in order to

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83 Walker, K., 1999, p. 28.
84 Walker, K., 1999, p. 25.
85 Walker, K., 1999, pp. 30-34.
develop a modern industrial fishing industry a close relationship was created between state and private capital investment. The Newfoundland Government’s involvement in modernising the industry shaped not only its outlook but also how the industry was perceived. The directions provided by the Government limited the industry’s ability to respond when the ecological, economical and social parameters surrounding the Newfoundland fishery changed.  

Another example is found in the study by Bjørn-Petter Finstad of the remote fish-fillet plant at Finotro from 1930 to 1986, which was managed by the Norwegian government. Finstad analyses why the state became involved in the first place, its management strategy for the industry and how the State became an entrepreneur in introducing freezing technology in Norway. He finds that despite political optimism the plant was a loss-making enterprise but kept its political support because the industry was considered important for social development in rural Norway.

Research design

The methodological approach to historical material evidence used in this thesis is informed by what Paludan had described as ‘the functional concept of sources’. The material evidence used is in the form of written documents and records and these are deemed ‘functional sources’ insofar as they provide information about the past when analysed with a specific hypothesis in mind. Material evidence only becomes a source the moment it is used to address such a hypothesis, because the material evidence in itself does not have a defined interpretation. The value of the sources is determined by how well it addresses a hypothesis or research question. This way of approaching material evidence means that the collection of sources is directed by their ability to answer to research questions or give insight to hypotheses. Another research question applied to the same material evidence might yield another answer and the material evidence then becomes a source for something else. This approach to sources does not change the point that all material evidence has to be understood in the context of how it is produced. All historical evidence is produced by “particular people,

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with particular purposes and with consequences – intended and unintended.” The researcher has to take such matters into account when analysing the source, and treat the extracted information mindful of their inherited biases. However under the influence of the functional concept of sources, the origin of the source is of less importance than gauging how well that source addresses the research question or hypothesis.

Importantly, too, historical knowledge is produced in the interactions between the researchers and a historical source. Where a researcher approaches a source with a specific question, and as information accumulates, the question is changed or refined and, if needed, hypotheses are adjusted to fit data. This dialectical relationship, where the historical context of source is ‘translated’ into a research context and vice versa is hermeneutic. Any historic knowledge produced is therefore the resolution of a contextualised relationship between researcher and source.

The idea that a ‘source is a function’ has been used by Poulsen to argue that historical methods and scientific methods are alike and that both methods share the same fundamental challenges in verifying data. According to the functional concept of sources the status of data can be described as a process in four stages: identifying a problem; formulating hypothesis; collecting sources/data; and interpreting sources/data to produce knowledge. Based upon this model Poulsen argues that the investigation methods of science and history are fundamentally alike, and that history therefore belongs to the conceptual realm of science. Thus the practise of ‘history as a science’ through the use of the functional concept of sources makes it an ideal investigation method for cross-disciplinary research into environmental history, insofar as the knowledge produced through this process is acceptable to scientists and historians alike.

Sources

Writing the history of steam trawling in NSW and examine how a public ‘will to govern’ the steam trawl fishery evolved requires sources related to management of commercial fisheries in Australia (and NSW in particular) and spans several decades in order to determine changes in policies. For such reasons many of the primary sources used in this study have been

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92 Hodder, I., 2000, p. 75.
records or reports from public agencies and to a lesser degree include historical publications (such as news articles and scientific papers) and personal documents (such as private correspondence and photos).

The fact that very few records exist from the private trawling companies, of which Red Funnel, Cam and Sons and A. A. Murrell were the most industrious, proved a special problem. Several trawling logbooks are kept at the National Archive of Australia in Canberra (A. A. Murrell) and the Mitchell Library in Sydney (Red Funnel), but they only contain information on catch, effort and sales prices and most of this information has already been analysed by Klaer. But by analysing news articles and vessel databases it was possible to gain an overview of the industry. A release of the Royal Australian Navy documents relating to the Navy’s use of trawlers 1939–1946 gave insight into the state of the industry at the outbreak of the war, and Stanley Fowler’s large private archive, kept at the National Archive of Australia in Hobart, contained many references to the early stages of the industry in the 1920s.

Of the three main private trawling companies only Red Funnel still exists. When the original company reorganised in 1933 it was split into several companies, all bearing the ‘Red Funnel’ prefix. Red Funnel Trawlers, which continued the trawl fishery is still registered but has ceased trading. In 1959 the company was bought by E.R. Mansfield and his son Richard. When I visited the current owner, Richard Mansfield, in his private residence in Sydney it was explained to me that many of Red Funnel’s records were destroyed when the warehouse in Balmain where they were stored was flooded, but some were still kept by him. Due to Richard Mansfield’s advanced age and his reluctance to part with the records, this line of inquiry was not taken further. Previous inquiries about the records made by the Australian National Maritime Museum to the Mansfield family were unsuccessful. Another company, Red Funnel Fisheries in Newcastle, still trades as a fish retailer but was never engaged in trawling.

At the same time as I began my research, David Cam commissioned Stuart Cooke to write the story about the Cam family and their trawling company. The privately-published *Oceans, Rivers and Dreams* provided valuable insights into the company, although my research raises a number of questions regarding that work, especially relating to acquisition of vessels.
The largest collection of documents from a public agency I reviewed was the full collection of records from the NSW Fisheries Branch under the Chief Secretary’s Department. The records reviewed ranged from the Branch’s establishment in 1882 to about 1965. However the collection was not complete: records regarding the NSW Government’s involvement with fisheries prior to the Branch’s establishment, as well as the early records, were lost in 1882 when the Garden Palace, where the Branch was located, burned down. Following this event, the Branch was relocated to Richmond Terrace and then in 1911 to the Head Office of the Chief Secretary’s Department where the records were kept until they were handed over to the NSW State Records. In the State Archive the records are kept according to their original file number, some files covering several decades. Each file usually contains in- and out-going correspondence about a case or topic, other documents deemed relevant for the case and succeeding officers’ notes and recommendations. Unfortunately not all files have been preserved. In the records from the Branch there are several references to cleaning and destruction of absolvent documents. Most gaps in the records relate to earlier years, while record-keeping progressively improved from about the 1920s. In general the collection is wide ranging and offers extensive and detailed insights into the work of the Branch. To complete the picture, particularly of the early debate on fisheries management in NSW, I have also used Hansards, news articles, Royal Commissions and Parliamentary reports.

The records relating to the NSW State Fishing Industry established in 1915 are particularly fragmented; the original bookkeeping was poor and later when the NSW State Fishing Industry (STI) closed in 1923, the remaining records were transferred to the Branch and filed as ‘Trawling Industry Papers’. Most of the documents relating to the STI have subsequently been lost. The records found at the NSW State Records office possibly survived destruction because they became intermixed with files from the Chief Secretary’s Department and were accidentally submitted to the State Records along with unrelated department files. The surviving trawling documents are kept in their original order and cover a range of topics, but

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94 See for example SRNSW: State Fisheries, no 2401-2500, Internal note, 15 September 1936 [5/9244]. In which it is suggest that miscellaneous fisheries papers that are kept in the corridor are so dirty that they need vacuum cleaning. A subjoin note dated 16 September reads: ‘This work is very necessary. When it has been completed action will be talent to rearrange the records and dispose any surplus not required.”

95 It seems that the bundles of papers submitted to records in 1927 by Herlihy after he finished writing his ‘Historical Record’ make up the main part of the surviving documents. Among them are listed cruise reports which date and vessel closely resembles the early records used by Klaer.

96 SRNSW: Archives Investigator, Series no 1304, Letters received (State Trawling Industry).
there seems to be little or no system informing what has been archived; a large part of this is
due to the aforementioned poor bookkeeping practice at the STI, in which accounts and
records, especially in the earlier days, are largely missing or unregistered. A Senior Examiner
who undertook an audit of the STI in 1915 testified that “No attempt was evidently made by
the Undertaking to collect and properly file all papers relating to the undertaking” and “I
might state that in the course of auditing the various Industrial Undertakings, I have never
experienced a more unsatisfactory state of accounts”. In 1916 another member of the audit
team explained to the NSW Public Service Board “They (the records) were not indexed: they
were not sorted – as a matter of fact they were not with the Fisheries Department…They were
in a hopeless state – just thrown together as they were”.

Because of the fragmented state of the records and the lack of good bookkeeping practices
the best sources on the economic state of the industry are found in the published NSW
Parliamentary Papers “State Industrial Undertakings: Annual Balance Sheet, Trading
Account & c.” from 1916–1923. A summary of the activities of the operation as well as
detailed information on its history and management are found in the unpublished and
confidential report “NSW State Trawling Industry, Historical Record. 1915-1924” by F.J.
Herlihy, September 1927. Herlihy was the STI’s last accountant and responsible for winding
up the industry.

Another report, “The Public Service Board Inquiry into the State Trawling Industry 1916-
1917”, gives a revealing snapshot of the first six months of the STI’s existence. A number of
officers and employees were interviewed and their accounts give a rare insight into personal
and political conflicts surrounding the undertaking. The two reports that became the undoing
of the STI were the “Fourth Sectional Report of the Royal Commission to inquire into the
Public Service of New South Wales upon the State Trawling Industry 1920” and “Report of
the Public Service Boards on the Investigation into the working of the State Trawling
Industry 1922”, which were initiated by the substantial and continual loss that the STI was
generating. Both reports gave a condemning picture of the undertaking’s financial situation
but also investigated how the industry was organised. Regrettably, no records have survived

97 SRNSW: Department of Audit, Industrial Undertaking Branch, Report on State Trawling Industry, March
1916 [8/513.3 27].

98 SRNSW: PSB; Statement of James Kevin Byrne, Clerical Reliving Staff, 16 June 1916 [8/513.3].
from when the decision to establish a state fishing industry was taken until about mid 1915, and there are almost no records about the industry’s actual fishing activities.

The small private archive of the Branch’s naturalist and the STI’s first general manager, David G. Stead, kept at the Mitchell Library in Sydney, provides insight into his activities in the 1910s and 1920s, enhanced by a previously unknown collection of photos depicting the work on the trawlers, early sales at Newcastle, fish shops and fish cleaning. Originally, the STI’s captains kept minutely recorded details of their catches. A captain kept a logbook onboard where he daily recorded information about the ships position, the weather and an account of what provisions had been used, making specific entries about information on fishing activity. After each voyage he gave the original entries to the clerks at the STI’s offices and kept a carbon copy onboard the vessel for future reference. Captain Charles Horn explains the system in his testimony to the NSW Public Service Board in 1916:

One goes into the Office, and I keep the duplicate. It is in a big book. It shows what stores etc., have been used. [Stead continues] It combines the ship’s log, and gives you a little bit of science in addition. It has all the information as to what they caught, when they started, what time they shot the net, and what time it came back. It is all there, and more.99

The system with extended logs was set up by Stead who, with his scientific training, wanted to ensure that all information that could be used in the development of the fisheries was recorded methodically. Although not identical, both logbooks from A. A. Murrell100 and Red Funnel Trawlers101 contain many of the same types of information as described above. Based upon the logbooks found in the archives it seems that Stead’s recording system to some degree continued in the private trawling fleet, although it is likely that the carbon copies only went to the company headquarters and not to the NSW Fisheries Branch. At an unknown date CSIRO Fisheries Division obtained access to haul-data from the periods 1918–23 and

99 SRNSW: PSB; Statement of Captain Charles Horn, 14 June 1916 [ 8/513.3].
100 The 1938–39 logbooks from the trawler Jongkol, have cardboard covers and is made of thinly pages with printed field. Each page is a carbon copy of an original that have been removed. A voyage covers one page with information on: Name of Skipper, fishing cruise number, time and date departure, time and date of arrival, Date and number of hull, Position, duration of trawl, catch (flathead or mixed) per haul and remarks. NAA: Log books of trawlers owned by AA Murrell [CP436/16/12].
101 Red Funnel Trawlers Moona and Matorla’s logbooks from 1952-1961 also includes carbon copies pages with daily entries about: Haul, time shot, time hauled, species caught (flathead/morwong/redfish/John Dorry/gurnard/leather jackets/hake/mixed), grounds worked, depth water fathoms and remarks. SLNSW: Red Funnel Trawlers Pty Ltd; Logbooks 1938-1961 [ML MSS 7182 3X (6)], [ML MSS 7182 4X (6)], [ML MSS 7182 5X (6)].
1937–1943, presumably from trawler logbooks. At some point the information was digitized and later used by Neal Klaer. According to CSIRO the original data were handed over (or back) to the Branch some time during the 1960s. Research into the archives of the Fisheries Branch has failed to locate the records, and there is no reference that they were ever received. It may be the case that the original material was lost or destroyed while in CSIRO’s possession.

The other large archive from a public agency to be investigated was the CSIRO Chief Executive’s correspondence relating to its Fisheries Division from the 1920s to about 1965. The documents are physically divided between the National Australian Archive and CSIRO’s own archive, both located in Canberra. My focus was on the Fisheries Division’s correspondence with the Chief Executive, a factor that contributed to this decision was that many of the Division’s files concerning investigations of the trawl fishery were already in my possession. When staff from the Fisheries Division of CSIRO were leaving their facilities at Cronulla in 1985 they discarded many old files, but some bundles relating to trawling on the South East Continental Shelf were forgotten and left under a staircase. At the beginning of my research these documents were given to me by staff at NSW Fisheries and there was therefore little reason to investigate the whole archive of CSIRO’s Fisheries Division. These files, along with miscellaneous received or purchased photos and publications, are referenced here as belonging to my private collection.

Another source of information about Commonwealth fisheries management is found in articles from the *Fisheries Newsletter*, which was published by the Fisheries Division from 1941 and from 1946 by the Commonwealth Fisheries Offices.

**The accuracy of statistical information about catch and landings**

The research design of the thesis is based upon the knowledge that the activity of the steam trawlers affected fish stocks, expressed by a relationship between fishing effort and the state of fish stocks. The exact relationships between historic catches, effort and biomass have been estimated by Neil Klaer.

The total outputs for fisheries in NSW are found in the ‘Annual Report on the Fisheries of New South Wales’ published from 1883 by the NSW Fisheries Branch. The reports contain
statements of the Branch’s activities, legislative work and statistical information on landings, port of origin, prices, import and export of fish products. Later editions also contain information about the number of licensed fishermen.

However, as Tull has pointed out, the officially recorded catch and landing data are not necessarily accurate. Several factors influence how reliable the recordings were: infrequent recording, inaccurate species identification and inaccurate returns.\textsuperscript{102} Also, officially recorded catch data do not account for the discards of by-catch at sea or onshore\textsuperscript{103}, and in the case of the NSW steam trawling industry the authorities had to rely on the companies’ reports as to how much of the catch was sold directly to private retailers, restaurants and fish-and-chips shops. Since NSW Fisheries officers made most of their recording of landing at the fish markets in Sydney, catches from subsistence fisheries were rarely listed and there were multiple reasons why fishermen might try to evade having their landings recorded.

Another possibility for under- or over-estimated landings derives from the way fish were recorded at the market: as a rule fish were sold in ‘baskets’, which was not a uniform unit, and the conversion from baskets to pound to kilograms proved unreliable. In general the Branch used a conversion ratio of 70lb per basket of fish, which is the rate I have used to convert baskets to kilograms throughout the thesis, unless another rate was specified in the source. However, the estimates of pound per basket could randomly vary from year to year. In 1914 the Branch used 84lb as the average capacity of the baskets used for fish at the Commonwealth Co-operative Fish Exchange at Redfern and the Sydney Market.\textsuperscript{104} In 1923 the Branch quoted estimates of 65lb and 70lb per basket of fish and 45lb or 50lb for prawns in their annual report.\textsuperscript{105}

Under the STI, catches were first recorded in basket per haul, each basket being a mixture of ungutted fish and ice. Upon landing the basket was counted and a total weight calculated by multiplying the number of baskets with a fixed standard weight, and the total number in

\textsuperscript{102} Tull, M. 1993, p. 97.
\textsuperscript{103} In his modelling Klaer estimates that catches were 20 percent higher than the recorded landings due to discards at sea. See Klaer, N., 2006 p. 114. My research has indicated that in the early stages of the fishery discards was even higher.
\textsuperscript{104} Annual Report on the Fisheries of NSW for the Year 1914, p. 25.
\textsuperscript{105} Annual Report on the Fisheries of NSW for the Year 1923, p. 1 and 9.
kilograms was then recorded for bookkeeping purposes. The fixed standard weight used by the STI was 60lb, a number identified by the General Manager, David Stead, after he established a baseline by testing a select number of baskets. A second recording was taken of the amount of mainly gutted fish sent to each of the STI’s retail outlets. Despite the detailed recording system the landings recorded by the STI can only be regarded as estimates, because of the known inaccuracies in its record keeping. In 1922 the Auditor General’s annual report on the STI showed a discrepancy between landings and fish sold of about 506 tons, or the equivalent of one-fifth of the landings missing from the trading records, a shortage which could not be accounted for. Evidence suggested that the fish were reloaded into the trawlers and discarded at sea, possibly because the market was flooded.

The historical fisheries data used by Klaer originate partly from a dataset of unknown provenance (but presumed to originate from logbooks) kept at CSIRO, as well as other types of data from the steam trawling companies. As a result his total annual landings differ slightly from the landings recorded in the Annual Reports. For the purpose of this thesis I have therefore used the NSW Annual Fisheries Reports as the source for total landings of ocean-caught fish in NSW.

**Ecological changes on the South East Continental Shelf 1915-1961**

The idea to do a study of NSW’s steam trawl fishery and how it was managed came when I learned that Klaer was working on establishing the changes in commercial fish stocks on the south-east continental shelf’s ecosystem from the beginning of human impact in 1915 to 1961 when the last steam trawler left. In order to do so he analysed historical logbooks, landing records and radio reports from the trawlers. The use of historical records, especially logbooks, has proven to be an effective method of reconstructing the productivity of depleted ecosystems, for which no scientific data exists.

The waters fished by the steam trawlers are today known as the Commonwealth Trawl Sector (previously the South East Trawl Fishery). The area is home to Australia’s oldest demersal

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106 SRNSW: PSB; Inquiry into the State Trawling Industry , 1916-1917 [8/513.3].
107 CFRC Library: Chief Secretary’s Department; F. J. Herlihy: NSW State Trawling Industry Historical Records 1915-24, September 1927, p. 18.
109 See for example Alexander, K. et al., 2009.
fishery and is still of economic importance. Originally it was located on the continental shelf to 200 metres depth in waters mostly south of Sydney, but through time spread out to cover grounds in the Bass Strait. Today the fishery includes several states covering fishing grounds along NSW, Victoria, around Tasmania and South Australia, and is managed by the Commonwealth under a single management plan. Until 1970 the trawling industry mainly targeted tiger flathead (*Neoplatycephalus richardsoni*), jackass morwong (*Nemadactylus macropterus*) and redfish (*Centroberyx affinis*) but several other species were brought to market as well.

**Location of trawling grounds**

When the STI began operations it found and exploited the fishing grounds located outside Cronulla (called the Botany Ground) but within a year the trawlers began to sail as far away as Green Cape to trawl for fish, on ground found between 1–8 miles or about 1.5–13 kilometres off the coast. The long distances sailed by the trawlers in the entry years can partly be explained by the lack of knowledge about the habits and migration patterns of target species. Although some of the fishing grounds had been mapped by the *Endeavour* in 1909 and 1910, there was little knowledge of what species the grounds contained, so particularly in the earlier years the trawlers had to undertake a lot of exploration work to identify the best fishing grounds. As the captains became better at finding the fish catch per unit rose on the grounds. The location of the fishing grounds are illustrated in figure 1.

Klaer’s mapping of the catch position of the STI trawlers from 1918 to 23 shows that the main fishing ground was primarily found outside Botany Bay on what was called the Home Ground (area D), and a second in the waters between Eden and Merimbula (area H). A little fishing also took place in waters north of Sydney (partly area C) and around Montagu Island (area G). Nearly all trawling took place more than three nautical miles offshore, beyond the territorial sea, but throughout the existence of the State Industry the most important fishing grounds were those closest to Sydney.

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110 Klaer, N., 2006 p. 3.
111 Roughley, T., 1916, p. 223.
112 SRNSW: PSB; Statement of Captain Charles Horn, 14 June 1916 [8/513.3].
For the period between 1923 and 1937 no haul data have survived, so the early movements of the privately owned steam-trawling fleet are not known. From 1937 to 1943 the fishing effort was distributed over most of the fishing grounds, although most effort was expended south off the coast, in area I off Cape Everard. As World War II progressed, the fishing effort decreased south of Eden and intensified in the grounds closer to Sydney (D and F). The next set of haul data covers the final years of steam trawling in NSW from 1952 to 1957. According to these the main fishing effort was again concentrated in the most southerly grounds (areal I and J) and relatively less fishing took place on the grounds closest to Sydney (area B, C, D, E and F).\textsuperscript{113}

The average depth of fishing between 1918 and 1923 (the State Trawling Industry) was 75–100 metres and the period after 1937 between 110–130 metres, indicating a transition to progressively deeper waters as CPUE declined.\textsuperscript{114} Given that the continental shelf is quite narrow outside NSW (about 40 km) and the continental slope begins at 100-160 metres depth, in the 1930s the private steam trawling industry had expanded the fishing areas to the very edge of the shelf.

\textsuperscript{113} Klaer, N., 2001 p. 404.
\textsuperscript{114} Klaer, N., 2001, p. 77.
Catches and the effect on fish stock

Fish landings by the NSW steam trawlers from the east continental shelf, show a progressive and pronounced increase from 1923 to 1929. In 1929 landings reached an all time record of 6665 tons. During the 1930s landings declined steadily, until they suddenly plummeted between 1939 and 1946, at which time most of the steam trawlers were taken over by the Royal Australian Navy to be used as minesweepers. The post-war period saw a brief return to the pre-war level of landings, but landings soon continued their previous rapid decline, particularly after 1954 when the trawling company Cam and Sons ceased to operate.
Figure 1-2. Total catches in tonnes by NSW steam trawlers and other fishing vessels from fishery at the south east continental shelf (SEF), Source: Klaer, N., 2006.

Figure 1-2 also shows the gradual emergence of a non-steam trawling industry, one gaining strength from 1936 when Danish seiners were introduced to the fishery. Their number increased after Second World War culminating in 1947-48 with 134 licenses issued. By 1961 landings from the seining and small vessel fishing industry had replaced landings from the steam trawlers.

By 1920 the trawl fishery was well-established and many of the fishing grounds on the continental shelf had been identified and were regularly trawled, affecting fish abundance. In his statement to the Public Board in 1916 Captain Charles Horn assured members that he had not noted any decline in the amount of fish found at the Botany Ground during the first year of trawling, although he admits that earlier and exceptionally high catches had only lasted a

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short time. He also gave several examples of how catches had improved over time, some of which he attributed to trawls ‘cultivating’ the seabed, taking off what he called ‘the slime’ or removing lesser wanted species such as gurnard so flatheads thrived. As the private industry took over in 1923 and increased the fishing effort, the stocks of the main target catch, flathead but also leatherjacket and latchet, began to be affected by the pressure. By the second half of the 1920s the first early signs that trawling was detrimentally affecting and changing the marine environment on the continental shelf can be detected.

In his research on the historical catch records, Klaer has calculated the CPUE (catch-per-unit-effort) and how the structure of the main demersal fish communities was affected by fishing effort. For the first five years of steam trawling in NSW, CPUE continued to increase, and did not level off before 1920. This phenomenon suggests that, in the early years of operation, the industry was still developing and not operating with maximum effect. However, over time, an increasing level of knowledge allowed trawlers to improve catch rates. This ‘period of learning’, as Klaer calls it, continued until about 1920 at which time CPUE levels off.

According to the STI’s own records, the average number of kilograms of fish caught per hour of trawling increased from 120 kg/h in 1916/17, to 142 kg/h in 1917/18 and 174 kg/h in 1918/19. Dealing specifically with the Botany Ground, figure 3 shows the same trend of increasing CPUE from 150 to 300 kilograms per hour from 1918 to 1923.

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116 SRNSW: PSB: Statement of Captain Charles Horn, 14 June 1916 [8/513.3].
117 Klaer N., 2006, p.87.
118 Klaer N., 2006, p. 76.
After the STI left the fishery and the private industry took over in 1923 CPUE appears to level off, although the lack of data makes it impossible to fix the exact time when CPUE began to fall. Similar patterns of briefly increasing and then declining CPUE were found on other major fishing grounds (Area G and H), although slightly later than on the ground near Sydney.\textsuperscript{120}

Without the catch-rates it is impossible to estimate the precise impact of fishing on the marine environment during the second half of the 1920s and first half of the 1930s. Based upon the data available, it is obvious that CPUE dropped dramatically for all the known fish grounds after 1923, suggesting that the fishing effort increased and/or the fish stocks were reacting negatively to exploitation. By 1937 the average CPUE for the steam trawling fleet was less than 50 percent of that achieved in the early 1920s.\textsuperscript{121} Time series data available for the post-war period show a significant decline in CPUE compared to the earliest data and radical changes in species composition; this finding has been confirmed by Klaer’s modelling of fish stocks, which shows a steady decline in flathead, leatherjacket and latchet biomass and abundance indices since 1915.\textsuperscript{122} His population modelling indicates a permanent biomass reduction in three out of the four studied fish species. In the case of tiger flathead the

\textsuperscript{120} Klaer N., 2006, pp. 81-82.
\textsuperscript{121} Klaer N., 2006, p. 76.
\textsuperscript{122} Klaer N., 2006, p. 112.
population was fished down to a low level of about 20 percent of its pre-1915 stock size in the 1950s and 1960s, but has today recovered to its current level of 40 percent. Klaer judged fishing the most likely cause of reduction in biomass.

Confronted with this information it is clear that the steam trawl fishery was unsustainable, and already in decline from the 1920s. In the rest of the thesis I examine the management of the steam trawl fishery and how the will to govern the fishery was expressed.

Chapter structure

The chapters to follow are organised both temporally and thematically, each covering periods of time consecutively organised according to the prevailing theme of the chapter. Throughout the chapters historic quotes are used to illustrate contemporary prevailing sentiments expressed by identified persons or agencies. Figures or illustrations are also used. To ease reading, references are given in footnotes; as a general rule literature, such as published reference works and scholarly articles, are footnoted in the style of author-date with a full reference in the bibliography. Most historical sources, including news articles and printed governmental reports are referenced in full in the footnote, but do not appear individually in the bibliography.

Chapter 1: Introduction, provided an introduction to the research, describing the motivation for and relevance of the study, followed by a literature review of select writings and ideas that have informed the research. The research design and methodological considerations that underpin that design was discussed and an overview of the changes in fish stocks on the south-east continental shelf between 1915 and 1961 was presented.

Chapter 2: A neglected source of wealth, examines policies and public opinion about the development of marine resources in NSW, to show when, why and how fisheries management became an issue in NSW. Drawing upon Hansards, Commission Reports, publications and newspapers I discuss how the Colony’s will to govern evolved from a need to conserve inshore resources into an impetus to develop marine fisheries. The period covered in the chapter is from 1865 to 1900, starting with the passing of NSW’s first Fisheries Act and ending with Federation.

In chapter 3: *Early attempts at fisheries development*, I continue the history of how an institutional framework for fisheries development and management was further advanced in NSW, covering the period from 1901 to 1913, at which time the findings of the NSW Royal Food Commissions were published. Focusing on the Fisheries Branch of the Chief Secretary’s Department I explore how additional governmental practices were introduced to fisheries management, especially using science as a tool to aid development. The chapter also examines the Branch’s venture into aquaculture (marine hatching) as a strategy for inshore fisheries development.

Chapter 4: *Fishing for the state*, describes how the NSW Government made the transition from having inshore fisheries development managed on a scientific basis to running a commercial trawling operation, fishing on the State’s continental shelf. Based upon the industry’s own records, the chapter tells the story of the NSW State Trawling Industry from 1914 to 1923, elaborating on its management objectives, and investigating both how it operated and why it failed to become a commercial success.

In chapter 5: *The private steam trawling industry*, the focus moves from the public to the private sector. Drawing upon business and economic history the chapter presents the origin and decline of private steam trawling in NSW from 1923 to 1961. Beginning with the takeover of trawling in NSW in 1923 by the private companies, the chapter maps the industry’s development and the consequences of the emerging environmental problems caused by increasing fishing effort and how the companies tried to re-negotiate the public-private relationship with the NSW Government.

In chapter 6: *Science goes fishing*, the focus shifts from the State to Commonwealth fisheries management. Using sources mainly from CSIRO the chapter looks at the founding of the first national institute for fisheries science – the Fisheries Division of CSIRO. I discuss how the Division evolved from an institution dedicated to developmental-oriented research, to challenge the developmental ethos and instead advocate scientific-based fisheries management to protect Australia’s marine resources. Finally the rationale and objectives behind the establishment of a Commonwealth legislative framework for fisheries management outside state territories is examined. The period covered in the chapter begins in
1927 with the first Australian Fisheries Conference and concludes when the first Commonwealth Fisheries Act become effective from 1 January 1955.

Chapter 7: *Marketing and management*, returns to look at the NSW Fisheries Branch and changes in management objectives and interaction with Commonwealth authorities from c. 1920 to 1961. An overview is given of the Branch’s staffing and the productivity of the States fishing industries. Early fish marketing is described and the background for market reforms in 1920-22. The difficulty in applying effective fisheries management in a system of overlapping authorities is illustrated and used to explain why a post-war scientific recommendation to reduce fishing intensity was not implemented. The Branch’s subsequent attempt to manage the shelf fishery through the market and the consequence for steam trawl industry is analysed. The epilogue describes how more a more sustainable fisheries management objectives for all Australian fisheries was agreed to in 1961.

Chapter 8: *Conclusion*, provides a summary of research, significant of findings and suggestions for further research.

To understand *how* a will to govern NSW marine resources emerged, especially the management of the species fished by the steam trawlers, we have to start by looking at *when* fisheries management became an issue in NSW. The next chapter commences in 1865 with the first expressions of intentional fisheries management by a NSW Parliament.
Chapter 2
A neglected source of wealth, c. 1865-1900

We ascertained that there are several places even in the city of Sydney itself where fish is rarely if ever seen, and where the people have become so entirely unaccustomed to the use of it as an article of food, that they seldom if ever think of purchasing it.\(^{124}\)

Introduction

In 1865 the NSW Parliament passed its first fisheries act and made tentative steps indicative of a ‘will to govern’ the Colony’s fisheries. During the course of the next thirty-five years the conviction that the Colony should actively develop its marine fisheries was founded.

The belief in government development was informed by a shared impulse around Australia of colonial socialism, but was also part of a larger pattern of governance of modern fisheries in western societies. During the second half of the nineteenth century most leading fishing nations introduced laws to regulate marine fisheries and created permanent institutions through which to conduct research, enforce regulations and manage national fisheries. In Canada the Fisheries Act of 1868 was the nation’s first full-scale fisheries policy to include both the Atlantic Ocean and the Great Lakes.\(^{125}\) Across the ocean the Parliament in the United Kingdom passed the first Sea Fisheries Act in 1875, and across the North Sea, Denmark’s first fisheries legislation, which included all inland and sea waters, was adopted in 1888.\(^{126}\) The New Zealand Government passed a marine Fish Protection Act in 1877 which, after years of debate, was replaced by the Fisheries Conservation Act in 1884. The acts were evidence of political motivations driven by concerns that resources were in danger of being depleted. However, as was common elsewhere, the New Zealand Parliament never fully understood the seriousness of the matter, given that it was a common belief that New Zealand’s seas were abundant with fish. As a result regulations were not far reaching enough

\(^{125}\) Bogue, M., 2000, p. 179.
and ultimately were ineffectual in addressing the problems at hand. New Zealand’s experience was not unique and was mirrored in NSW.

Fish had not been significant in Australian diets, because agricultural products were usually abundant and cheap; it was only in coastal communities that local marine products were eaten regularly. The relatively high price of fish in comparison to meat held back consumption. The urge to regulate or to develop fisheries was therefore not in the forefront of the interests of politicians and entrepreneurs, and only slowly entered the public mind in the second half of the nineteenth century, bolstered by widespread faith in colonial socialism and the common belief that marine resources were plentiful and could sustain nearly unlimited exploitation.

The purpose of this chapter is to show when, why and how fisheries management became an issue in NSW, and to discuss how the Colony’s will to govern was first expressed as a need to conserve inshore resources, then was transformed into a desire to develop marine fisheries. By reference to parliamentary debates and commissions, as well as the fisheries acts, I seek to show how governance has evolved. Publications and debate-letters printed in newspapers have been used to assess to what degree policymaking was consistent with public opinion. The period covered in the chapter is framed by the passing of NSW’s first Fisheries Act and ends with Federation in 1901.

**Fisheries legislation and development before Federation**

**The state of the NSW fishing industry before Federation**

Until the twentieth century the fishing industry in NSW was very small and of limited commercial importance; the only market of some significance was found in Sydney. Due to inadequate infrastructure and a lack of cooling facilities only fishermen in the vicinity of the city were able to send their fish to the market there. NSW had a total population of 1.1

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129 It was in 1883 at the International Fisheries Exhibition in London that zoologist Thomas Henry Huxley as the English government’s inspector of fisheries, in the inaugural address famously declared that “all the great sea-fisheries are inexhaustible”. He was voicing a widespread belief that had informed English management of marine fisheries in previous decades, but a belief that was under scrutiny by some scientists after the introduction of steam trawlers in the British fishing fleet in the 1870s. See Rozwadowski, H., 2002, p. 28.
million in 1891, of which in 1860 about one-sixth lived in Sydney. Lacking the means to market their catch more widely, members of the Colony’s fishing industry remained small in number throughout the nineteenth century. In 1880, only 27 seine boats, with an average crew of four, and eight line boats with crews of three, were regularly bringing their catch to be sold at the Sydney Fish Market. One steam vessel was also supplying the market with catches from distant fisheries and in the winter months additional supplies were brought in by steamers from as far as Port Stephens, 160 kilometres north of Sydney, and Jervis Bay 180 kilometres south of Sydney. Prior to 1880 ice was generally not used to preserve the catch, which severely hampered the trade of fish from distant grounds. Only during winter months could fish successfully be shipped over long distances by coastal steamers. Once the fish reached Sydney, the assorted boxes were repacked by agents into baskets and brought to the Market for sale. This method of handling fish increased the exposure of fish to deterioration and made it hard for fishermen to keep agents accountable for sales. Given the great difficulties in marketing catch and the generally low level of interest among consumers for marine products it was not surprising that commercial fishing was not a flourishing industry.

Constraints were amplified because fishing technology used during the second half of the nineteenth century was simple. Most fishing vessels were small open row- or sailboats only suitable for estuaries and near coastal or inshore fishing, using seines or meshing-nets as well as handlines. Seagoing fishing vessels were generally larger than those used in estuaries, and could be about 25 feet long. Built to stay at sea only for short periods of time, the boats were rarely decked and had no facilities for crew. As motorisation became more widespread after 1900 the average size of boats increased. Steam powered fishing vessels did not appear in the snapper and cray fisheries before early 1900, and never became widespread. The conversion from sail to (petrol) engine seems to have begun at the same time, but was not completed before the mid 1920s. The main fishing gear used by inshore fishermen consisted of handlines of up to one thousand yards in length, with baited hooks on secondary lines. Crayfish were caught in hoop-nets and later in pots. Estuary fishermen also used simple meshing-nets, which could be used passively, as gillnets, or shot across a channel, or in a

130 Kingston, B., 2006, p. 60.
132 The railway network was not extended enough to provide an alternative to coastal steamers.
133 Cohen, P., 1892, p. 6.
Another widely used net type was the beach-seine or hauling net, which was shot in a semicircle from the shore and then hauled in. Although effective, this technology could only be used in shallow waters with sandy or muddy bottoms.

Despite several short-lived enterprises on an industrial scale, fish preservation in the form of canning had limited success.\textsuperscript{134} The main reason was the lack of a steady and large supply of fish. Due to the seasonal nature of many of the marine species found in NSW, and the simple fishing gear employed by fishermen, catch and species composition fluctuated widely.\textsuperscript{135} The most important offshore fishing grounds were found in a relatively small area of about 60 kilometres in and around Sydney Harbour, from north of the Head to just north of Broken Bay (Cape Three Points) and as far south as Marley Head and Wattamolle (near Port Hacking). Their importance was as much due to their proximity to Sydney as the quantity of fish found on the grounds.\textsuperscript{136}

For all the reasons above the productivity of the NSW fisheries was low and fishing intensity concentrated in the waters around Sydney.

\textbf{The Fisheries Act of 1865}

The history of fisheries regulation in NSW began in September 1852 when the Colony’s first fisheries protection bill was proposed in the Legislative Assembly by independent liberal member Richard Driver, a solicitor who had made his political career by promoting the rights of the native-born.\textsuperscript{137} His bill was dropped in December due to lack of political support.\textsuperscript{138} In March 1865 Driver again introduced a fisheries protection bill, which aimed to stop the capture of fry and juvenile fish. This practice had come to his attention when it appeared that the fishing grounds near Sydney, especially those in the harbour (Port Jackson), were starting show signs of depletion, due to the reportedly widespread destruction of juvenile fish. The destruction of fish was believed to be caused by the use of small meshed nets, some as small

\begin{footnotesize}
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    \item At least two small canneries existed in NSW around 1880: the Clarence River Fresh Fish and Canning Company at Iluka and the Cape Hawke Fish Preserving Company at Foster.
    \item Amato, L., 1989.
    \item Part of nation building during the second half of the eighteenth century the privileges of white native-born Australians over white overseas-born became a political issue. The rights of indigenous Australians did not feature in the debate.
    \item SMH: NSW Parliament Debate, 3 September 1862 p. 3.
\end{itemize}
\end{footnotesize}
as \( \frac{3}{4} \) inch (approximately 2 cm), and the use of a fishing technique called ‘stalling’, where the net was shot across a bay or inlet’s tidal zone at high tide, so that when the tide turned fish and other marine animals were left on dry land to be collected.\(^{139}\)

In his address to the Legislative Assembly Driver claimed that the bill was welcomed by the harbour fishermen, but although there was general support for an act to protect the fisheries in NSW, members of the Legislative Assembly decided to let a Select Committee of the House investigate the matter and take evidence “of a professional and scientific kind”.\(^{140}\) The appointed members of the committee had no special knowledge of fisheries and the investigation was very quickly concluded. The committee found no reason to change the overall design of Driver’s original bill. Subsequently, when the bill again came before the Legislative Assembly, the Assembly expressed its support and with a minimum of debate and some minor changes the bill was passed.\(^ {141}\) In the Legislative Council the bill received even less attention and was passed without any debate and few comments.

The 1865 Act to Protect the Fisheries of NSW\(^ {142}\) introduced for the first time some restrictions on fishing methods, in order to safeguard the Colony’s fisheries. To protect spawn and juvenile fish the year was divided into winter and summer seasons and maximum legal mesh and net-sizes were defined. In winter the net could not exceed thirty fathoms in length (ca. 55 m) and the mesh could not be smaller than one inch (2.54 cm); prawn-nets, however, could not exceed eight fathoms in length (ca. 15 m). During the summer, meshes had to be a minimum of two inches, and the use of stationary nets within one mile from shore or at the mouth of a river was prohibited, to prevent fishing by ‘stalling’. It also became illegal to poison the water to catch or destroy fish. The law was administered by the NSW Police and Customs Department. Its staff operated during daytime, and could search for people fishing illegally but only charge them if they were caught in the act of unlawful doing. Since the restrictions only applied to estuary and river mouths, inshore waters and the continental shelf were still unregulated.

\(^{139}\)Thompson, L., 1893, pp. 26-27.

\(^{140}\)SMH: Parliament Debate, 25 March 1865, p. 5.

\(^{141}\)SMH: Parliament Debate, 17 May 1865, p. 4.

\(^{142}\)Fisheries Act 1865.
In September 1866 an amendment to the 1865 Fisheries Act was proposed in the Legislative Assembly by Robert Wisdom, a journalist and barrister who, at that time, was representing in Parliament the Lower Hunter region north of Sydney. The amendment proposed the abolition of all restrictions on net-sizes, an action that was claimed to be supported by many fishermen. It was argued that the 1865 Select Commission had not been very thorough in its investigation, and it was decided to appoint a new Select Committee. Of the nine appointed members of the 1866 Select Committee, only one had some professional knowledge of fisheries. This exception was William John Macleay who, since the early 1860s, had made a name as a patron of science and as a competent scientist himself. Driver was also appointed a member of the 1866 Select Committee. Macleay was later to serve on the 1880 Fisheries Committee with two other members from the 1865 Committee, Driver and James S. Farnell. However for unknown reasons the amendment bill lapsed before the committee had finished its investigation.

A new attempt to introduce the bill was made by William Charles Windeyer in November 1867. Windeyer was a barrister representing West Sydney and an advocate for law and social reforms. His concern was that the restrictions on net and mesh size limited fishermen’s ability to practise their trade. It was generally agreed among the members in the Assembly that the 1865 Fisheries Act had failed to protect the fisheries, and that it was impractical and not benefitting the industry. Robert Wisdom, who had proposed the same bill the year before, warmly supported the motion and argued that the 1865 Fisheries Act had had a negative impact on the industry since “there were far fewer fish in the market than there were before it (the Act) was passed”. After some discussion the 1867 amendment bill was passed and subsequently went through the Legislative Council without any further debate or amendments.

That the 1865 Fisheries Act was changed because it was considered a hindrance to the industry’s productivity illustrates how closely public and private development interests were linked in the second half of the nineteenth century.

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144 SMH: Parliament Debate, 3 November 1866, p. 4.
145 www.adb.online.anu.edu.au, [01.03.2010]
146 James S. Farnell participated in the early debate about fisheries development, but it was his son Frank Farnell who made fisheries management his calling.
147 SMH: Parliament Debate, 16 November 1867, p. 5.
The 1867 Act to Amend the Fisheries Act of 1865 revoked the paragraph about the length of prawn-nets and instead increased the length to fifteen fathoms (ca. 27 m). It also increased the legal length of fish nets to 90 fathoms (ca. 165 m) provided that the mesh size was a minimum of four inches (ca 16 cm). The adjustment of the size of nets was doubtlessly to allow beach seining; a fishing technique where one side of the net is anchored on the beach and the other is spread out in a circle by a rowing boat. After the second end is brought onshore the net can be manually hauled in. In practice, however, the amendment nullified all original restrictions on net sizes since the fishing boats now could use any size net they wanted (provided that the mesh size was a minimum of four inches). In reality none of the small sail boats used in the fishery had the man power or capacity to operate large nets. In comparison, the much more powerful steam trawlers introduced in 1915 used nets of only 126 feet (ca. 38 m) with a mesh size in the cod (end of net) of three inches.

Oyster farming was not included in the 1865 Fisheries Act. In 1868 a separate oyster-beds act introduced the first licensing system for oyster-beds, which was managed by the newly created Oyster Bed Board. From 1884 oysters and fisheries were managed under the same NSW fisheries authority, however it is outside the scope of this thesis to look at issues involving oyster management.

It soon became evident that the 1867 Amended Fisheries Act was ineffective in protecting fish resources. A contemporary observer of fisheries in NSW, Alexander Oliver a parliamentary draftsman, had in 1871 published an article on ‘The Fisheries in NSW’ in Industrial Progress of the Colony, and went as far as to declare the Amended Act “Dead to the letter”. Consequently it was not enforced by the NSW Police and Customs Department and the fishermen continued to use destructive fishing practices allowed by loopholes in the Act as well as outright illegal practices.

Records of the debates in the Legislative Assembly make it clear that the various fisheries bills introduced were motivated by a concern that the supply of fish to Sydney could be

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148 Fisheries Amendment Act 1867.
150 Roughley, T., 1916, p. 216.
152 Fisheries Amendment Act 1884.
153 Oliver, A., 1871.
154 Thompson, L., 1893, pp. 26-27.
affected by the destructive behaviour of the fishermen and their practice of catching and killing juvenile fish, rather than any desire to protect the natural environment. In March 1865, during the second reading of his fisheries bill in the Legislative Assembly, Driver had explained to the Parliament that unless some restrictions were enacted “to prevent the destruction of fish, we should be almost entirely deprived of fish (and)…many fish were destroyed that would otherwise be valuable”.  

Although some of the speakers during the debates over the bills expressed concern about how the legislation would affect fishermen, the gist of the bills – to stop the uneconomical practice of destroying fish before they reached marketable sizes – was never questioned. Throughout the debates, members of Parliament displayed a consistent and unambiguously economic attitude to the marine environment.

The Royal Commission of 1880 and the Fisheries Act of 1881

During the next decades the supply of fish to Sydney continued to be considered inadequate by observers of the industry and the fish available was sold at high prices, making fresh fish a luxury commodity for the wealthy.  

Observers like Alexander Oliver called the Colony’s fisheries “a postponed industry” and claimed that the market for fresh fish for consumption was four times as high as the current supply (1.5 tons per week).  

It was widely recognised that the 1867 Fisheries Act Amendment had failed to address the problem it was created to solve and the unsatisfactory state of the fisheries therefore continued to attract public attention in the following years.

In January 1880 the NSW Premier, Henry Parkes, appointed a Royal Commission to report on the actual state and prospect of fisheries in the Colony. The Commission was to ensure a diligent and full investigation...[and]...the best means of developing and preserving them, the expediency of encouraging Pisciculture, or supplementing the natural supply by the introduction and acclimatisation of useful foreign species.  

156 Philip E. Muskett wrote in 1893: “And not only is the supply (of fish) deficient, but what little there may be is so outrageously expensive that it is hopelessly beyond the reach of an ordinary purse.” See Muskett, P., 1893 [chapter 10].
157 Oliver, A., 1871.
The notion of ‘developing fisheries’ featured prominently in the document. Previous parliamentary debates and investigations had been about conserving existing fisheries, but the 1880 Royal Commission was to go a step further and not only make suggestions on how to protect the fisheries but also how to improve them. The 1880 Royal Commission comprised fourteen persons and included both individuals, with special knowledge or interest in fisheries, and politicians. Of the former, the most notable was the president of the Commission, William John Macleay. He was a member of the Legislative Council and a veteran of the Select Committee of 1866; besides his large pastoral holdings and political involvement he was an accredited ‘gentleman’ scientist with a special interest in Australian insects and inland fish, and holder of a large private collection of specimens. An associate of Macleay, and member of the Commission, was Dr James Charles Cox, who besides his work as a physician was an active natural scientist. He had published several works on different aspects of Australian natural history, amongst them works on shells and fish. The third person with scientific knowledge was Edward Pier Ramsay who was curator at the Australian Museum and a well-known ornithologist and zoologist, who had published over 30 papers on ichthyologic studies. The fourth member was Francis Hixson who was a former naval officer and superintendent of Pilots, Lighthouses and Harbours in NSW (since 1863) and, since 1877, president of the NSW Marine Board.

The two appointed Members of Parliament, Richard Driver and James S. Farnell, were also veterans of the Fisheries Act of 1865 Select Committee. Of the remaining appointed Members of the Legislative Council, George Thornton and Thomas Holt were not unfamiliar with maritime pursuits; Thornton was a former shipbroker and Customs House agent with an interest in aquatic sports and Holt had experimented with scientific oyster farming on his coastal estate just outside Sydney. Alexander Oliver, an outspoken observer of the industry, served the 1880 Royal Commission in his capacity of draftsman. The remaining members, William Bede Dally, Cary Dangar, Richard Hill, Charles Carleton Skarratt and George Frederick Want, did not have any special practical or scholarly qualifications.159

159 Macleay was one of the founders of the Entomological Society of NSW in 1862, and the first president of the Linnean Society of New South Wales formed in October 1874; he was also one of the trustees of the Australian Museum. In 1876-7 he was president of the Royal Commission on Oyster Culture. Since 1859 Cox had been a fellow of the Royal Society of New South Wales (then the Philosophical Society) and became its president in 1862. At the same time he was the Entomological Society’s first secretary and later became the Linnean Society’s president in 1881-1882 and a trustee of the Sydney Museum. Ramsay was another of the founding
During their investigation the members of the 1880 Royal Commission interviewed 35 witnesses, all with knowledge of fisheries, and received reports from pilots, lighthouse keepers and local dignitaries in all areas where commercial fishing took place. In their final report they divided their findings into nine thematic chapters and a summary with recommendations. The themes discussed were: Our Marine Fishes, Our Fishing Grounds, The Present Condition of the Fish Market, The Development of our Fisheries, The Protection of our Fisheries, Our Freshwater Fishes, Acclimatisation and Pisciculture, Oysters and other Mollusca and Crustacea.\(^{160}\) Their report was the first comprehensive study of all aspects of the Colony’s fishing industry, dealing with both biological and economic characteristics affecting the supply of fish.

Throughout the report were several references to how little was known about what fish species inhabited the waters or about their lifecycle and where they could be caught. Remarkably the productivity of the marine ecosystem was never in doubt and it was taken for granted that fish resources were plentiful and easily could meet any demand.\(^{161}\) The long NSW coastline with extensive areas of shallow water was believed to be ideal as nursery and feeding ground for fish.\(^{162}\) In reality NSW has a narrow continental shelf and low primary production, although the ecosystem was rich in terms of species diversity with many mixed-species fish aggregations.\(^{163}\)

These notions about unlimited marine resources were not based upon empirical work and would not have held up against any scientific scrutiny; rather the belief was founded on a basis of richness by proxy: Britain was surrounded by extensive fishing grounds that supported a large pelagic fishery, therefore as it had a coastline approximately a third of the British, NSW should also be able to sustain a thriving fishing industry. This view was generally accepted by professionals and the public alike, and was due to the lack of knowledge about the native/local marine environment and fish population dynamics in general. Although members of the biological scientific community were aware that catches

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for most marine fisheries fluctuated from year to year, they were unable to explain why.

Early scientific investigations from the late 1800s and early 1900s suggested that variation in catch was due to migration, predation, pollution or overfishing, but methods and approaches to study the causes of fluctuation and effect of exploitation on marine animals were still in their infancy.\textsuperscript{164} In effect the members of the 1880 Royal Commission uncritically applied British experiences of cold climate fishery engaging with a single species to fisheries based upon species found in temperate multi-species ecosystems, without considering if the sea could have distinctly different features.

In its recommendations to the NSW Parliament, the 1880 Royal Commission made several important observations in relation to the Colony’s sea fisheries: firstly, members concluded that the amount of fish at the Sydney market was restricted by the lack of ice and cooling chambers, as well as inadequate infrastructure in rural areas. The poorly developed network of roads and railways in many areas hindered the transport of catch from rural areas to Sydney. They also noted that local demand was much larger than supply, and as a result the retail price had doubled or tripled. The inadequate supply meant that many people were unaccustomed to eating fish, as large areas of Sydney were not serviced by hawkers. Another consequence was that NSW imported large quantities of preserved fish to a yearly value of £162,000 (1877) and £133,000 (1878).\textsuperscript{165}

Secondly, the members concluded that there was a real need for protective measures at some of the most exploited fishing grounds since their yield had decreased dramatically. The 1880 Royal Commission reasoned that this situation might have been acceptable if the decline had been caused by supplying fish for consumption or another useful purpose, but as the decline was the result of inappropriate fishing methods that destroyed spawn and juvenile fish, legislation was needed. The 1880 Royal Commission rejected the possibility that the quantity of fish actually caught and consumed could in any way influence the natural abundance of fish.\textsuperscript{166} To protect resources the members recommended the introduction of closed seasons; a maximum mesh size of 1½ inches in seine nets, and four inches in the case of nets suspended through stakes fixed into the seabed; and banning the placement of nets across whole inlets or

\textsuperscript{164} Smith, T., 1994, p. 21.
creeks. Importantly, they proposed a permanent Commission made up of two or three honorary gentlemen acting as a Board of Fisheries with the power to enforce the law, supervise fisheries and advise the government on the opening or closing of fishing grounds. The Board would also be responsible for collecting and publicising information on fisheries. To enforce the regulation the 1880 Royal Commission suggested a body of local fisheries inspectors “not more than six in all, and in most of these (districts) the duties would be so light that they might very well be undertaken by the Custom-house officer, or pilot, or other Government officer on the spot”. Time would show that the 1880 Royal Commission greatly underestimated the demands on inspectors and overestimated fishermens’ willingness to comply with the legislation.

On the question of how to develop inshore and offshore fisheries the 1880 Royal Commission found that the key was improved cooling techniques. The lack of onboard cooling facilities was viewed as the only thing that had prevented the establishment of an offshore fishing industry, because vessels could not be at sea for several days without their catch going stale, but new technologies had made artificial cooling possible onboard ships. The 1880 Royal Commission also predicted that ice would soon be so cheap that even small scale fishermen and fishmongers could afford to use it. The innovation in cooling technology would provide Sydney with an ample supply of fresh fish even if they came from fishing grounds far away. It was the 1880 Royal Commission’s opinion that if a few steam vessels of 100-150 tons with ice-rooms were employed in offshore fishing they would be able to catch enough to sufficiently to meet market demands. Members estimated that a fishing vessel with a crew of 12 would catch four tons of food fish per week, which would enable them to earn a weekly return of £80. For the future they did not consider trawling a viable fishing method, because the rocky coast would not allow for its wide use, but instead suggested that improved long-lining methods could provide the basis for development. However they also noted that if sandbanks were found, some trawl fishery could be viable, but they refrained from saying that systematic exploration of fishing grounds was needed. They also endorsed the use of the

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168 In comparison the NSW Statistician’s Office estimated in 1892 that a full-time inshore fisherman earned an average of 1 - 3 shillings a week, See Statistician's Office: The wealth and progress of New South Wales 1892, p. 925.
purse-seine as a more sensible way of fishing since the seine was less destructive of spawn than the commonly used net types.

Sea mullet (*Mugil cephalus*), which annually migrated down the NSW coast in large shoals, received the 1880 Royal Commission’s special attention. The members had great confidence in the future value of this fish, if a good method of preservation could be found, preferably canning. This was the only aspect of the fishing industry that the 1880 Royal Commission recommended the NSW Government directly assist in developing - preferably by funding research into canning technologies and making information on fisheries from overseas available to the public.169

A special section of the 1880 Royal Commission report was devoted to questions about acclimatisation and aquaculture (*pisciculture*), which was considered to have great potential in NSW. The 1880 Royal Commission praised the introduction of European species to the inland waters, such as salmon,170 and also native species such as Murray cod (*Maccullochella peeli* peeli), gold perch (*Nemipterus hexodon*) or silver perch (*Bidyanus bidyanus*), which had the added advantage that they were cheaper to obtain and easier to replace than the European species. However, members strongly advised against unchecked release of fish that could be destructive to other fish, or against introducing fish of inferior food quality. The most radical recommendation in the whole report was the idea of ‘farm-fish’, especially sea fish. The idea was to produce juvenile fish from artificial breeding and later release them into depleted waters to restock or improve natural abundance in order to increase productivity.171

Because of their more thorough investigation, in the case of fisheries protection the 1880 Royal Commission was able to develop a wider range of management tools (closed season, net and mesh size, minimum weight) than was employed in the 1867 Fisheries amendment Act.

Following the completion of the report, Premier Henry Parkes introduced a new extensive and substantially improved fisheries bill that mirrored the recommendations made by the 1880 Commission. Subsequently the debate in Parliament was dominated by two issues.

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170 Presumably Atlantic salmon (*Salmo salar*)
Firstly, the bill gave extensive powers to a proposed body of fisheries commissioners. Some members of Parliament, including James Farnell, complained that the bill only provided a legislative framework for fisheries management and that the fisheries commissioners, therefore, were given too wide-reaching powers over how management was conducted. The second issue that attracted attention was the section on oyster farming, primarily because the leasing of oyster-beds on crown-land was a source of revenue for the Colonial NSW Government. In all other aspects the attitudes displayed by members of Parliament during the debate were not much different from those expressed in 1865.

‗An Act to provide for the development and regulation of the Fisheries of the Colony’, was enacted 6 April 1881. The Act made provisions for net and line fisheries, oyster fisheries and private fisheries. The intention of the 1881 Act was to have: “more effective measures … adopted to check the wanton or unnecessary destruction of immature fish and to prevent the disturbance of the various nurseries and breeding grounds”. The 1881 Act also allowed for a wide range of management tools, and was innovative in creating an administrative body dedicated to fisheries management, consisting of five honorary commissioners of fisheries and a corps of inspectors to enforce the Act. It also gave the commissioners the powers to manage key aspects of the industry by regulating licenses, size of nets, legal size of fish to be caught, declaring closed seasons or closed waters, as well as other matters relating to the oyster industry. Legal sizes applied to fish regardless of whether they were for sale or merely found in a fisherman’s possession. However the minimum legal weight was not based upon any systematic biological observations, and in reality was useless in protecting marine stocks. Closed seasons or closed waters could be declared by the commissioners in order to protect nursing grounds from fishing. The method of creating temporary or permanent marine reserves was a common feature in many contemporary fisheries acts and was based upon the assumption that fish spawned in the shallow waters of estuaries and bays and that their fry continued to feed there until they reached maturity.

The impulse to govern fisheries which had inspired the 1881 Fisheries Act was not followed through. Regardless of the extended powers and regulatory methods all fisheries were still

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172 Amato, L., pp. 49-53.  
173 Fisheries Act 1881.  
174 Matters relating to the oyster industry will only be discussed to the extent that they were relevant for marine fisheries.
open-access, but a system of licensing individual fishermen and fishing boats was introduced to keep track of effort and to create revenue.

Despite the fact that ‘development’ was part of the Act’s title the 1881 Act gave no specifics on how to achieve fisheries development, and only stated that the Commissioner had the duty in “protecting, developing and regulating”\textsuperscript{175} for the Colony’s fisheries. Notwithstanding the lack of a scientific basis for the many of the regulations, the 1881 Fisheries Act was an improvement on that which preceded it. The management tools were more sophisticated and showed a growing will to govern the Colony’s marine resources.

The licensing system introduced in the 1881 Fisheries Act stated that all fishermen had to apply for permits to fish for commercial purposes. The revenue that was derived from these licences was intended to cover the cost of the new Fisheries Branch’s work. The licensing system meant that for the first time there was some indication of how many people were involved in the fishing industry in NSW. However, it is impossible to estimate the actual fishing effort since many licence holders would fish only seasonally when no other work could be found or as a secondary occupation to supplement their income. The systematic recording of data relating to fisheries in NSW began in 1883 with the publication of the annual fisheries reports by the Fisheries Branch.\textsuperscript{176} In 1887, 606 fishermen paid for a yearly licence and another 148 for a half-year licence; in addition nearly half of all the registered fishermen also held fishing boat licences.\textsuperscript{177} The total number of fishermen varied greatly from year to year, but increased overall, reaching 675 full-time licensed fishermen and 191 part-time fishermen in 1900.\textsuperscript{178}

The total catch achieved by NSW fishermen was unknown since much produce was sold privately without any transaction records. The official statistics from the 1880s and 1890s only recorded sales from the Municipal Fish Market at Woolloomooloo, Sydney and not from any of the private markets or when fish was sold locally. Recorded sales figures also omitted the fee which the fish agents were charged who traded on behalf of the fishermen.

\textsuperscript{175} Fisheries Act 1881, §4.
\textsuperscript{176} The first report was for the year 1883, but for various reasons, the reports were not published annually before 1887. See Select Committee, ‘Report on Working of the Fisheries Act’, 1889.
\textsuperscript{177} Annual Report of the Commissioners of Fisheries for New South Wales for the Year 1887, p. 3.
\textsuperscript{178} Annual Report of the Commissioners of Fisheries for New South Wales for the Year 1900, p. 18.
For the reasons stated above it is difficult to estimate total annual catch in NSW, but the number of baskets sent to Woolloomooloo and later also to the private market in Redfern can be used as an indication of the trend in the industry (see figure 4). In 1885, 38,163 baskets of fish were sent to the markets; the number gradually rose during the 1890s and in 1899 a record number of 87,525 baskets had reached the markets. A basket was not an exact unit of volume or weight, but was assumed to contain an average of 70 lb (31.88 kilogram) of fish. Accordingly the total recorded sale of fish from the two Sydney fish markets increased from around 1,213 tons in 1885 to around 2,140 tons in 1900.

![Figure 2-1. Total recorded catches in tons sold in Sydney through the fish market, 1885-1900. Source: ‘Annual Report of the Commissioners of Fisheries for New South Wales for the Year (1885-1900), ‘The Wealth and Progress of NSW’ (1889-1900), and ‘Select Committee: Report on working of the Fisheries Act’, 1889.](image)

The moderate growth in landings over the period was probably due to the slight increase in numbers of licensed fishermen. The increase in licenses coincided with the economic crisis of the 1890s which, in Australia, was triggered by the withdrawal of overseas (mainly British) capital investments that had fuelled much of the Colony’s economic expansion and increased

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180 See also chapter 1 about the liability of fisheries statistics.
government capital formation.\textsuperscript{181} In NSW the crisis was deepened by a prolonged drought in rural areas.\textsuperscript{182} The pattern of labourers moving from farming to fishing during periods of low agricultural activity is well documented historically and it is quite possible that the expansion of fishing was a result of temporary labour movement from agriculture to marine activities, and not an indicator of successful fisheries regulation.

The work of the NSW Fisheries Branch under the Chief Secretary’s Department, 1881-1900

In 1882 the fisheries commissioners began operating through the Fisheries Branch of the Chief (Colonial) Secretary’s Department (CSD); the Branch was to remain in the same Department until 1975. Official the Branch was named the Fisheries and Oyster Beds Branch from 1881 to 1911 and the Fisheries Branch from 1911 to 1976, but was often referred to by other names.\textsuperscript{183} To avoid confusion I have used the generic term ‘Fisheries Branch’ throughout the thesis. It is not clear why the Fisheries Branch was placed in the CSD but the Department covered a lot of fields. The CSD often worked as the Premier’s own department, with the so-called Principal or Chief Under Secretary as Head of Department (since 1856).\textsuperscript{184}

The first five fisheries commissioners were appointed in 1882, and one of their first tasks was to prepare a contribution to the Great International Fisheries Exhibition in London in 1883.\textsuperscript{185} Members served in honorary capacities, and did not receive any financial compensation for their expenses such as travel costs. They often had some scientific or practical knowledge about fishing, although none were professional fishermen. Macleay served as the first president, but resigned the same year and was succeeded by Cox. Later Hill, Oliver, Ramsay, and Hixson from the 1880 Fisheries Commission, served at one point or another as commissioners on the Board. The commissioners met every Wednesday for up to two hours, during which members reviewed new cases on management issues sent to them by fisheries

\textsuperscript{181} Butlin, N., 1959.
\textsuperscript{182} Kingston, B., 2006, p. 66.
\textsuperscript{183} Fisheries Commission, 1886 – 1888; Department of Fisheries, 1889 – 1892; State Fisheries Branch, c.1902-
\textsuperscript{184} Golder, H., 2005, pp. 117-120.
\textsuperscript{185} As zoologist at the Australian Museum and commissioner Ramsay attended the Exhibition as the Colony’s representative and to study (British) fisheries. It was at the Exhibition the British fish biologist Huxley famously declared that fish’s reproductive rate was so great that human fishing effort could not threaten the abundance of fish.
inspectors or members of the public, and recorded their considerations in the minutes.\textsuperscript{186} The commissioners could only recommend that a certain action be taken; the real power lay with the Minister, who also controlled the budget and appointed or dismissed fisheries officers. To prosecute offenders, the inspectors could not fine directly but had to obtain permission from the commissioners to put the case before the local Magistrate. The Fisheries Branch grew gradually until, by 1888, it consisted of a paid professional staff of five clerks and 32 fisheries inspectors, assistant inspectors and boatmen.\textsuperscript{187}

It quickly become apparent that the 1881 Act was not working well and the fisheries commissioners soon found themselves under fire from fishermen and politicians alike. The problem was that, despite restrictions on fishing effort, the fish supply to Sydney had not significantly improved. The fishermen argued that they were hampered in carrying out their trade. Even the fisheries inspectors complained that the Act was impractical and inadequate.\textsuperscript{188} In 1883 the fisheries commissioners tried to propose a completely revised bill for the NSW Government without any success.\textsuperscript{189} Instead amendments were passed in 1883 and 1884 without visible effect. The first Fisheries Amendment Act\textsuperscript{190}, which was passed in May 1883, defined what should be considered a natural oyster-bed and adjusted terms of leases. The Amendment Act also stated that Fisheries inspectors could not confiscate illegal nets, unless the owner had previously been convicted of using such. In July 1884 a second amendment Act\textsuperscript{191}, which relating to oyster culture and oyster fisheries, was enacted. Finally, in 1887, a new separate Act\textsuperscript{192} to protect inland fisheries was passed, bringing freshwater fisheries under the control of the Fisheries Branch.

Despite these adjustments critics of the various fisheries acts continued their critiques and by May 1889 the political debate in Parliament had become so severe that a select committee was elected to look at the 1881 Act. The ‘Select Committee on the Working of the Fisheries

\textsuperscript{188} Select Committee, ‘Report on Working of the Fisheries Act’, 1889, p. 17.
\textsuperscript{190} Fisheries Amendment Act 1883.
\textsuperscript{191} Oyster Fisheries Act of 1884.
\textsuperscript{192} Inland Waters Fisheries Act of 1887.
Act, 1889’ was chaired by Frank Farnell, the son of James Farnell, who was known in Parliament as an outspoken advocate for marine fisheries development.193

During the course of the investigation the 1889 Select Committee interviewed all fisheries commissioners and senior staff members of the Fisheries Branch, as well as local fishermen and known critics of the efficiency of the 1881 Act, about how to further develop the Colony’s fisheries. In total 15 individuals gave evidence.194

The evidence given to the 1889 Select Committee revealed a deep frustration within the Fisheries Branch. The fisheries commissioners reported that their administrative power was limited and suggested that, because of political and industry pressure, the NSW Government was unwilling to carry out their suggestions.195 The fisheries commissioners wished for more freedom to govern as they saw fit, especially when it came to matters of restricting fishing as they found the existing policy not restrictive enough, a sentiment they shared with the fisheries inspectors. On the issue of fisheries development, the commissioners complained that the 1881 Act did not support developmental work and that the Fisheries Branch was not allowed any funding. In their experience fishermen were not entrepreneurs, or as E.P Ramsay put it:

Q: Do you think that our fishermen are abreast of the time with regard to appliances?

E.P. Ramsay: They are about 200 years behind the time.

Q: Do they show a sufficient amount of enterprise?

E.P. Ramsay: No, that is always what I complain of – there is no go in them. …generally they only work for so much money as will keep them, and more than half of them throw it away.196

In the view of the fisheries commissioners, large scale marine development could only be achieved by enlisting steam trawling, fishing off the coast into the deep sea (continental

193 Frank Farnell was the son of James S. Farnell. Through his political career F. Farnell was committed to two areas of politics: fisheries legislation and the development of the (Royal) National Park. He was the chairman of the 1889 select committee and later a member of the 1894 Royal Commission. After Federation he served as chairman of the Fisheries Board from 1903-10 and even resigned from Parliament to dedicate himself to the task. www.adb.online.anu.edu.au [05.01.08].
shelf). While in England E.P. Ramsay had purchased two trawl nets, but the fishermen to whom he had shown the nets, had exhibited no interest in trying the new technology. There was a mutual understanding amongst the commissioners that before private entrepreneurs could establish a commercially sound marine fishing industry, the NSW Government would have to fund expensive experimental trawling. The argument that fishermen lacked entrepreneurship and economic sense continued to feature in the debate on fisheries development and became one of the main arguments for government funded industry development in the 1890s. In regard to the development of inland fisheries the commissioners suggested that they could best be developed by the government-funded introduction of English and American fish species.

Throughout the interviews, special attention was given to the less than ideal market conditions for fishermen sending their catch to Sydney. Most witnesses, whether they were public servants or fishermen, agreed that the fishermen were economically disadvantaged under the current marketing system where catches was repacked and sold by agents in Sydney.  

In their report, the 1889 Select Committee concluded that the 1881 Fisheries Act did not work satisfactorily and was inconvenient for fishermen, and they recommended that the system of fisheries commissioners be abolished and the Branch restructured. Another recommendation, that went beyond the original intent of the 1889 Select Committee, was that the NSW Government should fund a survey of the coastal waters for locating trawling grounds, and offer some ‘encouragement’ to trawlers. The 1889 Select Committee was also very unsatisfied with conditions at the Municipal Fish Market at Woolloomooloo, and urgently recommended that a second market was established and the existing market renovated.

To improve conditions and regulate sales the Sydney City Council had in 1871 build a Municipal Market for fish with cooling chamber in Forbes Street, Woolloomooloo. However during sale the fish was displayed on the floor for buyers to inspect and the conditions were generally filthy (see Figure 2-2).

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197 Fish markets and market reforms will be further discussed in chapter 7.
The Municipal Market had been enlarged twice, but following the recommendations of the 1889 Select Committee the building was demolished in 1893 and a new market was erected on the same site.\footnote{Thompson, L. 1893, pp. 44-46.}

Despite the effort of the 1889 Select Committee to identify problems and make appropriate recommendations, the Government ignored most of their recommendations and the Fisheries Branch continued to operate in the same unsatisfactory way. During the 1890s the frustration continued to grow, and the matter was raised several times in Parliament, but changes of government or more pressing matters always pushed any reform attempts away from the spotlight.\footnote{Thompson, L., 1893, p. 43.} In the NSW Annual Fisheries Report for 1890 the fisheries commissioners included a new bill to regulate fisheries and oyster-beds, but the Government did not proceed with the matter.\footnote{Annual Report of the Commissioners of Fisheries for New South Wales for the Year 1890.} Instead a few amendments were made to the Fisheries Act in 1892 and 1894, about the use of nets in inshore waters around Sydney and close to oyster-beds.\footnote{Sunk Nets Act, 1892, and Fisheries Act Amendment Act of 1894.}
In 1894 a new Royal Commission was appointed “to make a diligent and full inquiry as to the best means of developing the Marine and other Fisheries of the Colony and as to the proper regulation of that industry by law”. The 1894 Royal Commission was chaired by Frank Farnell, as well as White and Thompson, who both served as fisheries commissioners; the representation of both political and departmental interests meant that the investigation was carried out in a less hostile atmosphere than the one conducted in 1889. During the course of the query 27 persons were interviewed, most of them involved in some aspects of commercial fishing, or as Members of Parliament with special interest in the industry. In its report the 1894 Royal Commission dealt with deep-sea fisheries, whaling, herring fishery, inlands fisheries and oysters as well as marketing and fisheries legislation. During the course of the evidence given to the 1894 Royal Commission, many of the same complaints from 1889 were raised by the witnesses. To better understand how the Colony’s fisheries could be developed, the 1894 Royal Commissioners asked the witnesses detailed questions about the distribution and seasonal movements of known fish species, as well as how they thought the industry should be developed.

According to its report, in June 1894 the Royal Commission had submitted a proposal to the Minister for a new bill to regulate all fisheries in NSW. For unknown reasons the bill was never put before Parliament, and the members of the 1894 Royal Commission had to content themselves with the ‘earnest hope’ that the bill would be introduced and pass into law during the next session of Parliament. Evidently this never happened, and since the proposed bill was not included in the report, it remains unclear how it differed from previous fisheries Acts.

On the subject of deep-sea fishing, the 1894 Royal Commission expressed regret that the NSW Government had not yet seen fit to provided funds to explore possible trawling grounds, so they could add little to what had already been stated about the prospect of a deep-sea industry in the 1889 Report. They urged the NSW Government immediately to institute a

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Almost as an afterthought a new nationalistic argument was raised as to why the fishing industry should be developed:

From the fishing ports of the old country have come the hardy and seasoned seamen who have proved invincible on the ocean, and have carried the flag of England to the remotest corners of the earth. What the fisheries have done, in this respect, for the mother country, they are probably capable for doing for this newer land. Certain it is, that as a result of the development if our deep-sea fisheries, we may expect to produce a race of fishermen second to none in the world; indeed the fisheries of New South Wales should form the training-grounds for the men who in future years may be required to man the trading fleets of Australia.

What the 1894 Royal Commission tried to do was to evoke the nationalistic feeling that swept through Australia in the 1890s in wake of the financial crisis, in order to gain as broad as possible support for fisheries development. The argument about the need for Australia to have a trawling industry in order to train seamen for other maritime tasks was raised on several occasions, especially in the inter-war period when it was realised that a steam trawler with an experienced crew could be used for defence purposes as a minesweeper.

The 1894 Royal Commission did not bring forward any new views, with the exception of their proposal of recommencing Australian whaling. But it affirmed that lack of knowledge was considered the most significant impediment for developing the industry, and made it clear that by the 1890s steam trawling (aided by government-funded surveys to locate trawling grounds) was considered the best way to create a new sea-fishing industry, and aquaculture of trout the way to develop inland fisheries. However, as discussed in chapter 3, events after 1901 showed that there was considerable difference in opinion about the best direction of fisheries development; to create new fisheries or improve the established ones?

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First trawling in NSW

In January 1898 the NSW Government finally agreed to finance a trawl survey organised by Frank Farnell, to identify new fishing grounds along the NSW coast. It had been a recommendation in several Commission reports, beginning with the 1880 Royal Commission. 207

Marine studies had previously been undertaken in NSW waters, but none had addressed the issue of locating and catching food fish. During the nineteenth century several expeditions had undertaken scientific investigations in NSW waters, but their research efforts had not been coordinated and none of the expeditions had been Australian. The first reference to any experimental trawl fishing was from 1857 and was prompted by the news that the crew of a Mauritius boat, upon arrival in Sydney, had claimed to have caught so many turbot 208 outside the coast that their trawl had broken. As the crew was unable to duplicate the catch, a consortium 209 purchased the trawl-net and on several occasions attempted to trawl Botany Bay and the coast between North Harbour and Jervis Bay. Their efforts were met with little success, with few or no fish, but lots of organic material in the net. They never caught the prized turbot and were “not favourably impressed with the trawling capabilities of the coast”. 210

The next known attempt at sea fishing was by Macleay who, in 1874, commissioned the schooner Peahen for a dredging expedition to Port Stephens. The results of the investigations are unknown, since no record has survived. Later in 1880 the Australian Museum conducted a scientific dredging expedition to Port Stephens and Broughton Island and the specimens obtained were incorporated into the Museum’s collection. With the establishment of the Fisheries Branch of NSW, experimental sea fishing was intensified and in 1883, 1884 and 1889 the Branch conducted trawling investigations along the NSW coast with beam trawls.


208 Turbot is the common name most often associated with Reinhardtius hippoglossoides or Psetta maxima whose native range is in the northern hemisphere, but it is quite possible that the crew had caught greenback flounder (Rhombosolea tapirina) whose native range includes estuaries and inshore waters along the NSW coast. Source: www.iobis.org [24.01.2008].

209 The consortium consisted of former NSW Governor William Thomas Denison, philanthropist and member of Parliament Daniel Cooper and Captain Broomfield.

210 SMH: Fran Hixson to the Editor, 6 March 1897, p. 5.
Trial trawling for purely commercial purposes was attempted by Italian immigrants during the late 1890s, but although the initial results were very promising, the fishery was not continued on a commercial basis.\textsuperscript{211}

Most of the Australian research was prompted by a desire to develop sea fisheries and had therefore mostly concentrated on experimental fishing. With a clear commercial aim, the scientific value of such ventures was often a secondary priority.\textsuperscript{212} The literature often referred to experimental or exploratory fishing as trawling, whereby was probably meant any method of actively pulling a fishing-net along the bottom or up in the water column behind a towing vessel. There is rarely recorded any information on the type, size and shape of nets used, but by the end of the 1890s evidence suggests that all reference to trawling thereafter was to be understood as fishing with otter trawls: a method of fishing in which the trawl is dragged after a vessel, and the mouth of the net is held open by two large ‘otter doors’ that are attached to either side of the net.

When Frank Farnell was given authority to conduct trawling experiments along the NSW coast in January 1898 he wasted no time. HMCS Thetis was placed at his disposal for three months, fitted with an otter trawl and operated by the experienced captain Carl August Nielsen who had done steam trawling in the North Sea.\textsuperscript{213} The aim of Farnell’s operation was “simply to prove whether the ocean-floor was suitable for trawling operations to be carried on over it”.\textsuperscript{214} From 19 February to 25 March 1898 Thetis conducted 59 hauls along the coast between Manning River and Jervis Bay at a distance of 20 miles off the coast.\textsuperscript{215} The result was deemed by Farnell as a “phenomenal success”\textsuperscript{216}, with sufficient trawling grounds located to sustain a large-scale trawl fishery.

In his report of the outcome of the voyage, Farnell made two important comments about the future NSW trawl fishery: firstly, an effective and comprehensive way of bringing the fish to the consumers had to be developed, and this could only be accomplished by private

\textsuperscript{211} Waite, E., 1899-1914, pp. 7-9.
\textsuperscript{212} Waite, E., 1899-1914, p 3.
\textsuperscript{213} Farnell, F., and Waite, E.: ‘Report upon Trawling Operations’, 1898, p. 16.
\textsuperscript{214} Farnell, F., and Waite, E.: ‘Report upon Trawling Operations’, 1898, p. 3.
Secondly, he held that the only way to develop a plentiful and reliable supply of fish was to fund intensive research into marine natural history. He proposed a permanent fisheries research organisation that could advise in matters relating to fisheries development and legislation. However, he was not ready to accept a purely scientific organisation and in his opinion the matter was best handled by an experienced fisherman who knew about the commercial aspects of the industry. His opinion about the need for marine research was shared by Edgar R. Waite, who was a zoologist with the Australian Museum, and who had been invited onboard the voyage as a naturalist. But Waite was not overly enthusiastic about the expedition’s commercial aim and rather forcefully argued that it would have been better if the investigations had been organised around scientific methods. In his later report on the zoology of the fish he indirectly proposed a pure scientific research program into all aspects of the biology of fish. He later expanded upon this topic in his introduction to the multi-authored book on the ‘Scientific results of the trawling expedition of H.M.C.S “Thetis”‘. While most of the book was dedicated to zoological descriptions of fish, crustaceans and other marine life, with no intention other than to broaden the scientific knowledge of fish found in NSW, Waite’s introduction was one long argument for more scientifically based marine research. He argued that unless a permanent biological research station was established in NSW, trawling would never succeed because of the lack of knowledge of fish. He appealed to the national pride by pointing out that many European governments and the USA already had such institutions.

Although the Thetis expedition was successful in terms of finding fish, it was not followed by the expected surge in private investment. To the disappointment of the NSW Government, nobody seemed interested in financing marine sea-fishing. However, in the wake of the venture, a political momentum was created for more investigations into marine fisheries development and there was a growing pressure for research to be scientifically based.

Political pressure on governments to deliver ‘development’ without regard for ecological consequences has been discussed by Walker, who argues that in a development oriented

220 Waite, E., 1899-1914, p. 3.
society, consideration to powerful local interests takes precedence over good management practices.\textsuperscript{221}

**Developmentalism, nationalism and fisheries in the public debate**

The idea of government-funded fisheries development emerged in the 1880s from another idea, namely that the NSW Government should manage the Colony’s fisheries by protecting commercially important fish species. The 1880 Royal Commission had strongly argued that the fishing industry in the Colony was underdeveloped and that the natural resources found in the sea were largely untapped. In this the 1880 Royal Commission reflected the opinion of many contemporary naturalists and government officials in NSW who advocated that marine resources should be exploited for the benefit of the Colony. Their persuasion changed the tone of the scientific literature dealing with marine species; while previous scholarly literature had focused upon recording and cataloguing marine species without commenting on the commercial value of the species, the authors gradually began to include information on the fish’s edibility and on how fish could be caught and where. Many expressed surprise at the smallness of the fishing industry and increasingly began to call for its development.

Early developmentalists such as A. Oliver stated in 1871 “that our eastern seaboard has received from nature a rich endowment of resources”. In his view however “the great enemy of all our generations of fish is not so much the stomach of their consumers as the ignorant greed of monopolists” \textit{[Fish-agents].}\textsuperscript{222} Through his writing and dealing as a fisheries commissioner it was clear that Oliver belonged to a group of developmentalists who believed in protecting the already established inshore fishery and creating growth through market reforms.

Other early works, such as Reverend J.E. Tenison-Woods’ 1883 description of the zoology of fish in \textit{Fish and Fisheries of New South Wales}\textsuperscript{223}, included a reference to the 1880 Royal Commission’s report. Drawing heavily on information from the report, Tenison-Woods devoted a whole chapter to the subject of fisheries development and one to aquaculture in fresh water. He argued that net-fishing from steam-boats with ice facilities could greatly

\textsuperscript{221} Walker, K., 1994.  
\textsuperscript{222} Oliver, A., 1871.  
\textsuperscript{223} Tebnison-Woods, J., 1883.
improve the supply of fish, and also suggested that the method of line-fishing should be improved, however, he did not believe that trawling was viable in NSW because of the rocky coast.

Not everyone supported the recommendations made in the 1880 Royal Commission’s report and the Fisheries Act of 1881. Philip Cohen was a prominent critic of the Fisheries Act of 1881 and the fisheries commissioners in general, believing that the commissioners “had done a vast deal of harm, and had retarded the fishing industry” and that the system were “unnecessarily cumbrous… spending the fund of the country to no useful purpose”. 224 Although a fierce developmentalist, convinced that the sea was abundant with fish available for exploitation, he maintained that trawling would not be possible in NSW due to the rocky sea bottom. 225 In 1892 Cohen wrote a pamphlet on the commercial opportunities in NSW offshore fishing aimed at overseas (British) fishermen willing to immigrate to Australia, in the hope of developing the industry by skilled immigration. 226 However he did not advocate any specific fishing methods. An almost identical view on the fisheries commissioners and development in general was expressed by John Richard Eathorne, who in a pamphlet 227 written in 1897 advocated the introduction of an immigration scheme for Cornish fishermen to develop a deep-sea fishing industry in NSW.

A more zoologically based work was J. Douglas Ogilby’s ‘Edible Fishes and Crustaceans of New South Wales’ which was commissioned for the World’s Columbian Exposition in Chicago 1893 by the Fisheries Branch. 228 While the core part of the book was an in-depth description of selected species, Ogilby’s short introduction reveals his motives. It focuses on the lack of knowledge about the marine fauna and the apathy of the fishermen:

> The almost total want of reliable evidence on this latter subject, and the apathy and ignorance of those who are brought in daily contact with our food fishes, as forming their means of livelihood, has greatly impeded the author… So little interest has been taken in this subject by those whose

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226 Cohen, P., 1892.
227 Eathorne, J., 1897.
228 Ogilby, J., 1893.
means of livelihood depend so closely on it, that there are but few, even of our most abundant fishes, of which the date of spawning is known.\textsuperscript{229}

Another work about the history of fisheries in New South Wales, published for the same occasion, openly stated that it was an attempt to give the public “some idea of the extent and value of our piscine resource, and the so-far latent wealth which await only the aid of capital and enterprise to develop”.\textsuperscript{230} The author, Lindsay G. Thompson, was competent to comment as he had been the Chief Inspector of NSW Fisheries since the Fisheries Branch was established, but he was certainly not unbiased in his views on fisheries administration.\textsuperscript{231} Thompson praised the potential of trawling in NSW waters but warned: “Of course it is scarcely reasonable to expect that private enterprise will step in and prosecute this industry on the basis of little more than the bare assumption of ultimate success. But under proper representation the Government would … direct the institution of a trawl-survey to test the suitability”.\textsuperscript{232} He also gave a scathing critique of the conditions at the Municipal Fish Market in Sydney, discussed the potential for marine and freshwater aquaculture and called upon the NSW Government to initiate marine fish culture. Thompson undoubtedly projected the Fisheries Branch’s views of fisheries development around 1890, suggesting a range of ways to develop the Colony’s fisheries, and repeatedly called attention to the need for government-funded scientific investigations in order for development of the fishing industry to be successful.

As discussed elsewhere, the idea of deep-sea fisheries development by steam trawling had been a central recommendation of the 1889 Select Committees of 1889 and 1894 Royal Commission, both chaired by Frank Farnell, who was a strong supporter of this type of development. Farnell had become a fisheries commissioner sometime during the 1890s and tried to influence the overall direction of the Branch with his conviction.

Displaying thoughts similar to Farnell’s, Philip E. Muskett devoted the whole of chapter 10 in his ‘\textit{The Art of Living in Australia}’ to ‘Australian Fish and Oysters – and their food value’.\textsuperscript{233} Being based in Sydney, his observations were mostly about NSW, although he also includes

\begin{itemize}
\item \textsuperscript{229} Ogilby, J., 1893, p. 1.
\item \textsuperscript{230} Thompson, L., 1893, p. 1.
\item \textsuperscript{231} James C. Cox, a long serving Fishing Commissioner called Thompson ‘a real red tapeist’. See Select Committee, ‘Report on Working of the Fisheries Act’, 1889, minutes, p. 4.
\item \textsuperscript{232} Thompson, L., 1893, p. 12.
\item \textsuperscript{233} Muskett, P., 1893.
\end{itemize}
information from Victoria. Muskett regretted the lack of enterprise shown in developing
deep-sea fishing and advocated the implementation of beam-trawling. But for this to be a
success he maintained that a proper and systematic search for trawling grounds was essential.
The benefit would not only create increased employment opportunities and cheaper healthy
fish for consumption, but the industry would “raise a vigorous stock (of men) of which
Australia might well be proud”. He also coined the phrase ‘the middleman controversy’,
which refers to the problem of the market for fish being controlled by a few agents. Muskett
contributed to the development debate by adding a nationalistic theme to the argument for
government initiated fisheries development.

The controversy on how to develop the Colony’s fisheries was not restricted to publications
and parliamentary reports but was probably most fiercely fought in the media, first and
foremost in newspapers such as The Sydney Morning Herald. The views expressed in letters
to the editor largely follow the same pattern of argumentation as above: the need to develop
existing inshore fisheries and, from the late 1880s, if and how it was possible to develop a
new deep-sea fishing industry, preferably after the British model. One debate fought through
the letter pages of the Sydney Morning Herald in March 1897 revealed that the fisheries
commissioners did not agree on which model for development was most suitable. Farnell was
advocating the opportunities in developing a deep sea trawling industry, but his fellow
fisheries commissioner W. R. Campbell was convinced that trawling could not be successful
in NSW and that the industry would only produce inferior fish species such as flathead.
Campbell’s arguments placed him in the category of debaters who believed progress was best
achieved by improving already existing inshore fisheries.

Despite their position on fisheries development, most debaters agreed that the market
conditions were entirely unsatisfactory and greatly disadvantaged the small scale inshore
fishermen. As the century drew to its end and Federation approached, nationalistic arguments
become more common in the public debate.

234 Muskett, P., 1893, [chapter 10, paragraph 15].
235 SMH: Frank Farnell to the Editor, 6 March 1897, p.6.
Conclusion

An effective way of illustrating long term changes in public attitudes is to analyse parliamentary debates, legislation and newspapers.\textsuperscript{236} The material on fisheries proved that over a relatively short span of time there was a shift in approach towards marine fauna from indifference to viewing it as a resource that should be preserved and developed for economic reasons.

The change in attitude was to have profound consequences for marine species and the future course of fisheries in NSW. The transformation was brought on by changes in the socio-economic structure of the Colony as well as an increased international focus on the need to regulate marine fisheries.

The Fisheries Act of 1865 was a conscious attempt to protect the Colony’s marine resources but the legislation was flawed and hampered by politicians’ unwillingness to constrain fishermen. In the wake of the 1880 Royal Commission, fisheries legislation in NSW was increasingly being viewed in light of how it contributed to fisheries development. The Fisheries Act of 1881 was the Colony’s first comprehensive fishery legislation, but was mostly ineffective and hard to administer. The 1889 Select Committee did reveal the inadequate state of fisheries legislation, but the Government decided to ignore the matter. However, development of deep sea fishery, preferably by trawling, was now firmly on the political map. The 1896 Royal Commission did little more than affirm that the preferred method of development was government-funded trawl explorations, something that had been suggested since the mid 1880s.

By the end of the century, two competing views of how to develop the Colony’s marine resources had emerged. The first originated in the desire to protect fish resources, and held that the best way to ensure increased productivity was to improve already existing fisheries. Various methods were suggested, such as skilled immigration and improved fishing techniques, but aquaculture was considered a particularly attractive solution. This type of development favoured a low capital, inshore based, small-scale fishing industry dominated by independent operators. The other view favoured an expansion of the fishing industry by

creating a new deep-sea steam trawling industry after the British model. This view gained support from the late 1880s and found a high-profile advocate in politician-turned fisheries commissioner, Frank Farnell. A central theme of the advocates of trawling was the need for the NSW Government to fund investigation into the location and productivity of trawling grounds. To make their point, the supporters of the development of a steam trawling industry often made use of a nationalistic rhetoric. By advocating steam trawling, they supported the development of a new, highly capitalised industry, dominated by relatively large companies.

That rich marine resources existed, suitable for large-scale commercial harvesting, was taken for granted. The question of why the Colony did not have a larger fishing industry began featuring more prominently in the debate and towards the end of the nineteenth century. The most prominent perception of the Colony’s fisheries was that it needed development. This is well illustrated in the entry about ‘Fisheries’ in the official year book of New South Wales, published by the Statistician’s Office, in which the entries between 1888 and 1901, always began with the same sentence:

“The seas that wash the shores of New South Wales abound with fish, but this source of wealth to the State has been greatly neglected.”

237 Statistician’s Office: The wealth and progress of New South Wales 1887-8, p. 124.
Chapter 3
Early attempts at fisheries development, 1901 -1913

Introduction

After the previous decades of developing fisheries legislation and contemplating how to develop NSW marine fisheries, an institutional framework for fisheries development and management was further advanced in NSW during the early twentieth century. This chapter will examine how additional governmental practices were introduced to fisheries management, using science as a tool to aid development. In particular, I will examine the Fisheries Branch’s venture into aquaculture (marine hatching) as a token strategy for inshore fisheries development. The period 1901-1913 is framed by Federation and the publishing of the findings of the Royal Food Commissions of 1912 which brought steam trawling back on the political agenda.

When NSW, along with the other five Australian colonies, formed the Commonwealth of Australia in 1901, a new national level of government was created on top of existing colonial government structures. This event was to have a significant long term impact on NSW fisheries management. Since the second half of the nineteenth century it had become standard procedure in NSW to regard its territorial limits to extend as far as three nautical miles offshore. At the time of federation it was, therefore, generally acknowledged that the territorial limit of NSW was understood to include the sea adjacent to the colony as far as three nautical miles offshore. When entering into Federation, NSW retained its powers over these territories, save for those vested in the Commonwealth. Beyond the territorial sea neither State nor Commonwealth was sovereign, making the high seas open for exploitation and navigation. Consequently any fisheries acts passed in NSW or by the Commonwealth would only apply within the three nautical miles zone. The new dual responsibility over Australia’s sea territory had no immediate impact on fisheries. For the NSW Government the dual responsibility was of little consequence since most of the State’s fishing industry operated inland or in close proximity to the shore and never ventured beyond the three miles zone, which was already covered by existing NSW fishery acts. In relation to

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Commonwealth, there was no conflict of interest since no federal fisheries acts existed before 1952. The limitations of the territorial sea, however, had the potential to impact on the State’s desire to develop its own sea fishing industry, since it was generally believed that the main fish resources were found on the continental shelf, well beyond the limit of the three miles zone. In reality, at the time, any future problems with resource management were well past the imagination of those eager for development, and the Commonwealth administration had no intentions of influencing the development of any sea fishery.

It has previously been assumed by some historians that the Commonwealth assumed responsibility for waters outside the state’s territorial limits, the so-called extra-territorial waters. These extra-territorial waters have sometimes wrongly been understood to include the sea between 3 and 200 nautical miles offshore from Australia. However it was not until 1953 that the 200 sea-mile limit was official recognised in Australia (see chapter 6). The question of who had the rights to extra-territorial waters was the focus of a 1975 High Court decision, which ruled that the Commonwealth did not, upon federation, gain any territories other than the ones already claimed by the states. Any expansion of the territorial sea beyond the three mile zone was therefore related to later, mostly international, agreements. Federation meant that the states’ (sea) territorial limits became permanently fixed, and any later requisitions became, in time, the property of the Commonwealth.

When NSW entered the Commonwealth it became necessary to pass a new State Fisheries Act because the Commonwealth Constitution Act 1901 made the previous State Fisheries Act obsolete. In NSW the potential of a new State Fisheries Act was welcomed by the fisheries commissioners, who since 1889 had requested a major overhaul of the existing Fisheries Act of 1880. Gripped by the optimism that swept through the administration up to federation the fisheries commissioners also began planning for a radical new way of scientifically improving the State’s fisheries mainly by adopting methods of sea-hatching.

\[\text{239} \quad \text{Tull, M., 1993 p. 106.} \]
\[\text{240} \quad \text{Harrison, T. 1991.} \]
\[\text{241} \quad \text{New South Wales v The Commonwealth, 1975.} \]
New Institutional framework: The Fisheries Act of 1902 and the Fisheries Amendment Act of 1910

The new fisheries act was passed in December 1902. In line with the new division of power, the Act applied only to fisheries within NSW territorial limits, which meant within the three nautical mile zone. When the bill was debated in Parliament, most of the discussion was about the constitution of the Board of Commissioners and about whether the chairman of the Board ought to be the chief of the Branch as well. During the debate, Frank Farnell argued that in light of the failure of the previous fisheries commissioners to administer the Act, it was necessary to appoint a full time, professional paid chief of the Branch that also could act as chairman of the Board. His opponents were wary of the cost of creating a new position, and claimed that the chairman of the Board should also be the chief commissioner to the Branch. Since the Board only met once a month and the commissioners were only paid a modest compensation for their time, this was a much less expensive option. During the debate it was implied that Farnell, who already had been a Fisheries Commissioner for eight years, aspired to leave Parliament and become chairman of the new Fisheries Board. His motivations for doing so were to facilitate expansion of the industry and work to remove obstacles for the industry by legislation. After the Act was passed, Farnell indeed resigned from parliament in 1903 to be chairman of the Fisheries Board, a position he retained until 1910, when the Board was finally abolished.

One of the major new attributes of the Fisheries Act of 1902 was that the role of the Fisheries Board was strengthened. No longer was it only an advising body to the Minister, but the Fisheries Board was given executive powers to protect, develop and regulate the fisheries of NSW. The duties of the Board now included direct responsibility to manage and improve fisheries regulations by deciding upon the lawful weight or size of fish and oysters brought to market, acclimatisation and cultivation of fish and oysters, as well as:

- the development of the fishing industry; the exploration of offing grounds suitable for trawling; the improvement and cheapening of the supply of the consumers; the protection of the interest of the fishermen, and

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242 Hansard 1902, p. 4725-4730.
243 Fisheries Act 1902, part II, 4(1).
generally on all matters pertaining to the development and regulation of the fisheries. 244

The main significance of the 1902 Act was that it was the first attempt to integrate fisheries management, development and research into one governmental body. It was a testimony to early resource managers’ inexperience that they believed that industry development, fisheries regulation and consumer protection could work hand in hand without problems. In order to facilitate the broad sweep of duties, the Fisheries Board was expanded from five to ten members, including three government appointed representatives from the fishing industry, specifically one licensed fisherman, one holder of an oyster lease, and one person representing the inland fisheries. 245 Honorary the members were compensated for their time.

The new Act stated for the first time that anyone engaged in wholesale or retail trade of fish had to keep weekly transaction records with information on which species they sold, the quantity sold and where they were caught. 246 As in the Fisheries Act of 1881 the new Act also listed fish species and their lawful weights. Compared to the previous 1881 Act the legal minimum size had decreased, allowing for significantly smaller fish to be landed. 247 There was still no evidence that the creation of the list was based upon anything like stock assessment or systematic spawning and mortality studies. The flexible system of announcing time limited closure of waters through notices in local newspapers, in order to protect juvenile fish remained the main fisheries management tool and had a prominent position in the Act. 248 Unlike the Fisheries Act of 1881 the 1902 Act did not prohibit any net types, as long as those used did not totally block any waters, and allowed underweight fish to escape. The Act opted for periodic banning of certain net-designs from specific waters by declaration.

The inland recreational fisheries for introduced trout and salmon 249 had a special section in the 1902 Act, where it was stated that the only lawful way of catching the two species was by rod or line, effectively cutting commercial fishermen out of the fishery, and making it an exclusive recreational fishery. The 1902 Act also detailed the rights and responsibility of the

244 *Fisheries Act 1902*, part II, 4(3).
245 *Fisheries Act 1902*, part II, 5(2).
246 *Fisheries Act 1902*, part II, 5(2).
247 *Fisheries Act 1902*, part III, 16-17.
248 *Fisheries Act 1902*, second schedule.
249 *Fisheries Act 1902*, part III, 29.
250 *Fisheries Act 1902*, part III. By then it was not known that Atlantic salmon could not be successful introduced in foreigner waters, due to the species spawning habit of returned to spawn at its stream of origin.
lessee of Crown Lands for oyster culture, placed the leasing and inspection of oyster beds under the control of the Fisheries Board.

The 1902 Act was generally less restrictive than the 1881 Fisheries Act and remained largely unchanged until 1935, except for one important administrative change; in early 1911 the new Fisheries Amendment Act of 1910 was implemented, which established the principle of ministerial administration and transformed the Board of Fishery into the Fisheries Branch of the Chief Secretary’s Department. During the years following the assent of the 1902 Act there had been repeated complaints from the Chief Secretary’s Department and the House and in press; against the Board’s administration, and effectively confirming Farnell’s view that the Board was unable to administer the Act without the help of a Chief appointed by the minister. An internal note from the Chief Secretary’s Department dated November 1910, given as evidence at the 1912 Royal Commission, declared that the abolition of the Fisheries Board was due to the “absence of knowledge of fisheries matters on the part of the majority of the members (of the Board), the conflicting nature of the interests that had to be conserved and the inability of a cumbersome Board to deal promptly with matters as required immediate consideration” It was also the Department’s belief that a Board was not the right body to handle decisions of a more political nature as to how to develop the State’s fisheries. As a physical manifestation of the changes the Branch’s staff was moved from Richmond Terrace to the Chief Secretary’s Department.

The 1910 Amendment Act maintained the option for the minister to appoint an Advisory Board of no more than five persons and a Chief Inspector of Fisheries. The Board of Fisheries, in its own words:”generously intimated that they were agreeable to advise the Ministers in such matters as he might require their advice in” but no member, except one, was ever called upon and an Advisory Board was never assembled “as experience has shown that such a board is not so far necessary.” The move to create a Fisheries Branch under ministerial administration put matters relating to fisheries in NSW in the hand of a professional body of public servants instead of enthusiasts and industry representatives, an

250 Fisheries Amendment Act1910.
251 Royal Commission of Inquiry as to Food Supplies and Prices: Interim Report on the Supply and Distribution of Fish, 1912; Evidence given by Frederic Albert Coghlan, Under Secretary Chief Secretary’s Department 16. August 1911, p. 48.
acknowledgment that fisheries development was a matter of politics and therefore should be under direct ministerial control. The abolition of the Fisheries Board also signalled the end of a long-lived colonial administrative practice since appointing boards had been a convenient way for colonial governors to recruit the part-time services of outsiders with expertise. However, such semi-independent boards or agencies were not in accordance with the notion of responsible government\textsuperscript{254} and they were gradually placed under ministerial control, as was the case with the Fisheries Branch.

**Towards scientifically based development**

The Fisheries Act of 1902, as mentioned above, was an important step towards empowering the Fisheries Board, providing it with more extensive power, and more sophisticated management tools. So far the Board had relied mainly on its own members’ knowledge of fisheries development and management, but it was becoming increasingly clear that the growing complexity of the tasks set before the Board required specialised scientific knowledge.

Australia had historically a strong tradition of scientific bureaucracy. The science of primary industries had largely been managed by governments and their research agendas were driven by economic objectives. This type of ‘applied’ or developmentally focused science has been highly influential in Australian government’s policy-making.\textsuperscript{255} Through transnational scientific networks ideas, knowledge and methods spread through government institutions to (private) industries. For example botanists at Sydney’s Botanic Garden supported the pastoral industry during the nineteenth century by importing and acclimatising fodder crops, grasses, clover and grains that would improve the carrying capacity of the land. A case study illustrating how botanists at the garden in the 1920s fought the introduced Prickly Pear - which rapidly spread threatening settlement in northern NSW and Queensland - by introducing the *Cactoblastis* moth from overseas, showed how such governmental research institutions handled the cultural and intellectual traffic across settler colonies and empires.\textsuperscript{256}

\textsuperscript{254} Goldier, H., 2005, p. 113.
\textsuperscript{255} Robin, L., 2007, p. 203.
\textsuperscript{256} Frawley, J., 2007.
The Australian fishing industry during colonial times had generally been too small to attract enough government interest to establish scientific bureaucracy. Colonial governments generally did not appoint scientific bureaucrats, an exception to this was the English fisheries biologist William Saville-Kent who, as Superintendent or Commissioner of Fisheries from 1884-1895, did some of the first scientific surveys of Australian fisheries and their potential for development.

Prior to 1902 the NSW Fisheries Branch had no scientific officers and, as an institution, was not involved in international fisheries science/biology networks. When the Branch was in need of scientific advice it had been given on an *ad hoc* basis by members of Sydney’s scientific community or, to some extent by the Fisheries Board, where some commissioners had various degrees of biological knowledge. An example of how dependent the Fisheries Branch was on external expertise occurred in March 1900 when a combination of warm weather and toxic chemicals killed marine life in the inner bays of Sydney whose population had been affected by the outbreak of bubonic plague in January. To control the spread of the disease large quantities of disinfectant chemicals had been emptied into the city’s waterways, wharves and docks. When large quantities of dead fish and prawns began to appear in the bays, the public feared that live seafood had become toxic or infected and began to avoid any sea food consumption. In order to establish the cause of mortality, the Board of Fisheries had water and fish samples analysed by Gregg Smith, Bacteriologist of the Linnean Society, who concluded that the fish did not die of any poisonous substance, but succumbed to the high water temperatures. Despite these assurances fish prices dropped dramatically during the plague.

No matter how serious such incidents were in the public eye, it was the need for development that led the Board of Fisheries to begin looking for a scientifically trained officer. Among the commissioners the conviction had strengthened during the late 1890s that, since regulation

257 Saville-Kent worked for several colonial governments: Tasmania (Superintendent and Inspector of Fisheries) 1884-1887, Victoria 1887-1888, Queensland (Commissioner of Fisheries) 1889-1892, and Western Australia (Commissioner of Fisheries) 1893-1895.
258 [http://www.users.on.net/~ahvem/index.html[15.03.2010.]]
259 Cleansing agents used during the cleansing operations included: solid disinfectant (chloride of lime); liquid disinfectant (carbolic water: miscible carbolic, 3/4 pint water, 1 gallon); sulphuric acid water (sulphuric acid, 1/2 pint water, 1 gallon); carbolic lime white (miscible carbolic 1/2 pint to the gallon). [http://www.users.on.net/~ahvem/index.html [11.03.2010.].]
has proved to be a slow method to restore fish stocks, the best solution was to replenish the exhausted fishing grounds with artificially cultivated marine fish, hatched in specially constructed sea-fish hatcheries. Channelling opinions held at the Fisheries Board, Thompson had already suggested in 1893262 that the NSW Government should take up mariculture in order to demonstrate fish farming’s economic potential and to gain much needed information about the biology of native marine species.

While acclimatisation societies for introducing exotic plants and animals existed in Australia since before the mid-nineteenth century, the idea of adding artificially hatched sea-fish to improve wild populations was entirely new. The earliest introduction of non-native freshwater species was done as a private initiative. In Tasmania attempts has been made to introduce salmon into the island’s river systems since 1852 and in NSW the first recorded successful attempt to introduce European fish was made in 1888 when trout was released in some inland rivers and established breeding stocks. Attempts were also made with English perch, Russian carp, Californian salmon, brook -, rainbow- and common brown trout with various success.263 Rainbow and brown trout would soon dominate the release effort. Between 1894/1895 the Fisheries Branch established the Prospect Hatchery264 in order to supply the growing number of private acclimatisation societies with trout fry. The Fisheries Board’s decision to assist private acclimatisation societies in developing an inland recreational fishery by providing capital and resources was an act of colonial socialism.

Although facilitated exploration of trawling grounds was mentioned explicitly in the 1902 Fisheries Act as one of the duties of the re-established Fisheries Board, the previous Board had already set in motion actions that would lead to the establishment of marine hatching in NSW, ensuring that the efforts were put into developing the existing inshore fisheries. Farnell, a great supporter of a modernising program for fisheries by developing new sea fisheries, had to accept that the development efforts for the time being were focused upon inshore fisheries. He would later claim that he had opposed the idea of a marine hatchery

261 *The Fisheries Act 1881*, Part III: Private Fisheries. Was designed to allow the establishing of private fresh water or marine fish farming in permanent enclosures for commercial purposes but fish hatching for restocking purposes was clearly not versioned in the act.

262 Thompson, L. 1893, p. 24.


from the beginning, since he did not believe that there was a need for restocking. However, around 1902 there was considerable political goodwill to support sea-hatching.

**The sea-hatching movement**

At the beginning of the twentieth century fisheries biology was a highly specialised field with few real experts; the lack of a large fishing industry made this especially true in Australia. Much early fisheries research was focused on promoting national fisheries and several different, and often conflicting, scientific approaches could be employed at the same time. During the second half of nineteenth century it become a politically popular idea to support hatching and the subsequent release of young fish to create a supply of free-living fish populations, especially in situations where too much fishing had affected the recruitment. The idea that the problems of overfishing could be resolved by artificially hatching provided a superficial and politically attractive solution to politicians and managers that did not require them to intervene in the existing social and economical setup of the fishing industries. The support of what Shelbourne later labelled the: “Marine Fish Hatchery Movement”, was especially strong in the USA and Norway but also found support in Newfoundland, Scotland, Australia and New Zealand. Originally focused on freshwater species, the idea of artificial restocking waters to influence the yield was probably originated in the USA but it was the Norwegian Georg Ossian Sars who first applied the method to cod. In 1864 Sars had observed and identified cod eggs floating on the surface and a year later he succeeded in hatching pelagic cod eggs. Following his lead, artificial hatching methods were developed in the USA and Norway to include several marine species in the late 1870s. In 1878 the first experimental mass hatching and release was carried out in Gloucester, Massachusetts and,
from 1885, at the US Fishery Commission operated commercial fish hatchery at Woods Hole.\textsuperscript{273}

At the Great International Fisheries Exhibition in London in 1883, pisciculture was the focus of most of the scientific displays, and most of the US exhibition focused on the techniques used at the Wood Hole marine lab for hatching cod eggs. Edward Pierson Ramsay from the Fisheries Board/National Museum represented NSW at the Fisheries Exhibition, and would have been exposed to the idea of sea-hatching here.\textsuperscript{274}

In Scandinavia the idea of managing fluctuations in catches by marine hatching was taken up by Norwegian (Captain) G. M. Dannevig who, after having inspected the method applied in Woods Hole the year before, in 1882 set up his own marine sea hatchery in an old quarry in Flødevig near his hometown of Arendal, Norway. Here he developed an improved method of cod hatching and began a program of hatching and releasing in nearby fjords. The work at the hatchery was initially funded by private citizens from Arendal but due to his close association with G. O. Sars, Professor at the University of Christiania (now Oslo) and Research Fellow in Fisheries, who actively supported Dannevig until his retirement in 1893\textsuperscript{275}, as well as Dannevig’s own strong confidence in the ability of his hatching program to address overfishing, he managed to secure an annual budget for the hatching program from the Norwegian government.

Despite the political success of marine hatching in some countries, the belief that it was possible to artificially restock depleted fish stocks was not met with universal support by marine scientists. In Norway, Johan Hjort who had succeeded Sars as Research Fellow in Fisheries in 1894 began questioning the value of Dannevig’s work. While Hjort rightfully suspected that there had been very little research into the efficiency of artificial hatcheries for restoring or improving fish populations, his disagreement with Dannevig also came from their very different views of the future for Norwegian sea fisheries. While Dannevig’s approach was to maintain existing fishing activity based upon the coastal fishery, Hjort favoured a modernisation program for the fishing industry, based upon exploiting seasonal

\textsuperscript{273} Shelbourne, T. 1963, p. 53.
\textsuperscript{274} NSW contribution to the Exhibition was a mainly industry oriented display organised by Ramsay. It included painting and specimens of food fish, models of fishing gear and a large display of farmed oysters. See Thompson, L., 1893, p. 38-39.
\textsuperscript{275} Smith, T., 2002, p. 403.
fisheries in the open sea. Hjort was unable to convince the policy makers of the ineffectiveness of marine hatching and the Norwegian Government continued to fund Dannevig’s hatchery. The amount was as much as one third of the whole Government budget for fisheries research in 1902-03 and in 1911 the Norwegian government took over the economic responsibility for the hatchery. In the short run, Hjort and his followers lost the political battle over marine hatching in Norway, but the scientific argument employed in the debate provided new understanding of the life circle of marine species.

During his 29 years at Flødevig, Dannevig had made marine hatching a family trade. His oldest son Harald Dannevig supervised, in 1894, the building of Scotland’s first marine hatchery at Loch Fyne, Dunbarr and was later in charge of its operations, until he was recruited by the NSW Fisheries Board in 1902 to establish a marine hatchery in NSW. After G. M. Dannevig’s death in 1911 his second son, Alf Dannevig, became the director of the Flødevig Hatchery, and was in 1957 succeeded by his son. Of the early generations it was only Alf Dannevig who had academic training. While working at the hatchery, he undertook a degree in zoology and completed a doctoral degree in 1934 on the age and growth of cod in Skagerrak. His father and brother never had any formal scientific schooling and relied in their work on their practical experience.

In August 23 1911, shortly before his death, G. M. Dannevig wrote teasingly (in English) to his grandchild Sigrid Dannevig who was now living in Melbourne to tell of how things were at the family home in Arendal and to complain that her father Harald, and Uncle George never wrote to them. Besides the social information he wrote: “Well, well, - but I did beat Dr. Hjort and his followers. The hatching business in now acknowledged as a state affair and I shall have no more trouble in that way.” He was referring to the Norwegian Government’s decision to finance all marine hatching at the Flødevig Hatchery. By then NSW had already abolished its attempts at marine hatching and Harald had taken up the position of Commonwealth Director of Fisheries.

The government finally took over the entire operation in 1917, and the facility continues to operate today as a marine research station  
278 Smith, T., 2002, p. 413.  
279 Letter courtesy Dennis Reid, Cronulla Fisheries Research Centre of Excellency, NSW.
Internationally the marine fish hatchery movement had its golden era in the early years of the twentieth century, after which the critics increasingly were able to penetrate the discussion of the value of hatching. Despite ambiguous results governments in the US and Norway continued to finance marine hatching well into the 1950s.

**Sea Hatching in NSW**

**The Maianbar Fish Nursery, 1899 – c 1914**

The beginning of marine hatching in Australia can be traced to 1899 when the NSW Fisheries Board began constructing a simple enclosure at Cabbage-tree Creek, using the banks of the creek as boundary. The creek is located within Port Hacking and separates Maianbar from Bundeena (it can be seen from present day Cronulla Fisheries Research Centre on the opposite side of the inlet).

By building a stone wall, with 60 feet of wire-netting inserts to secure an influx of fresh seawater, across the creek entrance, a large closed basin was created, 300 yards wide and two to three feet deep, stretching half a mile inland. Inside the basin, on the western shore, two small ‘paddocks’ where marine species could be isolated and observed, were built. The purpose of the construction was to experiment with introducing fish not native to NSW waters, as well as making much-needed observations of native species habits and spawning. The undertaking was generally referred to as Port Hacking Fishery or the Maianbar Hatchery. The Maianbar enclosure was in fact not a proper hatchery since it had no facilities for spawning or hatching fry. Instead, it was essentially a giant aquarium where valuable food fish could be raised in a protected environment and non native species could acclimatise themselves until they were considered ready to establish themselves outside the enclosure.

During its short-lived existence the Port Hacking Fishery had mixed success. In December 1899 a number of young black bream were released into the enclosure, and their growth monitored over the subsequent years making it one of the first studies of the growth rate of

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281 Annual Report on the Fisheries of NSW for the Year 1900, pp. 4-6.
the species. The spawning season for several samples of native fish was also monitored. In September 1900 the Department tried to have live trumpeter and crayfish shipped from Tasmania, but on arrival the surviving trumpeters were in such a bad shape that they had to be released immediately in Watsons Bay. The crayfish were slightly less affected and were transported to the Manianbar enclosure where they most likely succumbed shortly afterwards. Another attempt was made with Tasmanian crayfish in July and September 1901 (after release they was never observed again), and Tasmanian trumpeters, local snappers and other local food species were released as well. In January 1901 the unusually warm weather made the water temperature in the shallow water of the enclosure rise to such a degree that many of the fish died.

It is not known how long the Maianbar Fish Nursery was in operation, but it probably was abandoned some time before the Gunnamatta Hatchery shut down in 1914. Today one can still make out the outline of the nursery in the creek.

After an enclosure was established at Cabbage-tree Creek, the Board decided to press for the construction of a proper sea-fish hatchery, with all the necessary facilities, financed by the government. With that in mind the president of the Fisheries Board Dr Cox, went overseas in 1901 to visit fishing centres in Scotland and the sea-fish hatchery at Aberdeen to obtain information that could be useful in the construction of a new and improved Marine Hatchery at Port Hacking.

To secure the best outcome during the planning and construction of both the Maianbar enclosure and the new proposed facilities the Board had been in correspondence with fishing experts in Scotland. In their letters Professor McIntosh, Director of Gatty Marine Laboratory in St Andrews and Thomas Wemyss Fulton, Scientific Superintendent at the Fishery Board for Scotland’s Marine Laboratory at Aberdeen both strongly encouraged the construction of sea hatching facilities in NSW, but repeatedly emphasised that it could not be done without an experienced and scientifically trained person in charge. Professor McIntosh put it in one of

283 Annual Report on the Fisheries of NSW for the Year 1900, pp. 6-7.
287 In 1882 the Fishery Board for Scotland was the first official body in Britain, to have a fisheries research capability, employing a scientific staff. See Adams, J. 2002, pp. 46-47.
his letters, “Your chief want, however, is a scientific superintendent to advice and direct,” and later, “P.S. The Government should sanction the appointment of a reliable Fisheries Advisor and Superintendent (Scientific) by the Commissioners.” The Board responded to such suggestions by re-printing the letter in the annual report for all politicians to see.

**Appointment of scientific staff**

When, around 1900, the Fisheries Board began in earnest to look for a scientific officer that could aid them in developing the State’s fisheries using hatching, they decided to approach Harald Dannevig. Dannevig was considered a specialist in hatching through his work with his father and, since 1894 had been in charge of the Marine Hatchery at Dunbar, Scotland where Cox had probably met him. Sometime during 1901 the Branch was able to secure his services.

Dannevig was specifically appointed to construct a marine hatchery and laboratories in NSW with a view to restock the depleted inshore waters as well as introduce new species. He was also to undertake general research into the life and habits of the principal food fish in NSW and provide advice on fisheries matters. Although he was engaged as Superintendent of Fisheries Investigation and Fish Hatcheries from 1 May 1902, he did not arrive in Sydney until 2 August that year.

Realising that it probably was too much work for one man, the Board had at the same time appointed David G. Stead as the Branch’s scientific assistant. Stead was also a young man without any scholarly education but had gained substantial knowledge of zoology and botany through his experiences as a field naturalist. He had no previous experience in public work but, after a period of probation for six months, he was appointed Scientific Assistant to the Department on 1 May 1902. Stead was appointed to investigate the habits and life history of the State’s fish, crustacean and molluscs to some extent in connection with the experiments at the Manianbar fish nursery. During his time at the Department he published a number of books on fish and fisheries and conducted freshwater investigations.

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289 Annual Report on the Fisheries of NSW for the Year 1902, p. 27.
Dannevig’s first assignment began when he still was in England and involved the collection and transportation of British saltwater species to Australia, the longest distance anyone has ever tried to ship live fish. The consignment was an attempt to establish a breeding stock of desirable sea fish from the northern hemisphere. Dannevig had set out from Europe with 750 plaice, 28 sole, four turbot, three brill, 23 lobsters and 32 crabs, but most of them died during the voyage. When he arrived in Sydney 560 plaice and 23 soles were still alive, but the one remaining lobster died before it could be released. Nevertheless the consignment was the first successful transport of live fish over such a distance, and upon arrival the surviving fish were liberated in the Maianbar nursery and the whole attempt declared a success.

Despite his young age, Dannevig had extensive experience in practical fish research, mainly hatching, through his father’s groundbreaking work on sea fish hatching at Flødevig. Harald Dannevig had briefly studied under the Norwegian marine biologist G.O. Sars, but in his work had mostly relied on his own practical experience. His later trawl investigations as Commonwealth Director of Fisheries indicated that he was a competent fisheries scientist with a sound grasp of scientific methods. With him, to Australia, he brought his Scottish wife Annie and daughter Sigrid and younger brother George E. Dannevig. The small family sat up home in the Sydney suburb of Ocean Hartsville to be near Port Hacking. A son, Olaf Haakon was born in 10 November 1910.

**Construction of the Gunnamatta Bay Hatchery, 1902-1905**

Within days of his arrival in Sydney, Dannevig had selected a site for the new sea hatchery on the eastern shore of Gunnamatta Bay near the entrance of Port Hacking and in view of the Maianbar Enclosure. Hungry Point had, since 1895, been set aside as a reserve for Defence Purposes which, on the west side, was adjacent to a public reserve for recreation and on the east side, private lots. On the premises were also a boatshed and one rood of land (the fourth part of an acre) occupied by F.S. Smart.

The Board wasted no time and on 29 August 1902 they approached the Chief Secretary with a request to acquire the land to establish “a Hatchery and Ponds for the propagation of Sea-

292 *SMH*: 4 August 1902, p. 9.
293 SRNSW: State Fisheries; Gunnamatta 1909-10 [4/6635.1].
294 SRNSW: State Fisheries; Gunnamatta 1909-10 [4/6635.1].

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Fish and Crustacea”. Due to the complicated ownership of the land, both Commonwealth and NSW authorities had to give their consent, and the site was not transferred to the Branch until October 1902. In the meantime plans for the construction of the hatchery were drawn up (see Figure 3-1) and the estimated cost of £500 for constructing a fish pond feed by tidal water was advanced from the chief Secretary of Colonial Treasurer so work could begin as soon as possible. The River and Harbour Department immediately began the construction but when the work was well advanced it was discovered that another £150 was needed to finish the pond, but due to lack of funds the work was not complete. The pond likely remained unfinished until 1904.

Figure 3-1. Drawing of the proposed hatchery approximately 1903, Source: SRNSW: State Fisheries; Gunnamatta 1909-10 [4/6635.1].

In April 1903 the Fisheries Branch was ready with plans and specifications for a fully functional marine hatchery, with a hatchery building, fishpounds, boatshed, storage tank, pumping plant, laboratory and residence for the caretaker, at a total cost of £2,125. To legitimise the spending the Department promised somewhat ambitiously that “The proposed Hatchery when completed will be capable of propagating 1,000,000,000 fish every season,

295 SRNSW: State Fisheries; Letter from Brodie, Secretary Fisheries Department to the Chief Secretary 29 August 1902 [4/6635.1].
296 Annual Report on the Fisheries of NSW for the Year 1902, p. 5.
which will be distributed along the Coastal Waters and inlets to stock the depleted waters with more valuable forms of fish.”(!)

In early 1904 the project was put to tender, and in February Mr Charles McCarthy of Mosman was given the work for his quotation of £1371. However, progress was slow and half a year later Dannevig had to ask the Department for another £500 in order to get some additional work done (piping to the pump, construction of a engine and boat shed, covering of the tidal pond and necessary technical equipment for hatching) in order to allow hatching work to begin. It was not until October 1905 that Dannevig could declare that:”the Gunnamatta Hatchery is now to all purpose in working order” (see Figure 3-2).

Figure 3-2. Gunnamatta Hatchery after completion, with the laboratory in the background, engine shed, boat shed and hatching pond with H. C. Dannevig in the foreground. Photo courtesy of Dennis Reed.

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297 SRNSW: State Fisheries; Letter from J.A. Brodi, Secretary Fisheries Department to the Principal Under Secretary 1 April 1903 [4/6635.1].
299 SRNSW: Memo 22 August 1904 by Dannevig [4/6635.1].
300 SRNSW: Memo 22 August 1904 by Dannevig [4/6635.1].
The work at the hatchery, 1906-1914

By early 1906 the hatchery was in full operation; observations were made on whiting, redbream, flathead, trevally and crayfish, snapper and some undisclosed deep sea fish which had been placed in the tidal pond. Until then, all Dannevig’s research and biology work had been limited to the study of native species at the pound, but with the construction finished the commercial hatching could finally begin. Surprisingly many of the species selected for hatching were not local marine species in decline, but marine species native to Tasmanian (flounder and crayfish) which were considered more valuable than the local NSW varieties. On 25 May 1906 Dannevig travelled to Hobart to secure the shipment of 1,200 flounder which on arrival back in Sydney were released into the spawning pond. The procedure was repeated on the 27 July with 1,100 flounder and after they had spawned and the eggs had been artificially hatched, more than 20,145,000 fry were released into the waters of Port Hacking, Botany Bay, Middle Harbour and Brisbane Water.\textsuperscript{301} The hatching of Tasmanian flounders was repeated in 1907 and 1909 and nearly a total of 40 million fry were liberated in NSW waters. The second large hatching program conducted at the Gunnamatta Hatchery was focused on (Tasmanian) crayfish and took place in 1908-09 where over 5.5 million fry were hatched and liberated. Experimental hatching and liberation were also made with sand whiting and blackfish.

With laboratory facilities at the hatchery completed, and with Dannevig and Stead at its disposal, the Fisheries Branch had succeeded in establishing some measure of scientific bureaucracy and began participating in scientific networks, mostly national. For instance, in 1908 students from University of Sydney carried out zoological research at the site.\textsuperscript{302}

These first attempts at commercial sea-fish hatching in Australia, no matter how misguided they may seem today, were welcomed by both the Fisheries Board and some members of the public. However, the attempt to establish local populations of Tasmanian flounder and crayfish proved unsuccessful. When in 1916 the Department asked the resident Fisheries Inspector, to investigate if a population of flounder had been established in Port Hacking\textsuperscript{303},

\textsuperscript{302} SRNSW: State Fisheries; Report on Gunnamatta Fish Hatchery 11 February 1910 [4/6635.1].
\textsuperscript{303} SRNSW: State Fisheries; Letter to Inspector H. Aldrich, Cronulla 23 November 1916 [4/7129]
they was forced to conclude that this was not the case since not a single specimen was recovered.\textsuperscript{304} Partly due to increasing public criticism, and declining political support as well as Dannevig’s deteriorating relationship with Frank Farnell in his capacity as Director of the Board\textsuperscript{305}, the hatching program proved short-lived. In 1907 Dannevig had been ‘lent’ to the Victorian Governments fisheries authority and in 1908 he was offered the new position of Commonwealth Director of Fisheries in Melbourne and he left NSW Fisheries altogether. During his time as Director of Fisheries, Dannevig spent most of his time conducting trawling investigations in Australia from the purpose-built Federal Investigation Ship (FIS) \textit{Endeavour}. The ship was launched in 1908 and located extensive trawling grounds along the NSW and Victorian coasts and in the Great Australian Bight. The results of the zoological investigations and the locations of trawling grounds were published in a series of books and parliamentary reports by the Commonwealth Department of Trade and Customs to encourage industry development.\textsuperscript{306} Despite Dannevig’s tendency to overindulge in alcohol on occasions (he was officially reprimanded and had to take a pay cut for being drunk at work while being Director of Fisheries)\textsuperscript{307} the result of his fieldwork\textsuperscript{308} onboard the \textit{Endeavour} was ground-breaking, documenting for the first time the existence of suitable trawling grounds along the south-east coast of Australia. The investigations were cut short when the \textit{Endeavour} was lost in a storm on 5 December 1914 with all crew, including Dannevig, on its way from Macquarie Island to Hobart after it had relieved the meteorological station.\textsuperscript{309} The Commonwealth did not appoint a new director, and fisheries research work was discontinued for the time being.

After Dannevig left NSW for Melbourne, the hatching work continued for about another year under leadership of Inspector Frederick Aldrich, who had been caretaker at the hatchery and Dannevig’s assistant in the hatching work since 1905. Stead had no interest in this work and Aldrich resigned in 1914 to take up the position of Chief Inspector of Fisheries in Western

\textsuperscript{304} Annual Report on the Fisheries of NSW for the Year 1917. And Annual Report on the Fisheries of NSW for the Year 1918.

\textsuperscript{305} The relationship was so hostile that Farnell in his speech at the First National Fisheries Conference, August 19 to 22 1907, held in Melbourne publicly criticised Dannevig who had been refused permission by the Branch to attend the conference. See \textit{The Age}, 1 November 1907.

\textsuperscript{306} Department of Trade and Customs, Biological Results of the Fishing Experiments Carried on by the F.I.S. ‘Endeavour’ 1909-1914, 1911-1933.

\textsuperscript{307} NAA: Public service record for Harald Dannevig, 1908-1914 [SP 515].

\textsuperscript{308} Dannevig only got to published results from voyagers made during 1908-1911, the data from the later years was kept on the \textit{Endeavour} and irreversible lost when the vessel sank.

\textsuperscript{309} \textit{SMH}: Loss of the Endeavour, 23 April 1915.
The failure of the Gunnamatta Hatchery to deliver tangible results by way of increasing the abundance of food fish and providing relief for the coastal fishing industry was due to both biological and practical reasons. First, the idea that it was possible to influence the yield of a stock with artificial hatching proved to be based upon the fallacious hypothesis that abundance of any target species is directly proportional to the number of eggs spawned by the adult stock. Later studies have showed that even the large and well-funded Norwegian marine hatching programs, which continued for decades, proved to be unsuccessful in manipulating recruitment in fish populations. Attempts in NSW had even less chance of succeeding due to the limited knowledge of the biology of local species and of how various stock were affected by the fishing effort. Furthermore, it was decided to put effort into hatching species not naturally found in NSW coastal waters and unable to acclimatise to the NSW marine environment. Finally, the very short time the hatchery was operating (four years) made it nearly impossible for Dannevig to do any research on the practical value of his hatching program and gain knowledge that would have allowed him, or a possible successor, to improve the program.

In the end the marine fish hatchery movement in Australia, lacked political support beyond the immediate initiation phase, and marine hatching as a means to support the productivity of the coastal fishing industry was eventually abandoned. Hatching of fish for restocking inland streams, nevertheless, was successful and is continued to this day by the NSW Fisheries Department.

The Gunnamatta Hatchery finally closed in July 1914 and the remaining fish in the pond liberate into Port Hacking. The fisheries inspector of the Port Hacking River and brother to...

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311 Smith, T., 2002.
313 Over the years the hatchery had become a popular excursion spot. The hatchery had a small collection of zoological specimens for display and the inspector spend an increasing amount of time showing visitors around. After Dannevig left it became necessary to erect a fence to keep out visitors, who had made it a habit to picnic on the premises and injure the fish by throwing things in the pond or trying to catch them. Later visiting times were restricted to Wednesday and Saturday afternoons only. During 1911-12 Stead was allowed to use the facilities at the hatchery for experimenting with preparations of fish products (pickled, paste, salted and smoked Pilchards). The decision did not sit well with all members of the public; residents of Cronulla complained that they were put off by the smell from the ongoing curing experiments and the limited opening hours. See
Frederick Aldrich, Frank Aldrich and his family moved into the premises and lived there until Frank Aldrich was promoted to Inspector of the Sydney Fish market in 1920. The former hatchery was not used for fisheries research until 1938 when CSIR’s Fisheries Investigation Section took over the place.

In the later years, after the marine hatching scheme had proved less successful and was met with criticism in the Sydney press, in his capacity as chairman of the Board since 1902, Frank Farrell argued that the idea of sea-fish hatching had originated with people not associated with the Fisheries Board and stated that the Board had been forced to proceed with the scheme and the “only consultation [of the Fisheries Board] was in connection with paying the bill for £1560”. He dismissed the construction of the Gunnamatta Hatchery as a “White Elephant” and the idea of restocking the sea with introduced and local fish artificial hatch as pointless. However, nothing in the Branch’s documents suggests that the Fisheries Board was not fully behind the idea, and that the construction of a marine hatchery had widespread support. While it seemed somewhat doubtful that the Fisheries Board had not supported the scheme it was well known that Farnell never had. Oddly he supported trout hatching and liberation into NSW streams throughout his entire career.

The history of marine hatching in NSW was an example of how public development policy evolved after federation. During the 1890’s a strong supportive relationship between governments and business interests had been created. After 1900 governments increasingly began using direct intervention to stimulate economic growth, and applying scientific principles to develop and manage utilisation of resources. Although a somewhat atypical method of fisheries development, the creation of Gunnamatta Hatchery, was a typical act of state developmentalism.

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SRNSW: State Fisheries; Memo 2 August 1912 Davis Stead to Under Secretary [4/6635.1] and Daily Telegraph: Gunnamatta Hatchery, Fish-curing Experiments, 21 October 1912.

315 SMH: Frank Farnell to Editor, 20 February 1914.
318 Frawley, K., 1994, p. 66.
David George Stead: Another take on developing fisheries

David George Stead (see Figure 3-3) was appointed scientific assistant to the Department in May 1902 and later got the more pretentious title Naturalist to the Fisheries Department. Originally trained as a stamp maker and before his appointment working as a compositor, he had a keen interest in all things related to nature and had at one point studied zoology at Sydney Technical College. Although he was a respected member of several scientific and amateur societies he never received an academic degree.

Figure 3-3. Photo of David George Stead with NSW Minsters and ladies on boat at Port Stephens 1917. Left to right: Fisheries Inspector Paton, D. G. Stead, J. Garland (Minister of Justice), Hooworth (Fuller’s secretary), Ms Harkness, ?, George Fuller (Colonial Sec Secretary). Source: SLNSW: David G. Stead; [ML MSS 5715 11(25)]

319 www.adb.online.anu.edu.au/adbonline.htm [15.03.2010].
While Dannevig was brought into public service as an overseas expert, Stead came from the new and growing body of public servants employed under the NSW Public Service Act of 1895. The Act had aimed at eliminating political patronage and from 1902 entry into the public service was through open competition and promotion only through examination. Public service positions were highly sought after since they guaranteed lifelong employment. In June 1898 Stead had unsuccessfully applied for the post of zoological assistant in the Technological Museum, but in 1902 he had more luck and became the Fisheries Branch’s first naturalist.

During the time he and Dannevig were both in the Branch it appeared that they had divided the workload between them, working largely independently of each other. Stead, working from the Fisheries Branch offices in the city, was mainly involved in matters relating to freshwater fisheries and trout hatching under the supervision of Dannevig, occasionally acting as his research assistant. Dannevig on the other hand seems mostly to have been involved in matters relating to marine fisheries and hatching and did all his investigation work from the Hatchery at Gunnamatta Bay. The two men appeared to have had different views on the best direction for fisheries research. Dannevig worked toward artificially restocking the depleted coastal waters, which in theory would support existing coastal fisheries. Stead supported a fisheries research program based upon zoological research and believed that the sea could sustain an intensive deep sea fishery based upon native species, without the need to improve the abundance using released fry. Stead explained his view in a document submitted to the Fisheries Board in May 1909, where he suggested that the hatchery be converted into a Marine Biological Station.

Perhaps I may here venture my opinion that we, with our great fish-fauna, so rich in both species and individuals, are not in any need of sea-fish hatcheries, even if the operations were on a colossal scale. We are waiting for the advent of the people who will come to [?] reap the great harvest which we know to exist. The existence of a sea-fish hatchery is therefore illogical and is one of those things that conspire to prevent outside folk for seriously entertaining all that they may hear in regards to our fisheries.

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321 SLNSW: David Stead [ML MSS 5715 1 (25)].
322 SRNSW: State Fisheries; Report on Gunnamatta Fish Hatchery, 11 February 1910 [2/33715].
323 SRNSW: State Fisheries; Suggestions as to the future use of the hatchery buildings a Gunnamatta Bay by David G. Stead, 18 August 1909 [4/6635.1].
Stead also suggested that the methods used at the hatchery were inadequate for restocking purposes. He supported the notion that the key to increasing the amount of fish available to urban consumers was to improve marketing, as he wrote in *Edible fishes of New South Wales*:

all that is needed to bring this about (more fish from harbours and estuaries) being a more improved fashion of handling the fish after capture, better means of dispatch to selling centres, and – most important of all – a comprehensive and up-to-date scheme of distribution to the people…the present supply might be very considerably augmented without there being any danger of it exceeding the demand.  

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In many ways Dannevig’s and Stead’s conflict of conviction echoed the one fought in Norway between G. M. Dannevig and Hjort. Contrary to the Norwegian experience marine hatching *was* abolished in NSW, but not because of Stead’s criticism, which did not surface before Dannevig had left. Moreover Dannevig himself proved to be a competent and enthusiastic supporter of a trawling industry, identifying fishing grounds on the continental shelf all along the east and south coast of Australia.

Stead was a very productive writer and wrote several publications on fish and fisheries during his time at the Branch. They often contained a call to increase the utilisation of the marine resources in NSW.  

325 His approach to fisheries development was certainly more focused on development than ecology. His daughter Christina Stead would later describe him as a state socialist, who believed in ‘evolution not revolution’.  

326 On the State’s marine resources he wrote in 1906  

327: “we, are only “on the threshold”; and there are vast storehouses filled with untold wealth lying at our doors, with their portals wide open, bidding us to enter and carry off the spoil.” To ignore such allegedly rich resources was a case of great neglect since “fisheries of Australia are destined … to play an exceedingly important part in contributing to

324 Stead, D., 1908, pp. 9-10. The book was printed in 1000 copies but was a limited success and by 1918 only about 100 books had been sold. The State Trawling Industry with Stead as General Manager bought the remaining copies and distributed them freely. When the industry winded up in 1923 the last 335 copies were sold to Angus & Robertson’s. See SRNSW: State Fisheries; Publication “Edible Fishes of N.S.W”, 1918-1923 [5/5363.8].

325 Publications or pamphlets from his time at the Department include: *Additions to the Fish –Fauna of New South Wales* (1907), with a description of new fish species found in NSW. The year after he published another pamphlet with a similar theme called *New Fishes from New South Wales* (1908). *On the Need for More Uniformity in the Vernacular Names of Australian Edible Fishes* (1911) where he showed that the same fish species could have different scientific name and common name, depending on where it was caught.


327 (Stead, D., 1906, p. 241.)

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Throughout his life Stead was always a relentless advocate for economic exploitation of marine resource in the interest of the society. It was the economic as well as moral wellbeing of society that was his concern and natural values played a key role in this wellbeing.

Stead’s strong belief in his own purpose motivated most of his actions at the Fisheries Branch and later at the NSW State Trawling Industry. He was instrumental in opening up NSW’s deep sea fishing, by suggesting and then running a state-owned trawling company, making it the first of its kind in Australia. Since the Industry was Stead’s brainchild one cannot fully understand the rationale behind the beginning of large scale marine exploitation in NSW without contemplating Stead himself.

Stead’s daughter from a first marriage was the famous author Christina Stead whose hate-love relationship with her father was the inspiration of her best known novel: “The Man Who Loved Children” (New York 1940). The novel’s main character Sam Pollit is a portrait of David, and Christina paints a picture of a charming, manipulative, playful, passionate, idealistic and indulgent father with a deep interest in every aspect of nature. Years later in the short story “A Waker and Dreamer”, published posthumously, Christina appears to have reconciled with her father’s memory and praises his ability to convey his love of nature to everyone around him, but also emphasis David’s strong self-confidence.

He believed in himself so strongly that, sure of his innocence, pure intentions, he felt he was a favoured son of Fate (which to him was progress and therefore good), that he was Good, and he could do nothing but good. Those who opposed him, a simple reasoning, were evil. 329

Stead was conscious of the fact that he did not have any academic qualifications, 330 and in his correspondence with the Fisheries Branch would often over-compensate for this academic shortcoming by referring to his superior knowledge of fish and fisheries (usually when his actions or ideas was questioned). Stead’s admiration of science even transmitted to the naming of his sons; all his sons were named after famous scientists (David Darwin, Frederick Huxley, Samuel Kelvin and Gilbert Jordan) while three daughters were more modestly named after family members.

328 Stead, D., 1906, p. iii.
It is paradoxical that Stead, who was a well-known and committed advocate of the intrinsic worth of Australia’s terrestrial nature, never applied the same considerations to the ocean. When it came to the marine environment he remained a fierce developmentalist all his life. Stead wrote his first book about fisheries development in 1906 at the time coinciding with his increasing involvement in conservations issues. He was one of the founders of the renowned and longstanding Wildlife Preservation Society of Australia (1909), and involved in such societies as the Naturalists Society of NSW, the Gould League of Bird Lovers (1909), the Association for the Protection of Native Races (1911) and the Australian Forest League (1923), to mention a few.331

Within the environmental movement in Australia Stead is fondly remembered as the epitome of an early progressive environmentalist, with a deep commitment to nature conservation.332 There is no doubt that he was greatly fascinated by Australia’s native fauna, especially birds and fish, and his field notebooks reveals that he found great pleasure in the beauty of the bush333 but retrospectively these activities overshadow his deep commitment to the industrial development of the marine environment for social progress. Stead was convinced that, in the case of fisheries, it was the duty of governments to take part in extracting the marine resources for the benefit of the people. He remained convinced all his life that sea fishing in Australia was under-developed.

Coincidently he shared his interest for nature conservation and fisheries development with Frank Farnell who, while promoting sea fishing, was at the same time a trustee of the NSW Royal National Park from 1888 and later its chairman from 1907-1929. The Royal National Park was created in 1879 and was Australia’s first national park. Ironically part of the parks border is the southern shore of Port Hatching opposite the Gunnamatta Hatchery.

After Dannevig took up the position of Commonwealth Director of Fisheries in July 1908, Stead became more outspoken about his views that a new direction in marine research at the

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331 David G. Stead was involved in number of scientific societies such as the Royal Zoological Society of NSW and the Linnean Society.
333 An example of an entry from one of Stead’s field notebook reads: “25/9/08. 3.40 time train from Sydney. Came along in starlight from Gosforth to Jerrigal under most delightful conditions. Lights of bushfires like ferryboats on water. Others looked like “fairy fires” with weird light caused by the light from (unreadable) + dying fires shining on light smoke between trees. At a distance this smoke looked like the placid surface of water reflecting a ghostly light.” SLNSW: David Stead [ML MSS 5715 1 (25)].
Branch was needed, preferably with him in charge. The staff working at the Fisheries Branch were organised to deal with clerical responsibilities under the supervision of the Under Secretary of the Chief Secretary’s Department and with professional duties under the supervision of the Fisheries Board. As scientific bureaucrats Dannevig and Stead took their instructions from the Board but, having no clerical staff of their own, depended upon the Under Secretary and Officer-in-Charge of the Branch for administrative work. It could lead to tensions when the Secretary’s and Board’s agenda differed. Around May 1908 when it became official that Dannevig was leaving for a Commonwealth position, Stead applied for his job and was nominated to the position of Superintendent of Fisheries Investigations by the Fisheries Board but the promotion was deferred and in February 1909 the Board abandoned the idea and instead suggested that Stead maintain his position as the Branch’s Naturalist with a salary increase. The crux of the matter was of course who controlled the hatchery and thereby the direction of fisheries research at the Branch. As Naturalist to the Branch, Stead had no authority over the Gunnamatta Hatchery, and had to get the Board’s approval each time he wished to use the research facilities found there. After Dannevig left, Stead was the only scientific officer at the Branch, and it was inexpedient that work at the hatchery was left to fisheries inspectors and technical personnel. Stead, likely supported by Farnell, wished to turn the hatchery into a Marine Biological Station under his supervision, but the Chief Secretary, at the time, William Herbert Wood, declined the suggestion because he wanted to look into the matter more thoroughly before he made a decision (but never did).

Unsatisfied with his position in the Branch and the lack of direction in fisheries research, Stead strove to get de facto control over the hatchery by challenging the (lack of) decision making. The conflict culminated over December 1910-January 1911 when Stead complained that he did not routinely receive documents relating to hatching and activities at Gunnamatta Hatchery and accusing Officer-in-Charge J.A. Brodie, head of the Branch’s clerical staff, of working against him. In a firmly worded reply Brodie denied Stead’s allegations and stated that Stead was in no position to be the recipient of such information on a permanent basis.

334 Sometime called the Colonial Secretaries Department, the minister was called the Chief Secretary or Colonial Secretary.
335 SRNSW: State Fisheries; Suggestions as to the future use of the hatchery – buildings a Gunnamatta Bay by David G. Stead, 18 August 1909 [4/6635.1].
since he was only employed as a Naturalist to the Branch to do scientific investigations authorised by the Fisheries Board.\textsuperscript{336}

A principle of NSW Government decision on how to proceed with fisheries research and development after sea-hatching had ceased was needed, but Stead’s timing for the confrontation was unfortunate. By alienating the Officer-in-Charge and to some extend the Under Secretary, F.A. Coghlan, he found himself without support from his superior officers in the Fisheries Branch. When the Fisheries Board was dissolved shortly afterwards in 1911 and the Branch came under direct Ministerial administration these officers became more influential. As a result Stead was forced to confine his ambitions, and wait for a more opportune moment to put forward his idea for a more progressive fisheries development policy.

**The Royal Commission of Food Supplies and Prices, 1911-1912**

Such an opportunity came for Stead in July 1911 when the NSW Government appointed a Royal Commission to look into the prices and food supply of the State. The background was that in 1910 NSW had got its first Labor government, which had been elected on a program of social changes. Because retail prices on food had increased, the cost of living had become relatively high for the working and lower middle classes in NSW. As part of its program for social and economic reforms, the Government therefore appointed a Royal Commission to look into the matter. A special inquiry was made of the supply and distribution of fish and it gave a snapshot of the industry and the interests of the main persons involved. The Royal Commission’s findings led it to formulate a number of political recommendations that led directly to the establishment of the State Trawling Industry in 1914-15.

The NSW “Royal Commission of inquiry as to food supplies and prices” was charged with investigating the food supply of Sydney, especially the state of fish, fruit, milk, bread, meat and vegetables. The Royal Commission was “to fully inquire into the processes, methods, and conditions of the production, manufacture, transport, handling, and distribution of the

\textsuperscript{336} SRNSW: State Fisheries; As to control of Gunnamatta Hatchery and allied matters, by David G. Stead [4/6635.1].
SRNSW: State Fisheries; Statement regarding control of Gunnamatta Hatchery allied matters by Brodie, 19 January 1911 [4/6635.1].
In addition, the Royal Commission was to investigate five specific questions of which the third was relevant to the fishing industry, namely: “How the position of the working classes and the lower-paid middle-class consumers has been affected by the fluctuation of prices during (say) the last five years.” The Royal Commission found it best to assign separate investigations and dedicate a report to each food item. Its findings and recommendations about fish were published in 1912 in the “Interim report on the Supply and Distribution of Fish”.

The Royal Commission conducted a thorough investigation of the fishing industry in NSW: over 88 meetings were held and 127 witnesses interviewed. They came from a wide range of backgrounds and included scientific experts, professional fishermen and fish dealers. These interviews provide a rare snapshot of the nature and organisation of the early inshore fishery.

During its investigation into the fishing and distribution system in NSW the Royal Commission expressed grave concern about the quality and price of fish available for consumers in Sydney. The Royal Commission argued that the key problem for the industry and consumers alike was that the public demand for (inexpensive) fish was not met and insufficient quantities of fish of all sorts reached consumers. Shortages of fish were attributed to inadequate and expensive transport and storages. In areas outside Sydney fish had to be packed with ice and left on the wharves for transportation to the city by train or steam boat.

The lack of an efficient system for transport meant it was not uncommon that fish was left out in the open for 24-48 hours before being shipped, and in some cases as much as six days went by before the product was sold at one of the Sydney markets. Normally, fish were not gutted and they were packed in large cases so that fish at the base were crushed by the weight of others. Often there was insufficient ice since the fishermen themselves had to pay for it. Incredibly only approximately 6 percent of fish that reached the private owned Commonwealth Fish Exchange were condemned. However, the Redfern Council’s inspector in the Commonwealth Fish Exchange at the time, Mr Fanning, testified to the Royal Commission of Inquiry as to Food Supplies and Prices: “Interim Report on the Supply and Distribution of Fish”, 1912, p. III.

Royal Commission of Inquiry as to Food Supplies and Prices: “Interim Report on the Supply and Distribution of Fish”, 1912, p. III.

Royal Commission of Inquiry as to Food Supplies and Prices: “Interim Report on the Supply and Distribution of Fish”, 1912, pp. III.


Royal Commission of Inquiry as to Food Supplies and Prices: "Interim Report on the Supply and Distribution of Fish", 1912, p. 315.
Commission that, in his opinion, 50 percent of the total amount of fish reaching the exchange was unfit for human consumption and should rightly have been condemned. It was not uncommon, as Stead testified, to find badly decomposed fish on display in the retail shops "with the rib bones sticking out from the flesh - the flesh coming away from the rib bone and sometimes even coming away from the backbone". The lack of efficient and suitable transport heightened the costs of bringing the fish to market and made the fishermen discard the less valuable species at sea, and only ship the most valuable catch to Sydney.

Since the terms of the Commission were to look into supplies and prices of fish most of its questions logically related to the current state of the market and to how marketing could be improved. Most of those interviewed (tradesman and public servants alike) suggested improvements for the handling and marketing of fish primarily in Sydney, within the framework of the existing inshore fishery. A few ‘expert witnesses’ such as Frank Farnell (by then retired chairman of the late Board of Fisheries and a veteran from the Royal Commissions of 1894 and 1895 as well as a commissioner for Fisheries for 25 years) suggested that a more dramatic approach was need to meet the public’s demand for fish.

Farnell was convinced that the supply of fish was inadequate and had calculated that demand in Sydney and its suburbs was as much as 6,683 tons per year and 11,024 tons for the whole State. In 1911 the total catch for NSW was 5,243 tons. Questioned about inshore waters’ ability to meet the growing demand for fish Farnell replied that in his opinion: “the inshore fisheries are incapable of supplying the need of our community; and if we go on allowing the present method to be continued, it will simply mean that the continuity of the supply cannot be maintained.” He made it clear that sea fishing was the only available option for sustaining or expanding the State’s fishing activities. To Farnell, developing the nation’s fisheries resources to save costly imports of fish products was a patriotic duty, and he

343 See also Chapter 2 for all Frank Farnells positions in relation to NSW Fishing Industry.
345 Annual Report on the Fisheries of NSW for the Year 1911
passionately argued that it was a crime against the country that the NSW Government did not actively promote or assist development in this area. Although he wished for the State to invest in vessels, infrastructure and research he stopped short of proposing that the Government get involved on a commercial basis, instead suggested that efforts be directed to supporting the building of a private trawl fishing industry.

For Stead, the inquiry was an opportunity to present his views on fisheries development directly to the NSW Government, sidestepping his superior officers. He testified before the Committee on four separate occasions as an ‘expert witness’. Stead’s views mirrored those of Farnell, although he estimated that over 50 percent of the entire coastline in NSW was under-exploited due to insufficient means of getting the catch to the consumers, and that some of the already exploited areas could be fished more extensively.

In Stead’s view the fishing industry was restricted because the market for Australian fish was hampered by high prices, and he argued that the ‘people’s demand’ for food fish was much greater than trading suggested, revealing his ‘state socialist’ convictions. The only way to meet demand was by reorganising and rationalising the production line, from fisherman to consumer; by introducing low rates for carriage of fish by rail and steam ships; providing better transport facilities (cool chambers); making gutting of fish mandatory before shipment and by encouraging the activities of fish hawkers in Sydney. While Stead put forward these suggestions to improve the situation of existing inshore fisheries, he repeatedly argued that the ocean contained more than enough fish resources to meet demand. Stead strongly advocated developing a deep sea fishing industry and argued that the NSW State or the Municipality of Sydney should to be instrumental in developing this fishery by demonstrating

349 Royal Commission of Inquiry as to Food Supplies and Prices: “Interim Report on the Supply and Distribution of Fish”, 1912, p. 11.
350 Fish hawking in Sydney was hampered by anti-hawking laws that made it illegal for the hawker to stop or put down his basket at any given time. The infrequent supply of fish also made fish-hawking a less desirable trade and many only sold fish to supplement their main trade of rabbits. See Royal Commission of Inquiry as to Food Supplies and Prices: Interim Report on the Supply and Distribution of Fish, 1912; Interview with Charles Moore, Fish-hawker, 23. November 1911, pp. 265-266.
fishing methods and techniques for preservation (canning, smoking) to the public. He also suggested to the Commission that the NSW Government could provide cool storage for various fresh food items at wharves and train stations, and suggested that financial assistance be given to fishermen who wished to expand their business with new and better gear. In his capacity as Commonwealth Director of Fisheries Dannevig was also called to testify before the Commission on 9 January 1912 about the suitability of the trawling grounds that Endeavour had surveyed along the NSW coast, in order for the Commission to assess the likelihood of increasing the supply of fish. He explained to the Commissioners that a narrow strip 10-35 miles wide along the NSW coastline and extending towards the 100-fathom line, more commonly known as the continental shelf, was suitable for commercial trawling. The Endeavour had systematically surveyed and completely mapped the bottom up to the Queensland border and round the Victorian coast, down the east coast of Tasmania and into the Australian Bight. During its investigations the crew had also made test trawls on selected ground to see if fish could be obtained in commercial quantities, the main species being deep sea flathead, today commonly known as tiger flathead (Neoplatycephalus Richardsoni). Since he had not been able to work the same grounds for a prolonged period, and because the seasonality and immigration pattern for most of the species they had found was unknown, Dannevig could not estimate an exact annual yield for the grounds, but he believed it reasonable to conclude that commercial trawling was possible on all the grounds although some seasonality in catches was to be expected. As to the economy of the fishery Dannevig noted that in his experience during 19½ hours of fishing a trawler could catch 5 tons of fish, that could be sold for £45 - £50, and that the working expenses of such a vessel would be around £70 per week.

352 Royal Commission of Inquiry as to Food Supplies and Prices: Interim Report on the Supply and Distribution of Fish, 1912, p. 14 and 36.
353 Royal Commission of Inquiry as to Food Supplies and Prices: Interim Report on the Supply and Distribution of Fish, 1912, pp. 292-301.
To secure a large, more reliable and healthier supply of fish to the urban areas the Commission made a series of recommendations on handling, marketing and distribution of fish.\textsuperscript{354}

First was that the Sydney Municipal Council should take control over the city’s supply of fish by having exclusive rights to market and sell fish in Sydney, and if necessary also purchase the catch directly from the fishermen and sell then to the public without the interferences of private agents.

Secondly, the Royal Commission recommended a system of local receiving deports and transport vessels with cold storage facilities be put in place by the City Council, to secure a better supply of fish.

Thirdly, the Royal Commission recommended that fish intended for sale should be gutted before arriving at the market, packed in continent size boxes and plants for manufacturing fish oil out of fish offal should be established at the local receiving depots to utilise the fish offal.

The Royal Commission also made a special recommendation on development of deep sea fishing, stating that it believed it was important that such a fishery be developed as soon as possible. If a private initiative was not forthcoming, members recommended the State took steps to form a fleet of trawlers (as well as surface-netting and long-liners) to run them as an industry. They concluded: “We think that such a venture, properly conducted, should prove successful.”\textsuperscript{355}

\textbf{Conclusion}

The period from 1901 to 1914, is framed by the State’s will to govern fisheries by scientifically improving inshore resources by releasing artificially hatched fish into the sea, and also by the emerging viewpoint of direct State industry development by trawling.

\textsuperscript{354} Royal Commission of Inquiry as to Food Supplies and Prices: “Interim Report on the Supply and Distribution of Fish”, 1912, p. xli.

\textsuperscript{355} Royal Commission of Inquiry as to Food Supplies and Prices: “Interim Report on the Supply and Distribution of Fish”, 1912, p. xxvii.
While marine hatching was internationally recognised and politically attractive because it aimed to improve catches without restricting the industry, it proved to be without scientific substance. Studies have shown that recruitment of marine fish cannot be increased by releasing juvenile or yolk stage fish, but in NSW the venture into marine hatching was cut short before any results were available. Although scientifically misguided, the venture into marine hatching was the NSW Government’s first attempt at scientific based fisheries management. The venture also succeeded in establishing a scientific bureaucracy which, after 1911, was put in the hand of a professional body of public servants. The failure of marine hatching allowed another viewpoint on governing to emerge. Personified by the Naturalist to the Fisheries Branch David G. Stead, it embraced the notion that the State should be directly involved in extracting marine resources. The ‘will to develop’ was still the main dogma in governing fisheries; only the means had shifted.

From 1901-1912 the development policies of the NSW Fisheries Branch had focused mostly on improving existing fisheries. But in 1912 it was suggested that the NSW Government’s intervene directly in the State’s fishing industries to develop and utilise previously unused marine resources. The next chapter will examine these interventions as well as the role of the NSW Labor Government.
Chapter 4
Fishing for the State, 1914-1923

“to bring up these fish is equal to dredging up current coin.”
David G Stead referring to the state trawlers catching large amounts of flathead. Weekly report from the State Trawling Industry, 30 October, 1915.\(^{356}\)

Introduction

In 1914, after the failure of scientific fisheries development using sea hatching as a method to improve inshore fisheries, the NSW Government was ready to make the transition from having inshore fisheries as their development objective, to focusing on the development of an offshore trawling industry. In order to do so from 1915 to 1923 the NSW Government operated a commercial trawling industry, exploring previously unused resources found on the continental shelf. The objectives behind the State Trawling Industry (STI) were a mixture of social and economic policy, where the NSW Government took control of all parts of the production line from catching to selling produce. Examining the business setup of the enterprise and discussing its management reveals reasons for the economic failure of the industry and it will be argued that the STI paved the way for the rise of the private trawling industry.

The idea of a State-owned trawling industry built upon previous years’ debates on how best to develop what was believed to be the State’s large and mostly untouched marine resources. When the hatching scheme failed to develop the existing inshore fishery, an opportunity was created for those who advocated that the best way of developing the State’s fisheries was by initiating new fisheries on the continental shelf by employing steam trawlers. Such an opportunity came in the years after Labor had gained power at the 1910 election during which the party had campaigned on a policy of State ownership of important resources\(^ {357}\) as well as social reforms.

\(^{356}\) SRNSW: STI; Statement and accounts, September- December 1915 [5/5441.1].
\(^{357}\) Tyler, P., 2006, p.59.
The Royal Commission of 1912 had identified the need for an additional source of protein that was affordable for low income earners. In the 1910 election Labor had formed its first government under Premier McGowen and subsequently succeeded in winning the next election in December 1913. Having defeated the opposition in the 1913 election on continuing the program of social reforms and industry development, a political will was present to act upon the Royal Commission’s recommendations. The 1912 Royal Commission’s recommendation was finalised in 1914 when Premier W.A. Holman appointed David G. Stead from the Fisheries Branch to a one-man Fishery Inquiry Commission. The new commission was to seek information on modern deep sea fishery and make the necessary steps to enable such a fishery outside NSW by essentially applying the 1912 Commission’s recommendation.

Butlin has observed that public development policy in Australia from 1900 to 1914 was characterised by a high frequency of direct industry intervention. After winning the elections the Labor Government began a policy of establishing State-owned industries, initially to produce supplies needed for public works but later the state enterprises also included services to the wider public. This style of Labor policy has been called welfare-statism by Walker. In NSW the rise of the Labor party to government strengthened the already existing tendency of direct industry interventions rooted in colonial socialism and resulted in the funding of a state owned trawling industry.

**Planning a state fishing industry, 1914-1915**

The belief that capital enterprise could be directed through Parliament for the greater good of society had allowed NSW’s first Labor Government to gain power in 1910. However once in power the McGowen Government found its legislative programme often hampered by a hostile upper house. It did not help that the Government repeatedly found itself under pressure from the labor movement outside Parliament, which was becoming impatient with the apparent lack of political reforms. Finding it hard to negotiate legislation, Labor began adopting a strategy of rearranging how power was administered within existing management

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frameworks to achieve policy objectives and get around an uncooperative Parliament. Weary of the political difficulties McGowen handed over leadership to William Holman in June 1913, before the December election.  

The first proposal for a State-owned commercial sea-fishing industry was made sometime in 1913 to the Chief Secretary’s Department and was “in view” up to May 1914. The source of the proposal is unknown and it does not seem to have generated any (political) interest or support. When a butcher strike hit Sydney in February 1914 however, it became apparent how dependent the public was on a regular supply of meat.

To Stead the butcher strike came as a godsend opportunity. Beside his professional ambitions for scientific fisheries management and development of sea fishing, he was convinced that it was the Government’s duty to utilise common resources for the greater good of the public. On his own account and possibly without informing his superiors, he approached Premier Holman with an idea to develop the State’s sea fishery and provide the urban public with a source of cheap fish. In Holman, Stead finally found a willing ear for his plans. Since the Labor Government assumed office it had initiated several businesses mainly to provide cheap supplies for public work. A few of the state enterprises had a purely social agenda aimed at lowering prices for ordinary people; one such example was the State Bakery founded in 1914. It was therefore not surprising that Holman quickly appointed Stead to look into the prospect of developing a deep sea fishing industry.

362 No documents from before the State Trawling Industry became an Industry Undertaking in June 1915 but the advents leading up to the establishing of state fishing company can largely be reconstructed from the 1916-1917 Hearing by the Public Service Board. The evidence given by Mr. F.A Coghlan, at that time Under Secretary of the Chief Secretaries Department, is especially valuable in understanding what happened. See SRNSW: PSB; Inquiry into the State Trawling Industry 1916-17, Statement of the Auditor General F.A. Coghlan, 12 February 1917 [8/513.3].
363 Stead’s personal ideology of Fabian socialism went beyond the ‘colonial-socialism’ that has thrived in Australian governments. Later in life he confessed to be inspired by the socialist movement, but he never became a party member, preferring to develop his own ideology. See SLNSW: David G. Stead, letters [ML MSS 5715 1 (25)].
364 Other state owned businesses were, by year of establishment: The Metal Quarries (1911), Homebush Brick Works (1911), The Brickwork, Botany (1912), The Limeworks at Taree and Botany (1912), The Joinery Works, Rozelle (1912, burned down in 1914), State Timber Yard (1913), The Building Construction Department (1913), Marouba Quarries (1913), The Clothing Factory (1913), The Pipe Works (1914), The Motor Garage (1914), The Power Station (1914), The Murrumbidgee Irrigation Areas (1915), The Saw Mill at Craven and Gloucester (1917).
Through a series of confidential communications directly to Premier Holman the plan was developed. On 27 March Stead submitted a scheme based upon fishing from three trawlers, with estimates of income and costs and the acquisition price for three trawlers. In his business model he estimated that each trawler would land 10 tons of edible fish and 20 tons of offal (by-catch) per week, 44 weeks a year. The value of edible fish was calculated to be 2 ½ d per lb in wholesale and at retail price, 4 d per lb. To optimise the economic return, by-catch and other waste from cleaning fish was to be used in making fish meal. To reduce the cost for the consumer Stead proposed to eliminate the fish-agent or middleman and distribute the fish directly to the consumers from a head depot to six branch depots in Sydney and surrounding suburbs, and later from country retail outlets. In his proposal Stead told the Cabinet that:

he might safely guarantee the Government an adequate and regular fish supply to be sold at a low rate throughout and at the same time to produce a large profit within the first twelve months from the time of starting the three vessels, and a considerably greater profit from that time forward.367

When a Royal Commission in 1920 examined the STI, the commissioners were surprised to find that Stead’s rough estimates of costs and catch capacity were more or less based upon estimates F. Farnell had provided to the Royal Commission of 1912. 368 Time would prove these early estimates to be more than a little optimistic.

On the 4 May 1914 the Premier decided that the question of a State Fishing enterprise should be brought forward to the next meeting of Cabinet scheduled for later in May. Before that Holman had made sure a memorandum submitted by Stead had circulated among the ministers. For unknown reasons the scheme was deliberately kept confidential to a point where not even F.A. Coghlan, Under Secretary of the Chief Secretary’s Department, under which the Fisheries Branch belonged, was informed.369 With the Holman Government already involved in several State enterprises, it seems unlikely that the scheme was so politically controversial that it had to be kept a secret in fear of competition from private companies, since none had showed any real interest in sea fisheries in the past. Stead,

368 Farnell presented the Royal Commission of 1912 with two statements that calculated the public need for additional supply of fish and how to accommodate it. See Royal Commission to Inquire into the Public Service of New South Wales: Fourth sectional report, 1920, p. 3.
369 SRNSW: PSB; Inquiry into the State Trawling Industry 1916-17, Statement of the Auditor General F.A. Coghlan, 12 February 1917 [8/513.3].
however, had a strong motive for keeping his Department in the dark. Since the controversy over the Gunnamatta Hatchery (described in chapter three) Stead could hardly expect support from his superior officers for such a radical idea, and he might even have taken pleasure in breaching the rigid structure of departmental hierarchy. For whatever the reason, the Fisheries Department was apparently kept out of much early correspondence about the initial stages of the State Trawling Industry.  

When Stead’s proposal for a State Fishing enterprise was put before the Cabinet it was well received, and between 23 and 30 May 1914 it was suggested that someone go to England to buy trawlers since no suitable vessels could be obtained in Australia. On the 26 May, upon Holman’s order, Stead went to Melbourne to interview Dannevig on the prospect of a NSW deep-sea fishery. After returning to Sydney, on the 30 May Stead gave the Premier a final and confidential report on the possibilities for deep-sea fishing in NSW waters. Subsequently the Cabinet decided to send Stead to England to buy several trawlers. So sure was Stead of the outcome of the Cabinet decision that he had already, on the 28 May, booked a ticket on a P&O Company boat sailing to England. A month later, on 27 June 1914, he left for England.

Stead travelled under appointment as a Fisheries Inquiry Commissioner. His assignment was to obtain knowledge of modern sea fishing in the United Kingdom, as well as to look into methods of distribution and canning of fish, and the disposal of offal. Ultimately he was to purchase an undefined number of trawlers suitable to operate in NSW waters. Although he still was an officer at the Fisheries Department, Stead was to report directly to Holman. Stead’s reports on his travel and findings are lost, but it is known that he did spend some time in England where he bought a ‘modern vacuum Fish Meal Plant’ for £1,350 with a capacity of producing two tons per 12 hours of fishmeal from fish offal. Most importantly, he ordered three new steam trawlers built from Smith’s Dock Co. Ltd at Middlesbrough-on-Tees at a total cost of £22,500.

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370 SRNSW: PSB; Inquiry into the State Trawling Industry 1916-17 [8/513.3].
371 SRNSW:PSB; Inquiry into the State Trawling Industry 1916-17, Statement of the Auditor General F. A. Coghlan, 12 February 1917 [8/513.3].
372 SRNSW: PSB; Inquiry into the State Trawling Industry 1916-17, Statement of Fran Gibbens, 15 May 1916 [8/513.3].
Shortly after Stead arrived in Europe, England declared war against Germany and its allies, thereby entering World War I. Upon the announcement the Admiralty began requisitioning large parts of the North Sea steam trawling fleet for naval service as minesweepers.\textsuperscript{374} It could potentially have jeopardised the delivery of the vessels, but the construction of the three trawlers was not interrupted and they were not seized by the British Royal Navy upon delivery in February 1915. The steam trawlers were named SS Brolga, SS Koraaga and SS Gunundaal. Stead had chosen the names which he claimed he personally had collected from aboriginals living in the North-West who spoke the Kamilaroi language. As a bird lover he had a habit of naming most of the STI’s ships after native Australian birds. Koraaga means “Blue Crane” or “White-fronted Heron”, Gunundaal means “Snake-necked Darter”, “Plotus” or “Snake Bird”, Brolga translated to “Native Companion”.

The three steam trawlers bought in England were of a design similar to the trawlers operating in the North Sea and North Atlantic. The British trawling industry was at that time dominated by steam powered fishing vessels, which had replaced the old sailing smacks. In the 1870s the British trawling industry still consisted almost completely of sailing vessels, but in the 1850s experiments with steam powered fishing vessels began, and by 1881 the first purpose built steam trawler began operating from Hull. By the end of the 1880s the large fishing ports of Hull and Grimsby were replacing their fleets of smackers with mainly locally build steam trawlers.\textsuperscript{375}

The next technological landmark came in the late 1920s where the first oil-fired steamers were introduced. They were somewhat faster and more effective than the coal-fuelled steamers, however it was not before the deep-sea fishing fleet had to be rebuilt after Second World War that oil-fuelled steam trawlers came to dominate the British trawling fleet.\textsuperscript{376}

At the time when Stead visited England, most of the British deep-sea fishing was done from steam vessels fuelled by coal and he subsequently ordered what was commonly considered the most modern type of trawler employed in one of the world’s most intensive fisheries.

\textsuperscript{375} Robinson, R., 1996, pp. 82-96.
\textsuperscript{376} Thór, J., 1995, pp. 66-67 and pp. 113-114.
**Koraaga,** and *Gunundaal* were sister ships, while the *Brolga* was larger. The two sister ships were 115 ft long with a gross tonnage of 220 tons. They had insulated fish storage rooms (but no cooling system) and a double-barrelled trawl-winch, each with a capacity of 800 fathoms. They could sail at a speed of 10 knots and were fitted to accommodate a crew of 12 persons. The slightly larger *Brolga* was 117 ft long with a gross tonnage of 220 tons and a bunker capacity of 135 tons, in comparison to the sister ships’ 90 tons, and was also fitted with a larger engine although its top speed remained the same. Its winch had a longer capacity of 1,000 fathoms. In everything else *Brolga*’s overall layout and equipment closely resembled that of the two smaller trawlers.

The trawlers were equipped with otter-trawl of about 140 feet long with a mesh size of 6 inches in the wings decreasing to 3½ inch in the cod end (bottom end of the trawl). The upper edge of the net was 90 feet long and the lower 140 feet. The rope at the edges was attached in each side to two ‘otter boards’ or ‘doors’ of 10 feet long, 4 feet 6 inches high which purpose was to keep the net open during trawling (see Figure 4-1).

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**Figure 4-1.** Drawing of State Trawler dragging an otter-trawl based upon original ship model from the shipyard, now at the Powerhouse Museum, Sydney. Source: Roughley, T., 1916.

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377 A model of *Koraaga* dragging a trawl exists at the Powerhouse Museum in Sydney. The model was presented to the Museum by the Department of Fisheries in 1924, following the end of the vessel’s service as part of the State Trawling Industry. The correspondence relating to the handover states that the model was made in England at the same time as the trawlers was constructed and sent out to Australia in 1915. See http://www.powerhousemuseum.com/collection/database/?irn=236168 [14.03.2010]

378 CFRC Library: Chief Secretary’s Department: F. J. Herlihy: NSW State Trawling Industry Historical Records 1915-1923, September 1927, Appendix A.
Attached to each otter boards was 400 fathoms of wire rope which was wounded up on two drums placed aft pulled by steam winches. As shown on Figure 4-2 gas lamps were placed with regular intervals on the deck so fishing could take place during night. 

Figure 4-2. Crew on aft deck with net and stem winches on a State Trawler, date unknown. Source: SLNSW: David G. Stead; [ML MSS 5715 11(25)].

The price of the three trawlers, delivered in Sydney and overhauled, equipped and ready to start trawling was £13,389.4.6 for the Brolga, £12,563.8.9 for Koraaga, and £12,588.4.9 for Guunundaal. On the 17 February 1915 the three vessels left from Grimsby for Sydney via Suez, Colombo and Fremantle. The trawlers were manned with British crews, who all had trawling experience and the plan was that they should carry out the fishing using their expertise from the North Atlantic and train local seamen in trawl fishing.

After spending some time in England Stead made his way home through the United States. His private correspondence to his family, principally addressed to his eldest daughter

380 CFRC Library: Chief Secretary’s Department: F. J. Herlihy: NSW State Trawling Industry Historical Records 1915-1923, September 1927, p. 3.
381 CFRC Library: Chief Secretary’s Department: F. J. Herlihy: NSW State Trawling Industry Historical Records 1915-1923, September 1927, p. 2.
Christina Stead, reveals that while he was in Europe he also spent some time in France (Paris) and Norway (Bergen, Hangesund and Stavanger), inspecting the local fish industries.  

**The NSW State Trawling Industry under Stead’s management, 1915-1920**

Eventually all three trawlers arrived safely in Sydney: *Brolga* on the 23 April, *Koraaga* on the 29 April 1915. Due to a misunderstanding about the sailing instructions *Gunundaal* (Figure 4-3) had made the voyage through Torres Strait and did not reach Port Jackson until 14 May.  

![Figure 4-3. Postcard with photo of SS Gunundaal with the STI’s logo on the funnel. Date unknown. Source: PCLJ.](image)

Upon delivery in Sydney, the British skippers took over the command of the trawlers from the merchant captains, and with a crew of mainly British hands they began fishing. On Saturday 5 June a test trip was made, and on the following Monday the vessels took to sea to start supplying Sydney with fresh trawled fish. Initially, the scheme appeared successful as the trawlers immediately found rich fishing grounds within the vicinity of Sydney and were able to bring fish to the market in previously unseen quantities. Record large landings were made during the first year. On 18 September 1915 *Brolga* landed 30,759 lb (14 tons) of mixed gurnard, flathead and leatherjacket from fishing grounds off Port Hatching and on 4

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382 In Stead’s letters home to his daughter Christina he muses over the possibility of the Australian Government attracting immigrants from Scandinavian because he considered them a superior and hardworking race which would improve the nation. See Rowley, H., 1994, pp. 21-22.

383 CFRC Library: Chief Secretary’s Department: F. J. Herlihy; NSW State Trawling Industry Historical Records 1915-1923, September 1927, p. 2.
November 1915 *Koraaga* landed 51,000 lb (23 tons) of fish, caught on grounds between Broken Bay and Port Jackson.\(^{384}\)

The rapid and successful commencement of fishing activity overshadowed, and to some extent concealed from the public, the budding enterprise’s problems with lack of planning and management. A detailed business plan to run the industry had never been made. Stead himself had arrived back in Australia only shortly before the trawlers. At that point almost no work had been done to set up the commercial and logistical parts of the enterprise. There were no office facilities, no storage space, no wharf, no means of marketing the fish, no employees and very little by way of an organisational plan. A general manager for the undertaking had not even been appointed. As a consequence, no one was officially in charge of the STI from April to September 1915, adding much to the confusion of how the undertaking should be organised. Unofficially Stead used his influence to direct the STI’s organisation.\(^{385}\)

Once back in Sydney in May 1915 Stead began writing reports and memos to Holman on what he had learned abroad, very much to his own minister’s irritation. George Mure Black,\(^{386}\) the Minister under which the Fisheries Branch was administered, was a journalist and long-time member of the Labor Party. He had only been in office since March and had no previous experience with Stead. In April 1916 he described the situation in a minute for Cabinet as follows:

> On Mr. Stead’s first return from Europe he spent most of his time in the preparation of reports on his travels in which he was assisted by two typists and in which he proceeded to quote liberally from various volumes of reports which he brought back from Europe with him, and it was not until I objected to his time being thus wasted and asked him to devote instead some attention to the initial work of founding the industry that these absurd proceedings terminated.\(^{387}\)

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\(^{384}\) Roughley, T., 1916, p. 224.

\(^{385}\) SRNSW: PSB; Inquiry in the State Trawling Industry 1916-17, Interview with George Houlton Smyth King, Ex-under secretary Chief Secretary’s Department, 10 July 1916 [8/513.3].

\(^{386}\) G.M. Black remained Colonial Secretary throughout the first year and a half of STI existents, until Holman formed his New National ministry in November 1916. Prior to being CS he was minister for agriculture from 23 February to 15 March 1915.

\(^{387}\) SRNSW: PSB; Inquiry in the State Trawling Industry 1916-17, Minute for Cabinet by George Black, 19 April 1916, [8/513.3].
The minute was written during the Public Service Boards Inquiry into the STI in 1916-17, when the STI was first faced with difficulties in relation to undertaking finances and bookkeeping. Black doubtless wanted to distance himself from the industry and especially from Stead. While Black personally never seemed to have been overly in favour of the idea of the STI, he allowed the STI the use of the Fisheries Branch’s inspectors and facilities at Cronulla. However Black remained wary of Stead during the rest of his ministry.

While Stead had been the architect behind the scheme to set up the STI, he had no experience in running a commercial business. The Cabinet was in favour of Stead as general manager although George Houlton Smyth King, Undersecretary at Chief Secretary’s Department, in July 1916 said that both he and Black had advised against it. Augmenting that Stead did not have the necessary qualifications to run a business but could be valuable as a consulting expert. Stead’s response was to approach Black with the alternative that he be put in charge of all fisheries work at the Department as Director – his original objective before his temporary appointment as Fisheries Inquiry Commissioner – but Black refused. When the State Trawling Industry was officially launched in June as an industrial undertaking under the Public Service of NSW, with its own records, accounts and procedures a manager was still not found, and in September 1915 the Cabinet decided to give Stead the position of general manager for the STI.

With Stead in full control of the enterprise, and free from what he called “undue departmental interference”, under his supervision the industry began to expand rapidly, especially in retail, fishing effort and the development of the State’s coastal fishery.

Initially the STI only sold fish in Sydney. Catches were sold directly to the public early in the morning at the languishing Municipal Fish Market, but it quickly became clear that this method was not practical. First, there was no appropriate display area and second the policy of selling directly to the public meant that up to 1200 people could be gathered waiting to buy fish by lot (one lot being 8-12 gurnards or 3 flathead) in a market that was only designed to house customers of agents and retailers, dealing mostly in baskets of fish. When there was a shortage of fish, or the trawlers had not returned yet, people would have to be turned away.

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388 SRNSW: STI; Report for Week ended 27 November 1915 [5/5441].
and after a while people become tired of the unpredictable method of sale. Occasionally when the trawlers were in Newcastle the catch was also sold directly from primitive slabs on the wharf as shown in Figure 4-4, but this method of sale was inefficient and time-consuming.

![Figure 4-4. An occasional fish sale at Newcastle, approximately late 1915. Source: SLNSW: David G. Stead; papers [ML MSS 5715 11(25)].](image)

In order to break the domination of market by private fish-agents and reduce the price of fish for consumers, in 1912 the Food Commission had recommended that the NSW Government provide the link between fishermen and consumers. Since the undertaking was created in order to provide cheap fish to the public it was a matter of principle that the STI did not use existing networks of fish-agents to distribute catch to retailers all over Sydney. Stead agreed with the common belief that agents and retailers overcharged consumers and underpaid fishermen, creating a market where fish was in unnecessarily short supply and costly. In a letter about the “outrageous profits by private fish dealers in Sydney”, Stead wrote “This greed which has been so marked in the history of private dealings in the Fishing Trade has

389 SRNSW: PSB; Inquiry in the State Trawling Industry 1916-17, Interview with George Frederick William Smithers, Inspector of Fisheries, 14 June 1916 [8/513.3].
been a very large factor indeed in preventing the people from getting fish which they needed and which was available [before the STI].”

To effectively and cheaply distribute large landings of fish early on it was decided that the STI should sell produce from the established Branch depots in Newcastle and Woolloomooloo, as well as directly to consumers from their own so-called retail depots, thereby keeping full control of all parts of the supply chain. The first State fish shop (No. 1 Retail Depot) was opened at 98 Oxford Street, Darlinghurst on 17 August by Minister Black. Shortly afterwards a second shop (the No. 2 Retail Depot) opened at 31 Pitt Street, Sydney (it was later transferred to 7 Pitt Street) on 21 September 1915. Premises on No. 5 Wharf, Woolloomooloo Bay were leased from the Sydney Harbour Trust and fitted with facilities to distribute and clean fish and also provided cold storage. It became the central distribution depot for all trawled (and later purchased fish). In November 1915 a second fisheries depot opened in Newcastle which could receive landings directly from the trawlers. Later that month a third shop opened at 244 King Street, Newtown (No 3 Retail Depot) and the forth shop on 5 January 1916 at the Corner of Hay and Castlereagh Street, Sydney (No 4 Retail Depot). Also in November the Central Depot was ready and became the headquarters of the fleet. As the industry grew the depot had to be expanded several times but still the conditions were cramped by late 1919. Until then the administrative or head offices of the STI were located in the Chief Secretary’s Building, in Macquarie Street, but they were moved to rented premise on George Street, and in 1920 to the Central Depot.

Initially the State fish shop not only sold trawled fish but also crabs, eggs, lobsters, oysters, prawns, rabbits, sausages and fish that had been smoked or cured. Rabbits were included in the assortment because they were another cheap alternative to mutton and beef. During the first year of operation (July 1915-June 1916) the trawlers landed 740 tons of marine fish, or nearly ten percent of all NSW captured fish available for consumers in the State during 1915 (in total 7,665 tons of NSW captured fish was sold through the metropolitan markets.

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390 SRNSW: STI: Letter from Stead, General Manager to Under Secretary, Chief Secretary’s Department, 3 December 1915 [5/5441.1].
391 Old photos place the no 5 Wharf and its now demolished buildings at Cowper Wharf Road on the west side of the Finger Wharf, on the site today occupied by Harry’s Cafe de Wheels.
392 CFRC Library: Chief Secretary’s Department: F. J. Herlihy; NSW State Trawling Industry Historical Records 1915-1923, September 1927.
and large country centres in 1915). The trawled fish sold well to private consumers and the ready public demand for fish made the State Fish Shops look like a commercial success: In memos from the end of 1915 Stead boasted that he could sell fish 50 to 100 percent and sometime 400 percent lower than the private fish shops and still make a profit, and that “The sales at that shop are only limited by our capacity to handle the customers.”

**Plans for expanding the State Trawling Industry**

By November 1915 Stead felt that the undertaking was doing so well that the time was ready for further expanding the enterprise. His expectations of the market for fish were high, based upon the first five months of operation, and he firmly believed that the demand for fish by consumers was unsatisfied and increasing. Stead was also encouraged by the large catches obtained by the trawlers; that result seemed to support the long held notion that the NSW continental shelf had marine resources that could rival those found in the North Sea, and could sustain a much more intensive trawl fishery.

Stead’s original proposal for the expansion of the STI was ambitious: An increase of the trawling fleet with six locally built steam trawlers, a purse seine vessel for surface fishing, a steam fish carrier and the construction of series of rural fish receiving depots with cold storage at Cape Hawke (Wallis Lake), Manning River, Tea Gardens and Nelson’s Bay. The idea behind the rural depots, situated in the main fishing districts, was that they would act as a collection and storage point for fish sold to the STI by local inshore fishermen before they later could be sailed to Sydney or Newcastle and sold in the State owned fish shops. The proposal was in line with the 1912 Royal Commission’s recommendations on how to develop the State’s inshore fisheries. By providing cold storage, efficient transport to the urban markets and cutting out the middleman, it was hoped that the quality and supply of fish would improve, that small-scale fishermen would benefit economically, and the coastal fishery improve.

Stead estimated that the strategic expansion described above would cost about £112,000. His arguments for this ambitious investment program were based upon a claim that the

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394 SRNSW: STI: Letter from General Manager to Under Secretary, Chief Secretary’s Department, 3 December 1915 [5/5441.1].
395 SRNSW: STI; Report for week ended 16 October 1915 [5/5441.1].
undertaking had shown an increasing profit for up to 500 percent per month since June 1915 and that demand was greater than supply. He also estimated that when the proposed investments were in place the industry could make over of £1,000,000 a year in fish sales.\textsuperscript{396} His proposal was received favourably by the NSW Government and on 11 November 1915 an order for four steam trawlers was placed at the NSW Government Dockyard at Newcastle. Their design was based upon that of \textit{Brolga} but with refrigerated storage rooms, something that was not on the British built trawlers. There were several reasons for using the Government’s own shipyard; because of the war vessels could not be obtained from England and it was in the Government’s interest to support the recently established State owned shipyard\textsuperscript{397} and develop the industrial expertise needed to maintain and develop a sea-fishing fleet. The Government Dockyard had no experience in constructing trawlers and initially estimated that the delivery price for the four vessels would be £50,000, somewhat more expensive than the British-built trawlers. Due to the war the building was seriously delayed from the beginning, mainly because it proved difficult to get the necessary materials and, as a consequence, the keel of the first vessel \textit{Goonambee}, was not laid before 19 August 1916. The keels of the three other trawlers, \textit{Gooeangai}, \textit{Dureenbee} and \textit{Dubbiu}\textsuperscript{398} were laid in the next months, but it was not before 5 May 1919 that the first trawler, \textit{Goonambee}, was launched from the Dockyard. The other trawlers were launched shortly afterwards: \textit{Gorangai} on 24 July 1919, \textit{Dubbui} on 19 August 1919, and \textit{Dureenbee} on 13 September 1919.\textsuperscript{399} They all commenced fishing between June and October the same year, nearly doubling the supply of trawl fish.

Further expansion was initiated in November 1916, when a large wooden fishing vessel was commissioned by the STI to expand the industry into surface fishing and conduct fisheries investigations. The Fisheries Department did not have an ocean-going research vessel and the trawlers were not equipped for scientific research, so to conduct fisheries research the STI needed to add a more versatile vessel to the fleet. From a business perspective an investment

\textsuperscript{396}SRNSW: STI; The success of the State Trawling Industry and Proposal for its Extension, November 1915 [5/5441 1].
\textsuperscript{397}The NSW Government Shipyard was established in 1913.
\textsuperscript{398}As rest of the fleet the ships was named after native birds in the Kamilaroi language. \textit{Goonambee} meant ‘Wood Duck’. \textit{Gooeangai}, meant ‘Black Duck’, \textit{Dureenbee} meant ‘Grebe’ or ‘Dabchick’ and \textit{Dubbiu} meant ‘Whistling Duck’
\textsuperscript{399}Total price of the three British trawlers when fitted for trawling in May 1915 was £38,540. See CFRC Library: Chief Secretary’s Department: F. J. Herlihy; NSW State Trawling Industry Historical Records 1915-1923, September 1927, p. 3-6.
in a research vessel hardly seemed a key activity of the STI and it represented a rather large financial commitment given that at the time the STI had only begun to set in motions its expansion plans and had still to display revenue. However, in view of the STI’s position as a State-funded industry entrepreneur with a mission to provide social benefits in the form of cheap fish, financing fisheries research was in line with the company’s mission. The dual purpose of the vessel was an attempt to make the research zero-cost so the crew could also conduct commercial fishing. The commission of the research/fishing vessel illustrate how blurred the lines were between the STI as a commercial industry and an instrument of scientific based development. Frawley has noted that this form of scientific state developmentalism was characteristic of public resource exploitation from about the late nineteenth century to mid twentieth century.  

The contract to construct the combined fishing and research vessel Bar-en-mul was given to the private dockyard Messrs. T.F. Morrison & Sinclair in Balmain, which finished the work in time according to their agreement with the STI. However the instalment of machinery, which was done by the Government Dockyard, was seriously delayed and with excessive costs. To reduce expenses SS Bar-en-mul was sold upon completion to the Queensland Government as a fisheries research vessel in April 1919.

In the plan approved by the Government seven coastal fish receiving depots were envisaged, but the process of finding suitable locations was slow, and later when Stead’s economic prospects for the industry proved too optimistic, the scheme was put on hold. In the end only four receiving depots were erected. The first to begin operation in October 1917 was the Pindimar Depot at Port Stephen and then the Maclean Depot opened in February 1918. The small depot at Wandandian was, after lengthy negotiations, purchased from a private company and did not commence business before August 1919. The final rural fish receiving......

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400 Frawley, K., 1994.
401 Meaning ‘Black Swan’
402 CFRC Library: Chief Secretary’s Department: F. J. Herlihy; NSW State Trawling Industry Historical Records 1915-1923, September 1927. Inspired by the NSW example the Queensland Government was trying to establish a deep sea fishing industry, but despite large efforts the fishery with Bar-ea-mull was unsuccessful and proved costly for the Government. The vessel was laid up from December 1920 to end of 1921. During January and February 1922 new attempts on locating resources for a sea fishing industry was made with the help of Commodore C. R. Stuart from NSW State Trawling Industry, but the trial was without success. After that Bar-ea-mull was sold to R.W. Miller and Co., Sydney.
depot in Eden did not begin operations before April 1920. Each depot was fitted with the necessary refrigeration rooms for storing fish and ice-making facilities for transportation.

The strategy behind creating a network of coastal collecting points for fish caught by local small scale fishermen was twofold. The first reason was to stabilise and improve the availability of fish on the urban market, as well as provide greater variety for the consumer. Some species were only brought in by the trawlers in small quantities and the public were reluctant to accept alternatives to their preferred choice. At other times the trawlers failed to land enough of the most desired species (flathead and John Dory) but could also overflow the market when a particular species, such as gurnard, was in season and sometimes caught in large quantities. The second reason for creating depots went beyond accommodating the market and was an act of social development by the State, both to improve the economic situation of the small scale inshore fishermen and to develop the industry. By cutting out the fish agents and allowing the fishermen to sell their fresh catch directly to a local state depot, the fishermen were saved the cost of freight, boxes, ice, agent-fees and the risk of their catch deteriorating or being mishandled on its way to the market. All of which eliminated the risk of the catch been sold at too low a price at market. At the depots the fishermen received their payments based upon the weight and the current market value of the fish. Payment was immediately upon delivery and often in cash, very different from the agents systems of paying accordingly to what the individual batch sold for. The idea of improving the conditions for the inshore fishermen through market reforms, and later using market regulations to managing fisheries, became a prominent feature of the NSW Fisheries Branch management strategy (See chapter 7).

For distribution the fish was iced and packed in boxes at the depots before being shipped to Sydney or Newcastle for sale in the State fish shops. Shipping was mostly done by private shipping companies or, in the case of the Wandandian Depot, by rail and motor vehicle. The STI had foreseen the need for a transport vessel and in March 1916 had commissioned a wooden fish carrier, constructed with a shallow keel that enabled it to navigate shallow estuaries to service the coastal depots. The construction of the hull was entrusted to the

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403 SRNSW: STI; Report for week ended 24 June 1916 [5/5441.2].
404 CFRC Library: Chief Secretary’s Department: F. J. Herlihy; NSW State Trawling Industry Historical Records 1915-1923, September 1927, pp. 3-6.
405 SRNSW: STI; Report for week ended 25 March 1916 [5/5441.2].
private Morrison and Sinclair’s Dockyard. The keel was laid in September 1916 and the
Collibio was launched according to the plans on 23 February 1917. Minister Black had
decided that the vessel should be powered by a semi-diesel Skandia oil engine with 2x200
horsepower, but when it became clear that such a motor could not be delivered by the
company’s agent it was decided instead to install a steam engine, and in July 1917 the
Colliboi was towed to the NSW Government Shipyard to have a steam engine fitted. Due to
delays similar to those that were experienced in the case of the trawlers, Colliboi was not
completed until 24 January 1919 and then had to return to the Dockyard a Walsh Island
shortly afterwards on 7 February because of engine trouble. It was then not ready for service
until 20 August 1919.406 By then the final price of the vessel was £20,625 in contrast to the
original estimate of £15,730,407 mainly due to expensive and lengthy alterations and fittings
at the Government Dockyard. From the beginning the ship’s engine under-performed and over
the next few years Colliboi was often laid up for repair, causing great expense to the STI. The
ship was reported to have a maximum speed of only seven knots only when empty in
favourable weather conditions with a following wind, without using steam for refrigerating,
with extensive feeding and maximum strain to the motor. Or as Stead sarcastically wrote to
the Dockyard after the ship’s first voyages: “The “Colliboi” had a trial trip and broke all
records on the coast for slowness”.408

As illustrated above the quality of the vessels built by the Government Dockyard for the STI
was generally lower and significantly more expensive than expected. Fully fitted and ready
for trawling the final cost for all four trawlers was £94,900, or more than double what was
spent on the similar British vessels.409 Experiences with private dockyards showed that they
were more reliable and cost-effective that the Government Dockyards, but Government
policy forced the STI to use State industries whenever possible. The expansion of the STI can
be understood both in terms of statist development and Labor policy of welfare-statism. The
founding and expansion of the STI was a typical act of state development, where the NSW

CFRC Library: Chief Secretary’s Department; F. J. Herlihy: NSW State Trawling Industry Historical Records 1915-1923, September 1927, p. 8.
408 Total price of the British trawlers fitted for trawling in May 1915 was £38,540 See CFRC Library: Chief Secretary’s Department; F. J. Herlihy: NSW State Trawling Industry Historical Records 1915-1923, September 1927, pp. 3-6.
Government undertook development work that was too large or too risky for private enterprises. The STI also served a Labor policy of increased social welfare, by providing the public with fish at lower prices and providing the small scale fishermen with improved methods of marketing their catches. Because the STI was organised as a commercial industry, its many functions was a strain on its finances.

**Landings and sales of trawled fish**

In the first year of operation the STI landed 740 tons of fish but due to the long delivery time of the trawlers, landing did not increase significantly before the second half of 1919 (see Figure 4-5) and, to make matters worse, the STI’s three original steam trawlers was requisitioned by the Admiralty for mine sweeping during parts of 1917 and 1918.

Sea mines posed a serious threat to shipping in time of war and had to be removed to allow safe passage for goods and military equipment. Steam trawlers were ideal for this purpose as they were built for towing and sailing in all types of weather and had highly skilled crews. The British Admiralty had realised this and in 1911 had already established the Trawl Section of the Royal Naval Reserve with some of the leading British steam trawl owners. In case of war the Admiralty could requisition any of the listed vessels. During the time of service the owner would be compensated a fixed rate according to gross tonnage, nominal horsepower and the vessels age. By the outbreak of First World War in August 1914, 146 steam trawlers were part of the reserve.

During the First World War the NSW State trawlers were requisitioned under similar terms as their British colleges. Originally Stead tried to negotiate a rate of £30 per diem; later he lowered it to £25, based upon his estimates of earning per trawler. However the Admiralty was only willing to pay £ 15/15 per diem and Stead had to accept the offered payment. The official report on the STI from 1927 claimed that the rate received had not fully compensated the industry for not having a full fishing fleet and had caused the STI to stagnate. Between March 1917 and November 1918 the trawlers were requisitioned three times for up to six months, or the equivalent of one trawler being permanently engaged in mine sweeping during

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412 NAA: Navy Offices [MP 472/MP472/1/0 3/19/1172].
the whole period. Since the main part of the mine sweeping activity took place in the financial year 1917/18 the catch landings for this year were only 862 tons, compared to 1,373 tons in 1918/19 when the trawlers were less engaged. In 1919 the four locally built trawlers began fishing, and the catches increased to a level of about 2,500 tons per year for the rest of the period. The low catch during 1922/23 was because STI ceased fishing in February 1923, eight months into the financial year.

![Graph of Trawl landings and Purchased fish](image)

*Figure 4-5. Total landings of fish (un-gutted) from the State Trawling Industry in tons and purchased fish from the Coastal Receiving Depots and Market, July 1915-February 1923, Source: Herlihy, F., NSW State Trawling Industry - Historical Records 1915-1923, 1927, and SRNSW: Parliamentary Papers; State Industry Undertakings, Balance Sheets, Trading Accounts (1916-1921)*

It is difficult to give a conclusive explanation for the first two years of low levels of landings. Low levels of landings can be expected in the early stages of operation, until sufficient knowledge about the location of fishing grounds and movement of species is established. The lack of knowledge may have caused the first two year’s modest landings but natural fluctuation in fish stocks and poor recording of landings might have contributed.

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413 CFRC Library: Chief Secretary’s Department: F. J. Herlihy: NSW State Trawling Industry Historical Records 1915-1923, September 1927, p. 17.
By 1920 a system of fishing and distribution was well established. In the beginning the trawlers was at sea from one to four days without a fixed schedule of landing but as the fleet expanded it was attempted to schedule voyages of five to six days to maximised catches. In reality the trawlers were often at sea for only three to four days as voyages had to be cut short to maintain a steady supply to the market.

The main fishing grounds were located off Botany Head, Green Cape and Barrenjoey. During fishing the trawl was towed for about four hours, after which the catch was hauled in. Non-commercial species and undersized fish were thrown overboard and the fish transported below deck to be stored with ice. Upon returning to port at No. 5 Wharf, Woolloomooloo Bay, the fish was landed un-gutted from the trawlers by the depot discharging staff that transferred the fish from baskets into boxes on the wharf. The boxes were passed onto the cleaners, who gutted and cleaned the fish, before the fish was transferred into the cold store at the Central Depot. The process was occasionally delayed because there was only facility for unloading one trawler at a time on the central depot. Fish from the coastal receiving depots was also sent to the central depot.

From the central depot fish would be sent to the fish shops each day by specially designed lorries. The shops had facilities for storing fish on ice (the ice was also delivered by the central depot) and a selection of the fish was showed in a glass-display box, often artificially cooled, so the costumers could view the offered products. As the fishing effort increased more shops were opened in Sydney City and suburbs. In October 1919 country selling depots in Newcastle, Maitland, Lithgow, Orange and Goulburn were established, but the STI did not have resources to ship fish that far, and had to rely on sending the fish by railroad as normal cargo. As a consequence shipping to the country fish shops was both difficult and irregular. By 1920 there were twelve retail depots and five country selling depots. During the STI’s existence fish was sold from a total of twenty-five different state owned shops at various times.

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414 SRNSW: PSB; Inquiry into the State Trawling Industry 1916-17. Interview of Charles Holm, Skipper of State Trawler Brolga, 14 June 1916 [8/513.3].
417 A complete list of STI assets, including Fish Shops are found in appendix 1.
Over time a small market developed for fish sold directly from the central depot to NSW Government institutions. The institutions included mental hospitals, asylums and Commonwealth Military Forces, but this trade it was never a large part of the business.

As trawl landings and fish from the coastal depots increased, the shop had difficulty in clearing out the stock at the central depot, especially at times when catches were large or purchase was low. To reduce stock and free storage room, the STI had to use alternative selling methods. Most common was sale in large bulk to private dealers and fish-agents and, in some instances, large quantities of fish was sent to country towns for special sale. Between 21 and 40 percent of haul was annually sold outside the shops; during the last year of operation state shops sold as little as 53 percent of all fish. Both methods of sale were economically unsatisfactory and failed to cover the STI’s expenses. Private dealers were only interested in popular species and expected a wholesale price, but the retail price was already kept deliberately low to move stock and encourage fish-eating habits, since it was the marketing strategy of the STI to provide large quantities of fish to the public as a cheaper alternative to meat.

Before the STI was established only a very small demand existed for fish as a primary product, chiefly from consumers who due to their religious beliefs preferred fish, or from the few consumers who viewed fish as a delicacy. Fish products also found a market as a diet for sick people who, due to a lack of appetite, could better tolerate fish than meat. Eating fish was so ill appreciated that it was postulated in the early days of the enterprise that even the poorest public institution in Sydney would only accept fish once a week, even if it was given it for free by the STI. The consumers’ lack of appreciation for fish and the market’s failure in recognising fish as an attractive product in its own right, severely affected the retail prices that could be obtained for fish. In 1920 it was estimated that the average price of 6.2d per lb

418 CFRC Library: Chief Secretary’s Department; F. J. Herlihy: NSW State Trawling Industry Historical Records 1915-1923, September 1927, p. 19.
419 Herlihy CFRC Library: Chief Secretary’s Department; F. J. Herlihy: NSW State Trawling Industry Historical Records 1915-1923, September 1927, pp. 21-23.
was about what the public was willing to pay for fish as a substitute for meat, a retail price that most of the species sold in the State shops were well below.

During the first months of the STI’s operation, Stead deliberately priced the STI’s fish at an average of 5 d per lb under the current market price, to endorse fish eating habits. Over the years he repeatedly had to increase prices to try to cover cost (see Table 4-1). By April 1916 Stead had to increase fish prices on account of the increased cost of supplies and gear due to the war, although the new prices were still well below those in private shops. The price for the most common species like flathead, leatherjacket and gurnard increased from 5d to 5½ d, 4d to 5 d and 3 d to 3½d per lb, while the price for species that the STI had to buy from coastal fishermen, such as blackfish and snapper was higher, both of which increased from 8 d to 9d per lb. Later Stead continued to keep prices low to stimulate trade. During 1918-19 prices had further increased so that flathead was sold for an average of 7.73d per lb, leatherjacket (without heads) for 8d per lb, and gurnard 5d per lb. By 1922 the prices for trawled fish had been reduced again, while prized fish like snapper had increased in price. It is not possible to compare the price trend found in the State shops with the ones in private shops, since no such data exist, but it stands to reason that the private shops generally charged higher than the STI.

During the war and immediate post-war period there was a steep increase in the cost of living due to inflation. From 1914 to 1918 prices had increased by 34 percent and jumped to 96 percent in 1920, nearly doubling the cost of living in six years; from 1920 to 1922 the average cost fell slightly. The price of fish did rise at a similar rate until 1919, but instead of continuing the upward trend the price of fish dropped slightly in the post-war period, so in fact trawled fish was relatively cheaper in 1922 than in 1915.

423 SRNSW: PSB; Inquiry into the State Trawling Industry 1916-17. Interview of David George Stead General Manager STI 10 July 1916 and 22 January 1917 [8/513.3].
424 SRNSW:STI; Report for week ending 8 April 1916 [5/5441].
Maritime historians such as Tull, have suggested that the relative (high) price of fish was hampering the development of an Australian fishing industry. In the case of the STI the problems seem more to have been a cultural reluctance to eat fish, since the STI only could sell large quantities of fish if the price was very low.

The other source of income Stead had originally envisioned, offal and by-catch turned into fishmeal, was never realised; one problem being that there was no obvious market for the products, and the plant bought in England was therefore never put to use.

**The last years, 1920-1923**

By 1919 the optimism that had characterised the expectation for the STI receded and the underlying morass of financial chaos, incompetent management, political interference and unrealistic growth prospects began to surface.

As early as late 1915 Stead’s management had come under scrutiny. On the 29 November 1915 J.S. Strahan, an accomplished accountant who had worked at that capacity at the State Brick Works, was appointed to the position of Account and Assistant Manager of the STI to sort out the administration and accounts of the industry. In December 1915 Strahan produced a report on the accounts of the STI in which he strongly criticised its work, methods and

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management, blaming Stead as the undertaking’s general manager for most of the misery. Strahan stated that there was a lack of supervision and qualified staff (many had enlisted for front-service). Most of the account books were inadequately kept, important books and papers were strewn about the office in disorder, and there were no records of management decisions. The clerks at the head offices were spending up to 80 percent of their time on matters not essential to the business. Strahan concluded his report by noting: “I regret to state that in my 17 year’s commercial experience I have not met with such a display of carelessness and incompetence as disclosed during my investigation of the past four weeks” 428. Minister Black tried to distance himself from the undertaking while Stead retaliated by complaining that Strahan lacked sympathy with the objective of the business and showed neither support for nor cooperation with the STI. Finally on 5 April 1916 Stead asked to be relieved of his service. 429 Strahan responded by requesting an inquiry conducted by the Public Service Board (PSB) into the allegations laid against him and the case was referred to the PSB on 29 April 1916. Strahan had by then resigned from the STI.

From Stead’s point of view the matter had been further aggravated by the publishing of a Report on the STI on 27 March 1916 by the Department of Audit’s Industrial Undertaking Branch, in which the Senior Examiner, Mr Gibben, largely confirmed Strahan’s assessment of the administration situation and testified: “I might state that in the course of auditing the various Industrial Undertakings, I have never experienced a more unsatisfactory state of accounts” 430. In the report Gibben described how his first to attempts to audit the book in October and November 1915 failed due to their chaotic state. None of the books had been up to date and the accounts were not balanced. In the end Strahan, several officers from the Department of Audit and Gibben had to take over all the accounts and virtually rewrite them.

The PSB inquiry into the general management of the STI began in May 1916 and continued until April 1917. In course of the investigation 17 witnesses were interviewed, exposing the chaotic and sometime haphazard way the STI operated. Stead was not well-disposed towards the inquiry which he considered meddlesome and he let his displeasure be known on several occasions.

428 SRNSW: PSB; Inquiry into the State Trawling Industry 1916-17. Letter from Strahan, accountant State Trawling Industry Undertaking to Chairman, Public Service Board 1 May 1916 [8/513.3].
429 SRNSW: PSB; Inquiry into the State Trawling Industry 1916-17 Letter from Stead to Minister 5 April 1916 [8/513.3].
430 SRNWS: PSB; Inquiry into the State Trawling Industry 1916-17, Department of Audit, Industrial Undertaking branch. Report on State Trawling Industry 27 March 1916 [8/513.3].
occasions. Upon being summoned by PSB to give evidence Stead wrote that he hoped that the inquiry would take into consideration that due to the nature of his work it was exceedingly inconvenient for him to be away from his offices for very long time, and schedule the meeting according to that.\textsuperscript{431} When questioned about the problems identified by Gibben Stead said:

\textbf{Witness [Stead]:} It is very tiresome, but as you went through Mr. Gibben’s report seriatim, I will have to do the same.

\textbf{Chairman:} You need not touch on the trivial matters. --- [to which Stead replies]: Most of them are trivial matters to me, but I cannot tell if you think they are also trivial.

After finishing its investigation in April 1917 the PSB concluded that the criticisms of the STI were justified, but there were special factors that to some extent minimised the criticism: It had been impossible in the early stages to predict the industry’s development and therefore to put in place the proper measures and “the unexpected and rapid growth was largely the result of Ministerial policy”. Stead must have been relieved to learn that the PSB did not hold him responsible for the accounting problems. The PSB found, however, that Strahan had misused his position to criticise the STI instead of correcting and removing disabilities within the STI. Surprisingly the PSB continue to praise Stead’s effort by declaring:

\textbf{While Mr. Stead has not had the opportunity of becoming a business man in the commercial sense, the Board are convinced that he has worked with ardour and enthusiasm and with the interests of the Industry always before him, and that he has accomplished a very great deal in the face of great difficulties, in connection with the establishment of the industry.}\textsuperscript{432}

What could potentially have been a stumbling block for the State Trawling Industry and a public embarrassment for Stead had instead turned into a seal of approval by the powerful PSB. The Department of Audit however upheld its severe criticism, and would in its annual audit the following years repeatedly criticise the management’s inability to control expenses and despite frequent reassuring of the opposite, continued to run at a loss. The relationship between the STI and the Department of Audit remained strained throughout the STI’s

\textsuperscript{431} SRNSW: PSB; Inquiry into the State Trawling Industry 1916-17. Communication from Stead to Public Service Board, 9 May 1916 [8/513.3]

\textsuperscript{432} SRNSW: PSB; Inquiry into the State Trawling Industry 1916-17, Conclusion of enquiry by Public Service Board 10 April 1917 [8/513.3].
existence and was not improved by the open hostility between Stead and the Auditor General F.A. Coghlan, who had been Under Secretary of Chief Secretary’s Department when Stead first proposed the trawling scheme. Stead for his part maintained that the criticism was a result of Coghlan opposing the STI based upon a personal dislike of Stead.\footnote{SRNSW: PSB; Inquiry into the State Trawling Industry 1916-17, Statement of the Auditor Genera F. A. Coghlan, 12 February 1917 [8/513.3]. and SRNSW: Parliamentary Papers; State Industry Undertakings, Balance Sheets, Trading Accounts re. Year end 30 June 1920, p. VIII.}

Intrigues aside, the fact was that the STI was running at a loss, which increased annually without showing signs of improving. As shown in Figure 4-6 the annual net loss increased yearly from £11,065 in 1915/16 to £20,537 in 1918/19. By the end of the financial year ending June 1920 the industry had reached an astonishing annually loss of £68,476. The loss was due to several factors. Overall the development of the industry had been more costly than anticipated, and without financial reserves any investments had to be on loan from various Government accounts. At the same time the STI was unable to cover basic production costs, sliding the industry further into debt.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{net_loss.png}
\end{figure}

In July 1920 Stead left the STI and the new manager Augustus Sommergreene financially reconstructed the industry. All inoperative or unproductive capital (debt) was charged to the previous management and written off, while all capital invested in the production system and
interests of debt was charged to the new management. The financial reconstruction was done to allow the new management a fair chance of making the STI commercially sound business, without being burdened with Stead’s economic failures.\footnote{SRNSW: Parliamentary Papers; State Industry Undertakings, Balance Sheets, Trading Accounts re. Year end 30 June 1921, p. 39.}

In an attempt to bring the rampant expenses under control and turn the industry around, a cost cutting program was enforced in 1920/1921, which temporarily reduced losses. Unfortunately the new management was not able to continue the progress and during the final two years annual net loss was growing.\footnote{Financial year 1922-23 was eight months only.}

To understand the source of loss Figure 4-7 gives an overview of which activities were most costly and displays them in percentages of earnings. Due to changes in accounting practice the cost of administration from 1921/1922 and 1922/1923 is not specified, but attributed to other activities.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure4-7}
\caption{Percentage of costs of expenses to earnings, Source: SRNSW: Parliamentary Papers; State Industry Undertakings, Balance Sheets, Trading Accounts (1916-1923)}
\end{figure}

The largest source of loss in the STI was running the trawling fleet and the purchase of fish from the coastal depots. Since the purchase of fish had begun in 1917 between 370 and 420
tons were yearly forwarded to the central depot. In 1918/1919 this amounted to about one-fifth of the total weight of fish handled by the STI,\textsuperscript{436} but at a greater share of costs. The coastal receiving depots had been costly to build and were expensive to run, and it did not improve matters that the local fishermen continued to dispatch their prime fish to private agents for sale at the Sydney or Newcastle markets to get maximum price. They only sold their catch to the STI in case of excess supply of fish on the market, or their catch consisted of commercially less attractive species, successfully exploiting the competition to maximise their profit. When more trawlers were employed in 1919 the Fish Shop (retail depots) became unable to move stock quick enough from the Central Depot and the STI was more and more forced to rely on alternative sale methods, which often proved unable to cover expenses. After the reorganisation in June 1920, the new management was able to reduce some of the sales costs, by appointing a private fish agent to sell surplus catches through the Municipal Fish Market.

The cost of administration did slowly decrease after 1916/1917, and is likely to have remained fairly low after 1921.

The delivery of four extra trawlers in 1919 did not provide the expected economy of scale, but instead they contributed to the deteriorating the financial situation. It was partly due to circumstances beyond the control of the STI. First, as explained previously, the trawlers from the Government Dockyard were more expensive than expected and of a quality inferior to the British vessels. While the British trawlers on average spent 36 percentage of their time in port, the locally built trawlers spent 47 percent\textsuperscript{437} because they needed more frequent repair. Considerable time was lost in port no matter the origin of the vessels. Limited docking facilities and difficulty in discharging more than one trawler at once played a role, but the main factor was the terms of the industrial agreement with crews. While it was the custom in the British steam trawling industry to pay the crew a share of the value of the catch or an award on top of a minimum wage\textsuperscript{438}, this system it was never (fully) implemented in the STI. A system of ‘basket money’ – a reward based upon catch, was not accepted by the crew until

\textsuperscript{436} See Figure 4-5.
\textsuperscript{438} Robison, R., 1996, pp. 115-118.
nearly the end of the STI’s existence and then only by the officers. Unlike in the United Kingdom conditions of all employment on the trawlers were governed by industrial agreements, complicated further by the fact that the crew members were organised in different unions. The power of the unions was apparent from early on; the British steam trawlers usually carried a crew of 10, but when the first three of the STI trawlers arrived in Port Jackson in 1915, the unions successfully pressed to increase the crew to 12 persons (one skipper, one fishing mate, one third-hand, three fishermen, two engineers, three firemen and one cook).\(^{439}\) Later Stead would complain that one of the reasons it was difficult to find skilled seamen was that their union was strong and dominated the crew. Even with about 130 seamen on the payroll it was hard to get a last minute replacement, in those cases the union would allow the STI to hire non-members.\(^{440}\) The largest drawback in keeping the trawlers at sea was the application of an eight hour working day and enforcement of a weekly day off and payment for overtime. While the eight-hour day had been a reality in most of the building trades in NSW since the 1860s\(^{441}\) it was not before the passing of the NSW Eight Hours Act in 1916 that such working terms were granted to all workers in the State. In June the same year the standard of eight-hours (with the exception of trawler crew) and a 48-hour working week was implemented in all levels of the STI.\(^{442}\) In March 1917 it was further specified that the day-off for the crew was counted as twenty-four hours from midnight to midnight.\(^ {443}\) It is easily imagined how impractical such agreements were for the STI; the opportunistic nature of the fishery caused irregular arrival times at port and because of the work-agreements more time than necessary was lost in port waiting for departure.

From the beginning the STI was subject to frequent (but short) strikes which also affected all parts of the undertaking. The largest to affect the STI was the ‘great strike’ of 1917, which began in the Randwick workshop of the Railways and Tramways Department in August 1917 and quickly spread to other parts of the public service. At its peak 76,000 public servants took part in the strike and it lasted for eighty-two days.\(^ {444}\) To continue operation during strikes, the

\(^{439}\) CFRC Library: Chief Secretary’s Department: F. J. Herlihy: NSW State Trawling Industry Historical Records 1915-1923, September 1927, p.15.

\(^{440}\) SRNSW: STI; Report for week ended 15 January 1916 [5/5441.2].

\(^{441}\) Kingston, B., 2006, p. 60.

\(^{442}\) SRNSW: STI; Report for week ended 10 June 1916 [5/5441.2].


STI had to use voluntary workers at times and as the picture shows below, even the General Manager had to lend a hand to secure supplies (although it probably was mostly for publicity (see Figure 4-8).

Figure 4-8. Volunteer fish-cleaners at Woolloomooloo during a strike, David G. Stead in the middle with cap and apron, 13 April 1919. Source: SLNSW: David Stead; [ML MSS 5715 11(25].

New inquiries into the State Trawling Industry

In early 1920 the STI became caught up in a political debate related to allegations that the public service was a major source of the State’s financial problems. In August 1917 George Mason Allard, an accountant and lecturer at University of Sydney, was given the prestigious and daunting job of leading an inquiry into the law, administration, conditions and working of the public service in NSW. The first report of the Royal Commission into the Public Service of NSW, dealing with the administration of the Public Service Act was published in November 1918, and other reports followed in the following years. In his reports Allard found many flaws with the public service but blamed it on the Public Service Board’s neglect of its duties under the Public Service Act. He also acknowledged that public administration
was subject to objectives other than the purely financial, which was generally the case in the private sector, and therefore could not be expected to perform accordingly.\textsuperscript{445}

In April 1920 Allard produced a report on the STI in which he recognised the truth of much of the previous year’s criticism of the undertaking and the loss sustained, but took an essentially sympathetic view of the industry based upon the many difficulties it had faced, the scope of the undertaking (cheap fish for the public) and the steep learning curve managers had been subject to. In the report he put forward the position that the losses were not the result of ‘faulty management’ but ‘faulty developmental policy’ derived from ideological and political objectives instead of commercial.\textsuperscript{446} It has likewise been argued by Walker that State driven developmental schemers often were driven more by political enthusiasm for development than sound economic and ecological principles.\textsuperscript{447} In the case of the STI there was no conflict in the mind of the managers between development and sound ecological practices because it was believed that marine resources were practically inexhaustible.

Allard disagrees with the Department of Audit’s criticism of the STI’s management which he found too harsh and without an understating of the practical workings of the industry. Allard also investigated the possibility of the STI becoming a financially effective enterprise and thought it possible if there was a change of policy and if unprofitable activities (such as the coastal receiving depots) were eliminated. He recommended that the industry focused on trawled fish, charging prices that covered actual costs instead of focusing on keeping prices low, and that sufficient cool storage was build at the central depot to accommodate supply and demand. To facilitate the necessary changes Allard advised that it was urgent that Stead was relieved from his position as General Manager and a new manager with more commercial experience and people skills was appointed.\textsuperscript{448} However he gave Stead considerable credit for his efforts in establishing the new fishing industry although he found him lacking business acumen. As Allard wrote:

\begin{quote}
One could not proceed very far in the course of investigation into the undertaking before realising the amount of labour, the scientific
\end{quote}

\textsuperscript{445}Taylor, P., 2006, pp. 47-49.
\textsuperscript{446}Royal Commission to Inquire into the Public Service of New South Wales: “Fourth sectional report”, 1920, p. 22.
\textsuperscript{447}Walker, K., 1994.
\textsuperscript{448}Royal Commission to Inquire into the Public Service of New South Wales: “Fourth sectional report”, 1920, pp. 47-49.
knowledge, the power of acquiring technical and practical knowledge, the enthusiasm and love of the work which Mr. Stead has brought to bear upon the industry from its inception, even in most disheartening circumstances,… Mr. Stead, however, is first and foremost, a scientific man – a naturalist – and through evidencing much shrewdness, he has not throughout exhibited the possession of the business sense well developed.\footnote{Royal Commission to Inquire into the Public Service of New South Wales: “Fourth sectional report”, 1920, p. 38.}

He continued to suggest that Stead’s skills were better used back in the Fisheries Department and as a consultant to the STI.

The publication of the findings of the Royal Commission coincided with the first of several change of governments. In the 1920 election Holman lost his seat and his Cabinet was replaced on 12 April 1920, with another Labor government led by John Storey. Storey fell ill and died suddenly in October 1921. James Dooley, who was Colonial Secretary at the time, was elected new Premier and continued to lead the Government until 13 April 1922. After the March 1922 election GW Fuller, who represented the Nationalists, became new premier, a position he kept until 17 June 1925. Fuller had previously held the office for seven hours on 20 December 1920 when, as leader of the opposition he successful had challenged the Government’s taxation policy. The new Labor Government, as well as the succeeding Nationalist government, was eager to make saving in the public service since State finances were tight after the war.\footnote{Tyler, P., 2006, p. 68-71.} The STI with its great losses was an obvious candidate for cost cutting.

During his first month-and-a-half in office the new Chief Secretary James Dooley conducted his own internal investigations of the STI and Stead’s (mis-)management of it in order to decide the best course of action. Stead must have felt the ground burning under his feet, because on 22 May 1920 he wrote to the Under Secretary of the Chief Secretary’s Department that he was “feeling very run down … and would be very glad for a little respite”.\footnote{SRNSW: STI; Unmarked bundle [5/5365.6].} But not one to sell himself short he two days later he wrote again to suggest that

\begin{itemize}
\item Privately Stead had had a trying couple of years. In 1917 his father in law, Frederick John Gibbins died and the Stead family had to vacant the mansion he had provided them with on Lydham Hill and relocate to more modest house in Watsons Bay. In 1919 he became romantically involved with a much younger woman with he had med
\end{itemize}
the day-to-day management of the STI was given to someone else and given his vast knowledge about international fisheries administration, legislation, culture, conservation and commercial fisheries he was promoted to a position with a ‘wider scope’ expecting “that such an alteration as proposed would carry with it a higher status and increased emoluments”. It is likely that Stead again was hinting at becoming in charge of the NSW Fisheries Department, especially since he expected the appointment to be an advancement from his position as director and not a sideways promotion.

Chief Secretary Dooley was hard pressed to find a way of improving the STI’s financial situation and the results of his investigation left him thoroughly unimpressed by Stead’s management skills and his lack of suggestions on how the industry could recover. In his final report of 31 May Dooley stated that:

> My investigations in the State Trawling Industry force me to the conclusion that there is a total lack of anything resembling business management or organisation in the Industry. I believe that the Industry may be made payable one with proper reorganisation. Whatever his qualifications may be, Mr. Stead, the General Manager, is revealed as hopelessly incompetent as a business man.

Dooley’s annoyance with Stead was so great that by end of May Stead was forced on holiday under suspicion of embezzlement, for the offence of refusing to provide the Minister with the name of people that had been receiving free fish under his direction. A few days after the investigation was concluded Dooley decided to have Stead removed as General Manager and asked the Public Service Board (who was in charge of such things) to relocate Stead to a more suitable position. Until such a position could be found Stead was granted leave of absence from July 1920.

He remained on leave, in the end without pay, until 17 January 1922 where he was seconded to the Fisheries Department of British Malaya until March 1923 in order to write a report on the fisheries of Malaya. In his report he recommended that the Malayan Government should through the NSW Naturalists. Despite the controversy they resumed the relationship several times and where by 1930 living together. See Rowley, H., 1994.

452 SRNSW: STI; Letter from General Manager David G. Stead to Under Secretary, Chief Secretary’s Department. 24 May 1920 [5/5365.6].
453 SRNSW: STI; Report on the Trawling Industry by the Chief Secretary Dooley, 31 May 1920, p. 1. [5/5366].
455 SRNSW: STI: Memo from Chief Secretary Dooley, 3 May 1920 [5/5365.6].
investigate the possibility of introducing steam trawlers equipped with otter trawls into the fishery and survey possible fishing grounds.\textsuperscript{456}

Shortly after Stead had left Australia, Chief Secretary Oakes decided to terminate Stead’s contract because they were unable to find him a new position in the public service, and he was ‘gazetted out of service’. After Stead returned to Sydney he found it difficult to find a job. In 1924 he attended the Pan-Pacific Food Conservation Conference in Honolulu as the Australian representative and in 1925 he got a short term government job to report on rabbit extermination, but except for these short stints he never worked as a public servant again; instead he made a living mainly as a popular scientific writer. In 1929 or 1930 a syndicate headed by Stead bought the whaling station at Point Cloates, from the Western Australian Whaling Company which together with the Norwegian Bay Whaling Company had operated the site since 1925, killing approximately 1,000 whales per season.\textsuperscript{457} Stead’s syndicate seems only to have existed for a short time, and it is likely that it never began to operate the station.

\textbf{New management}

With Stead removed from the undertaking, the way was paved for a new manager to reorganise the industry; Augustus Patrick Sommergreene, a butcher by trade, who had been Officer-in-Charge at the central depot since 29 March 1920 took up the position on the 30 June 1920.

Sommergreene immediately began a cost cutting program to rationalise the industry and terminate marginal activities. His first action was to close down the four coastal receiving depots on 1 July 1920 and discontinue the practice of buying fish locally. The coastal depots were then periodically leased out to private enterprises, but without much success in recovering costs.\textsuperscript{458} Without the coastal depots, there was no need for the expensive fish carrier \textit{Colliboi}, and it was withdrawn from service in July 1920, advertised for sale, and finally sold to the Tasmanian Government on 23 January 1921 for £10,000 or half of its

\textsuperscript{456} Butcher, J., 2004, pp. 90-91 and p. 139.  
\textsuperscript{457} NAA: Stanley Fowler – correspondence: [P2780].  
\textsuperscript{458} CFRC Library: Chief Secretary’s Department: F. J. Herlihy: NSW State Trawling Industry Historical Records 1915-1923, September 1927, p. 29.
delivery price two years previously. The administrative office also relocated from its ‘palatial offices in George Street,’ to the central depot at Woolloomooloo Bay, in order to save rent and improve communication between management and the depot. In the process the administrative staff were reduced significantly in number and the workforce trimmed in general. Three of the retail depots in the metropolitan area and one county depot were also closed.

While Stead had focused on discovering new trawling grounds and expanding the industry, Summergreene’s management was mostly focused on the retail part of the business. One of the reforms Summergreene introduced refined how the STI dealt with surplus of fish. Instead of continuing to sell the surplus by various methods of wholesale, which gave little or no profit, Summergreene broke with Stead’s policy to forego the middleman and appointed Cam Brothers, a private fish agency at Redfern as the accredited agent of the STI on 11 October 1920. Cam later became one of the three main steam trawl operators in NSW.

Despite Summergreene’s best efforts the fundamental problems within the industry, as they are described earlier, continued and he was only able to temporarily improve the financial situation of the undertaking and the industry continued to run at a loss (see Figure 4-6).

Rumours about corruption in regard to the STI’s administration began to surface in June 1922 after it was made public that the STI paid over market price for the coal used by the trawlers. The new Chief Secretary C.W. Oakes had to report on the matter in the Legislative Parliament in mid July 1922. When Oakes laid further evidence before Cabinet it was decided to make an official inquiry into the STI, especially focusing on the coal contract made by the management. The inquiry was done by the PSB and the investigation ran from 27 July to 15 August 1922, and was often referred to as the coal-case inquiry. During the course of the investigation the PSB found that Summergreene, as manager of the STI assisted by other officers from the STI, had made a deal with Whitmore Australasia Sales

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459 CFRC Library: Chief Secretary’s Department; F. J. Herlihy: NSW State Trawling Industry Historical Records 1915-1923, September 1927, p. 9.
463 SMH: 20 July 1922.
Company Ltd to supply the trawlers with coal in Sydney instead of Newcastle from September 1920 and four years ahead. Upon investigation it was found that the coal was too expensive for the quality and the agreement was made without the necessary authority. The PSB found that Summergreene and the involved officers had showed gross negligence and misconduct when making the agreement and as a consequence his employment was terminated with immediate effect on 30 August 1922 and the coal contract rescinded.

Francis Joseph Herlihy, who originally had worked in Treasury and had been the STI’s accountant since Strahan left in June 1916, before being promoted to Business Manager in July 1919, was appointed Acting Manager until the NSW Government could make a final decision about the future of the STI. On behalf of the Government Oakes requested the PSB to do another investigation of the STI, this time to determine if it was likely that the undertaking in the future could display a profit. On 1 November 1922 the PSB replied that it saw no way of recovering the capital already invested and thought it unlikely that the current setup of the industry would be profitable. The PSB recommended that if the Government decided to continue State trawling, the fleet be reduced to three trawlers and the focus be on wholesale instead of retail. Still hoping there might be a way to save the industry, the NSW Government next employed Frederick J. Smith from the accounting practice F.J. Smith & Johnson, Sydney to report on the future of the STI. Smith reported on 7 December 1922 that the amount the State had invested did not justify the meagre results to date and that the STI should be closed down as soon as possible to avoid further loss. He also mentioned that despite the STI’s best efforts, the public had not shown sufficient appreciation for the cheap supply of fish to warrant the industry. As a result of the two reports, backed up by evidence from the report from Royal Commission, and the Auditor General, the NSW Government was forced to close down the industry. The STI ceased business operations on 28 February 1923, on the recommendation of the Minister in Charge, Chief Secretary Charles William Oakes, and its assets put off for sale.

464 SRNSW: STI; Coal Contract Papers Trawling Industry [5/5357.2].
465 CFRC Library: Chief Secretary’s Department; F. J. Herlihy: NSW State Trawling Industry Historical Records 1915-1923, September 1927, p. 32.
466 Herlihy CFRC Library: Chief Secretary’s Department; F. J. Herlihy: NSW State Trawling Industry Historical Records 1915-1923, September 1927, p. 33.
By the end of 1924 all assets were realised or written off and the final accumulated loss was identified. Total capital investment by the State was £220,463 10s 11d, total realisation was £50,651 17s 5d, and the final accumulated loss of the STI, from all sources, was £317,850 6s 11d.467

**Business or Education?**

In his concluding comments on the Audit for the financial year 1919-20, the Auditor-General F.A. Coghlan had examined the possible future of the STI and the fact that the industry had accumulated a large loss over five years. At the end of his account Coghlan asks how the NSW Government could continue to justify the expenses of running the STI by characterising the industry in the following manner:

In summation:-

**Business** with a loss of £106,449 10s. 8d.

Or

**Education** at a cost of £106,449 10s. 8d., plus the great expense of a Royal Commission468

With this quote Coghlan sums up the dual nature of the STI’s legacy. From a strictly business perspective the STI was a great failure caused by a combination of structural and external factors. The setup of the industry was flawed from the beginning because the STI’s social agenda was in direct conflict with its commercial mission. These inbuilt problems were exacerbated by incompetent managers who decided upon rapid and financial unsupported industry development, aggravated by the complications of World War I.

If the STI is viewed as a learning experience in marine fisheries and an instrument for large scale fisheries development, it was a costly success. While it operated, those in the STI found and explored previously unknown trawling grounds and built the necessary infrastructure to market its catches. They also trained trawling crews and other personnel in all aspects of the business, providing a pool of knowledge for succeeding private companies. The STI’s greatest accomplishment was that it created an affordable market for fish, some species which

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467 Cf. FRC Library: Chief Secretary’s Department: F. J. Herlihy; NSW State Trawling Industry Historical Records 1915-1923, September 1927, STI p. 37.

468 SRNSW: Parliamentary Papers; State Industry Undertakings, Balance Sheets, Trading Accounts re. Year end 30 June 1920, p. 49.
had never been marketed before. The STI’s pioneering efforts confirmed and strengthened
the belief that there was an inexhaustible resource of fish at the coastal shelf ready for
exploitation. The legacy left behind by the STI was so great that private companies could take
over more or less seamlessly. When the industry was abolished in February 1923 its assets,
principally the trawlers, were sold below their nominated value, which meant the emerging
private trawling companies had relatively low establishment costs. The achievements of the
STI were to have long lasting effects on how NSW offshore fishery and the industry
operated. It illustrated the possibilities in developing Australian sea fisheries. Its greatest
impact was however to be on the - until then - pristine marine ecosystem and fish stocks on
NSW’s continental shelf.

The rise of the private trawling companies and the impact on the continental shelf ecosystem
will be discussed in greater detail in the next chapter.

Conclusion

The numerous proposals, investigations and political inquiries made during the previous
decades were in many ways a long preparation for what came into being in 1915: A State-
owned sea fishing industry, the STI. Despite several investigations into the marine fauna and
some expert claims that it was possible to develop a sea fishery that could equal the best in
Europe, private companies were reluctant to invest in sea fishing. Given that various reports
had expressed the need to develop such an industry, not least the report of the Royal
Commission of 1912, it was not surprising that the NSW Government finally took upon itself
to start developing the State’s offshore fish resources. However, what prompted the Holman
Government’s decision to develop the State’s fisheries by running its own company was the
need to provide a cheap substitute for meat, not the recommendations of the 1912
Commission, although in practice many of those recommendations were implemented in the
STI. Assured by experts on the vitality of the industry and captive to the long held belief that
the sea contained unlimited resources, the Holman Government established the NSW State
Trawling Industry (STI) in July 1915.

The STI was largely planned by David G. Stead who was also its General Manager from
1915 to 1920. His business strategy was to supply ‘cheap fish to the public’ on a commercial
basis by importing steam trawlers and knowhow from England, and controlled everything from fishing to distribution and retail. Shortly after business commenced, high demand made the STI appear a commercial success and within six months of operation plans were made to expand the undertaking. Unfortunately its social and commercial aims were in conflict and in combination with Stead’s overly optimistic assessments and chaotic management style, that conflict strained the developing industry’s finances. Finances were further strained by delays in construction and increased expenses caused by World War I. Although the STI was not a financial success, the industry was successful an instrument of fisheries development. The STI opening up the continental shelf for commercial fishing and demonstrated that fish was available in large quantities, thereby creating a new industry and significantly improving NSW’s supply of fish. As an example of fisheries management, the STI illustrated that the Governments policy for marine resource management in NSW seems to have been driven by productivity growth and industry development. The will to govern marine resources was completely taken over by social and economic development policies. The STI was an act of both statist development and a unique Labor policy of welfare-statism. The industry was established as a way to develop the States marine resources and as a political solution to social problems. It was funded upon the belief of the rich, inexhaustible source of fish in the ocean ready for exploitation, as advocated during previous decades. Driven by the prospect of combining social reforms with industry development without costs, the NSW Government did not consider how the fishery would impact the marine environment, dazzled as they were by such statements as below.

“It would easily be possible to turn over £1,000,000 a year in Fish sales in this State without, any great effort and without risking a penny if the taxpayers’ money.”469 By David G. Stead, 1 November 1915.

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469 SRNSW: STI; The success of the State Trawling Industry and Proposal for its Extension, 1 November 1915 [5/5441].
Chapter 5
The private steam trawling industry, 1923-1961

Introduction

Whilst the NSW Government’s attempt to run a commercial steam trawling industry was an economic failure, it did succeed in proving it possible to catch large quantities of fish on the continental shelf, and in establishing a market for these fish in Sydney. This chapter traces the rise and decline of the private trawling industry in NSW from 1923 to 1961 and asks what effect changes in catch rates and species composition had on the private trawling industry’s impulse to govern resources. The origins, aim and methods of the NSW Government’s management of the steam trawling industry will be discussed further in chapter seven.

The period from 1914 to 1923, where the STI was the sole trawling company in NSW, can be considered the ‘early growth phase’ of trawl fishery on the continental shelf. In contrast the period from 1923 to 1929 was the ‘main growth phase’ of the fishery, dominated by three Sydney based companies.

The period from the early 1930s to about 1939 was characterised by fully exploited resources and some degree of economic consolidation, but also by stagnation and some decline. Due to the near total government control of the industry during the Second World War, and because of unusual market conditions during the war and post war period, the years from 1939 to 1946 were characterised by an increase in industry capital formation despite low fishing productivity. The final decline phase from 1947 to 1961 witnessed the end of steam trawling on the continental shelf.

Authors like Tyler have argued that although the NSW Government’s business enterprises were not always profitable, “they stimulated private competitors to enter the market without excessive profiteering.”

Large scale, commercial fishing with steam trawlers required significant funds. As described in chapters 2 and 3 the private fishing industry in NSW was dominated by small scale, low-

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470 Tyler, P., 2006, p. 60.
cost operations which rarely ventured beyond inshore waters. Therefore an essential factor in establishing a new private steam trawling industry in NSW after 1923 was that equipment needed for the industry could be obtained at low costs from the STI. Private industry members also relied upon a consistent yield from the fishing grounds and market demand for the products in Sydney. The stability of the new private industry was first challenged five years later, in 1928, when one of the main fishing grounds collapsed, and again when the Great Depression hit Australia, which resulted in the industry struggling to stay afloat.

The growth of the private steam trawling industry, 1923-1929

From state industry to private industries

When the Fuller Government decided to abolish the STI in February 1923, its assets were put up for sale. During April all the company’s trawlers (Brolga, Koraaga, Gunundaal, Goonambee, Goorangai, Dibbiu, and Dureenbee), as well as other substantial assets such as the coastal receiving stations (coastal depots), the retail depots in Sydney and the central distribution depot on No. 5 Wharf, Woolloomooloo Bay were put up for sale. A fish canning plant and six motor lorries were also put on the market to be sold wholly or separately. In one newspaper advertisement it was specified that preference would be given to applicants planning to continue in the industry. Expressions of interests had to be made to the State Contracts Control Board, 35 Young Street, Sydney, no later than 4.30 p.m. on 31 May, and had to include a deposit of 1 percent of the offered amount.471

Despite the Government’s obvious efforts to liquidate the State industry as quickly as possible, buyers were not queuing up. No offers were received for the entire industry; and of the vessels, only the British built trawlers attracted any interested buyers.

In May Koraaga was sold to the locally based Coastal Trawling Company for £8,000, which was to be paid over five years, and it was the only state trawler whose second-hand price succeeded the requisition price (about £7,500). The two last British trawlers Gunundaal and Brolga went for (cash) £3,400 and £4,400 respectively, to Sanford Ltd, a large Auckland

471 The Argus, 14 April 1923, p. 6.
472 CFRC Library: Chief Secretary’s Department: F. J. Herlihy: NSW State Trawling Industry Historical Records 1915-1923, September 1927.
based fishing company, and were renamed *Gilbert San* and *Albert San*. Later, in 1925, they were sold back to Australian companies. The interlude with the New Zealand fishing company was interesting because Sanford Ltd was already a well established trawling company and had previous trawling industry experience which the new, local companies lacked. Sandford Ltd was in a position to more realistically assess the situation of the industry and, as described below, its actions highlighted some of the problems surrounding the fishery on the south east continental shelf, thus confirming the vulnerability of trawling in NSW.

In 1923 Sanford Ltd was the largest fish merchant in Auckland, where almost half of the New Zealand catches were landed. Since the 1870s Albert Sanford had built up a successful fish merchant and trawling business, and since 1894 operated his own fish market. He was repeatedly in conflict with other fishermen and the Auckland City Council over his business methods and firm belief that (private) steam trawling would provide cheaper and more abundant quantities of fish than the customary line fishery or a council owned trawling industry. Much to the Auckland City Council’s dismay, by the end of 1915 Sanford had acquired three trawlers and had begun to supply Auckland with trawled fish. By 1923 Sanford Ltd. owned a fish market, more than twenty fish shops, a fleet of small trucks and two fish restaurants. The purchase of the two NSW steam trawlers brought the company’s trawling fleet up to six vessels.⁴⁷³

For some time Sanford Ltd had tried hard to develop an export market in Australia for New Zealand fish, and was regularly sending fish to the markets in Melbourne and Sydney. However, the company had to sell through local Australian fish agents or merchants. Not satisfied with this arrangement, the new managing director Gilbert Sanford decided to open a depot in Sydney to handle the New Zealand imports as well as local fish caught by the company. An office and freezer were rented from NSW Fresh Food and Ice Co., and in December 1924 SS *Gilbert San* and SS *Albert San* were back in NSW, trawling the continental shelf.⁴⁷⁴ The New Zealand venture into NSW waters ended later in 1925 as Gilbert Sanford realised that “while the distribution business [in NSW] was satisfactory, trawling was not”⁴⁷⁵ and he proceeded to sell the trawlers.⁴⁷⁶ The depot, on the other hand,

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⁴⁷⁵ Johnson; D., 2004, p. 110.
was upgraded to a branch and Philip Sanford was appointed manager. What Sanford had grasped was that the production of trawl fish from NSW waters was less profitable than selling fish. With an ample supply of New Zealand trawled fish, Sanford did not have to rely on catches from NSW waters, and could eliminate the costly steam trawling operations for local species. As we shall later see, the limited production of the continental shelf-fishery was the greatest problem for the development of the NSW steam trawling industry.

Coastal Trawling Company Ltd., 1923-1926

The first private steam trawling company in NSW, and for some years the only one, was the Sydney based Coastal Trawling Company, which almost immediately after buying Koraaga began landing fish in Sydney. In the beginning it closely copied the rigid model for trawling operations established by the STI: The vessel made two trips a week to land catches in time for the Monday and Friday market. 477 However, unlike the STI, the company seemed to focus on wholesale and not retail sale.

Being the only supplier of trawled fish in NSW proved to be profitable. By March 1924, only 10 months after buying its first trawler, the company had paid off the trawler and was looking to expand its business with a second Scottish built trawler. In an interview a spokesman for the company attributed its success to the fact that it had better equipment than the STI, effective business administration and “clean lines” a not so subtle hint to the problems with the management of the STI. 478 In late 1925 Coastal Trawling Company bought Guundundall from Sanford Ltd. With a second trawler in the fleet, Coastal Trawling, led by managing director Creamer and director Dunningham, decided to expand its market into Victoria and on Friday 20 November 1925 the newly acquired Guundundall delivered the first shipment of trawled fish to Melbourne. The plan was for each of the trawlers to make a visit to Melbourne every second week, in the hope that if business picked up, the frequency could be increased to as much as two to three visits a week. 479 It does not appear that the plans were carried into

476 SS Albert San (ex Brolga) was sold to Coastal Trading Company, Victoria as a transport vessel. The former trawler spend the rest of its time transporting goods along the coast until it ran ashore and was abandoned on Beware Reef off the East Gippsland coast, Victoria on 13 August 1926. SS Gilbert San (ex Guundaal) was sold to Coastal Trawling Co. and renamed SS Guundaal.
477 The Argus, 26 July 1923, p. 8.
478 The Argus, 19 March 1924, p 23.
effect, and on 22 October 1926 Coastal Trawling Company Ltd amalgamated with The Red Funnel Fisheries Ltd.

The Coastal Trawling Company’s position as NSW’s sole steam trawl operator did not last long. After the STI’s British built trawlers were sold, those built at the NSW government’s dockyard in Newcastle were slowly sold during the second half of 1923, but at much reduced prices. The first was Goonambee which was sold to a local syndicate called Tucabia Fisheries Ltd. for £3,500 on twelve months terms. When the STI had Goonambee delivered from the NSW Government dockyard in May 1917 the total costs of delivery had been £23,725, so the ship was sold at a bargain price. In 1924 the trawler was resold sold to Carlyon Ltd, Newcastle for £8,000. On 11 January 1926 Carlyon Ltd also amalgamated with The Red Funnel Fisheries Ltd.

The second government vessel to be sold was Goorangai which went to Charles Caminiti, Sydney (Later Cam and Sons) for £3,550 paid over five years in quarterly instalments. Later in 1925 Caminiti acquired another of the trawlers through the Department of Public Works which had bought Dibbiu from the State Trawling Industry for £3,500 cash. Charles Caminiti renamed the vessel SS Charlie Cam.

The last of the trawlers, Dureenbee, was finally sold in November 1923, to a Douglas Paul Hann at the higher price of £6,500 including its coal stores. The payment was £2,000 on delivery with the balance to be paid in 12 quarterly instalments. By that time the economic success of the other trawl fleet owners was apparent and several buyers showed interest in the remaining vessel, hence the higher price. Later in October 1925 Hann bought the wooden fishing and research vessel Bar-ea-mul for £4,250 in quarterly instalments and at an annual interest rate of 7 percent from coal merchant Robert William Miller of R.W. Miller and Company, Pitt Street Sydney. Miller had purchased the vessel for a similar price from the Queensland Government. In November 1925 Hann amalgamated his business with the New State Fish & Ice Company to form The Red Funnel Fisheries Ltd.

While it had taken nearly half of 1923 for the NSW Government to sell all the vessels, the shops and other leases were more easily disposed of, although in most cases a cash deposit

\[480\] Douglas Paul Hann was a butcher of trade.
\[481\] SRNSW: Item 9920, Red Funnel Fisheries Limited [17/5605].
could not be made, and payment had to be made in instalments. The leases of the large central distribution depot of No. 5 Wharf Woolloomooloo Bay with its ice making facilities and cold stores were taken over by the New State Fish and Ice Company Ltd. The distribution depot in Newcastle was taken over by Carlyon Ltd. The new private trawling companies had bought most of the STI’s vessels and storage facilities, but had refrained from taking over the shops and coastal depots, which generally found other uses.

**Cam and Sons**

After Coastal Trawling Company, the next large steam trawling company to be established in NSW was Cam, also called Cam Brothers, Mess. Cam and Sons, and later Cam and Sons Ltd. The Sydney based company originated from a humble Italian fishing family and the trading name of Cam was an Anglicisation of the family’s Italian surname Caminiti. The first Caminiti, Rocco Caminetti, had arrived in Sydney from Italy in 1881 and had worked as a seaman on a coastal steamer. After this he spent a few years as a settler in ‘New Italy’ near Woodburn NSW, before he returned to Sydney with his wife Catarina and son Carlo (called Charles, born in 1882), and began supporting his family by fishing. When he was naturalised in 1903 he listed his occupation as fisherman. Rocco Caminetti died in 1907, aged 58. Charles Cam had worked with his father in the fishery since age eleven and continued to do so after Rocco’s death. In February 1913 the entrepreneurial Charles purchased a fish shop in Drummoyne for £5 which he supplied with fish that he and two of his sons, Rocco and Charlie, had caught. In 1917 he bought the freehold of the property and rebuilt the fish shop and the two other shops in complex. The business expanded further in 1918 when fish agent Humphrey M. Earl sold his business to the Cam Brothers, and Charles began selling other fishermen’s catches at the agent-owned Commonwealth Co-operation Fish Exchange in Redfern and supplying shops and outlets with fish. In 1920 the business had grown to such a size that on 11 October 1920 he became accredited sole agent of the State Trawling Industry, which by then had closed the wholesale part of its business.

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482 CFRC Library: Chief Secretary’s Department: F. J. Herlihy: NSW State Trawling Industry Historical Records 1915-1923, September 1927, p. 36.
485 SRNSW: State Fisheries; Letter, 22 February 1922 [4/6636.2].
486 SRNSW: STI; Papers relating to the 1920 inquiry into the State trawling Industry [5/5366].
Trading must have been profitable, because in 1923 Charles Cam was able to buy his first trawler from the STI. Under normal circumstances he might not have been able to raise the capital to do so, but luckily for the new established private industry nearly all the trawlers were sold very cheaply. Shortly after buying *Goorangai*, Charles brought in his third son Rocco Edmund, and subsequently changed the company’s name from ‘Cam’ or ‘Cam Brothers’ to ‘Cam and Sons’. A son–in–law, John Reid, later joined the company’s management in 1929. The company was located at Baltic Wharf, 5 Day Street, Darlington Harbour and traded as General Auctioneers, Fish Agents and Trawl Owners. According to the letterhead Cam and Sons’ motto was ‘Prompt Returns’.

During the 1920s business was sound and Cam expanded the trawling business until the fishing fleet consisted of eight vessels by the end of the decade.\textsuperscript{487} Of the eight trawlers three were built by governments for commercial or defence purposes. In 1932 Cam moved the business to two newly purchased blocks of land at 1 Bank Street, Pyrmont. Cam also leased nearby waterfront from the Marine Service Board where he built a covered wharf for unloading and mooring trawlers and, on the plots, built a brick-and-sandstone office, a blacksmith’s shop and coal storages facilities.\textsuperscript{488} The new location in Blackwattle Bay was much closer to the Municipal Fish Market at Haymarket and brought together all the company’s activities in one place.

In 1934 Cam and Sons consolidated the company by incorporating it under the name Cam and Sons Limited and transferring all assets previously owned by the founder Charles Cam to the new company. All the shares were distributed to family members, and Charles Cam remained in control of the company by being a majority share holder, chairman and managing director.\textsuperscript{489}

**Red Funnel Fisheries Limited**

Red Funnel Fisheries Ltd was established in December 1925. During its existence, the company went through several changes of ownership while operating as a trawling company. The surviving public records are mostly from the company’s first incarnation when it still

\textsuperscript{487} *SS Goorangai* (1923) *SS Charlie Cam* (1925), *SS Beryl II* (1926), *SS Camro* (1927), *SS Oliver Cam* (1928), *SS Alfie Cam* (around 1929) and *SS Mary Cam* (around 1929).

\textsuperscript{488} Cook, S., 2006, p. 22.

\textsuperscript{489} Cook, S., 2006, pp. 22-23.
used the “Fisheries” ending of its name. From the period after 1935, when it began operating under the name Red Funnel Trawling, only sketchy information about its ownership and financial arrangements has survived. From 1959 Red Funnel was owned by the Mansfield family, and since the company has never officially wound up some of the documents are still kept by Richard Mansfield.

Red Funnel Fisheries Limited was incorporated on the 2 December 1925 with a capital of £75,000 by Douglas Paul Hann (owner of the steam trawler Bar-ea-mul and Dureenbee) and Edmund Samuel Percival (owner of the New State Fish & Ice Company with a lease on 5 Wharf Woolloomooloo Bay) as well as others. The new company was to take over the assets of Hann and Percival and in its Memorandum and Article of Association the objective of the company was listed as: Conserve animals for human consumption, do any trading in regard to the company’s production (fish), act as an agent for third party, conduct wholesale or retailer, hire charter, buy other vessels, carry out trawling and other fishing, and operate cold stores. Hann who had bought the two former State trawlers for £6,500 (Dureenbee) and £4,259 (Bar-ea-mul) was still paying off the instalments, so Red Funnel took over the trawlers at a value of £27,750, including the outstanding debt of £2,823 and £1,500 respectively. The price Red Funnel paid for the trawlers was probably closer to their true market value at the time of transfer, but their dramatic 250 percent increase in value gives indication of how much the perception of the profitability of the trawling industry had changed in the two years since the STI closed.

Hann was paid fully in shares, and was installed as the general manager at a generous salary of £1,000 per year with a bonus of 5 percent of the net profit if the company’s dividend exceeded 12.5 percent. The other major contributor, Percival, was paid £7,250 in shares for his assets in the New State Fish & Ice Company. In its setup Red Funnel was ambitious and committed to rapid development. Part of Hann’s contract included a clause that the company was to pay for a first class return fare to London, with all expenses paid, for the purpose of

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490 Klaer, N. and Tilzey, R.: Project 90/23, p. 51. Many of Red Funnels records was destroyed when the warehouse where they were stored was flooded. Due to the owners advanced age this line of inquiry was not taken further.
491 When this author visited Richard Mansfield in his private residence it was explained that many of Red Funnels records were destroyed when the warehouse in Balmain where they were stored was flooded, but some was still kept by him. Due to Richard Mansfield’s advanced age and his reluctance to part with the records, this line of inquiry was not taken further. Previous inquiries about the records made by the Australian National Maritime Museum to the Mansfield family have also been without success.
inspecting and purchasing additional vessels for the trawling fleet. In January 1926 Red Funnel incorporated the business of Carlyon Ltd which included the former State trawlers SS Goonambee and a cool store in Newcastle. In 1924 Carlyon had bought the trawler from Tucabia Fisheries Ltd for £15,000 which was to be paid in instalments. The price included tackle gear, fish vendor and machinery plants on the former STI leasehold in Newcastle, together with stock-in-hand. Carlyon was unable to pay more than the first instalment of £3,000 and in 1926 he therefore transferred the vessel with its remaining mortgage to Red Funnel. In June the same year Red Funnel bought the former navy vessel SS Gunner and renamed it SS Millimumul. The vessel was a British steam trawler built in 1915 at Smiths Dock in Tees, the same year and dock as the original State trawlers. To further fuel the company’s growth an extraordinary general meeting of shareholders was held in October 1926, and it was decided to increase the nominal capital by £100,000, making the total capital £175,000. Some of the new capital was used the same month to take over the assets of the Coastal Trawling Company, including the two former State trawlers Gunundaal and Koraaga. By the end of the company’s first year it had built up an impressive fleet of six steam trawlers and was operating from the former State Trawler Depot at No. 5 Wharf, Woolloomooloo. According to Red Funnel’s second progress report, the company had a profit of 13.3 percent in the first ten months and it had increased its profit earning assets 200 percent. In 1928 Red Funnel bought two steam trawlers (SS Durraween and SS Goolgawai) from Grimsby, which had been built to the Royal Canadian Navy for minesweeping. By 1929 the fleet consisted of eight trawlers, all which had been for various governments for commercial or naval purposes.

For unknown reasons Red Funnel's offices relocated several times during the years. From no. 5 Wharf, Woolloomooloo, in 1925 to 19 Bridge Street, Sydney, in March 1929 and back to the wharf at Woolloomooloo in March 1931. By 1941 Red Funnel Trawlers Pty. Ltd was to be found further west in the bay at Hopetown Avenue, Vaucluse.

492 SRNSW: Item 9920; Red Funnel Fisheries Limited, Memorandum and Article of Association of the Red Funnel Fisheries Limited, 2 December 1925, [17/5605].
493 SRNSW: Item 9922, Red Funnel Fisheries Limited, Memorandum of satisfaction of mortgage of change July 1926 [17/5605].
494 The ship might have been a so-called Q-ship. Q-ships also known as Mystery Ships were armed merchant- or fishing vessels employed by the British Royal Navy during World War I as a countermeasure against German U-boats. The vessels were to lure submarines into surface attacks, and then attach the U-boat. Q-ships were also used by some nations during World War II.
The growth of Red Funnel continued until 1928/29 when the company, along with the rest of the trawling industry, was hit by falling catches and economic recession.

**A. A. Murrell**

Little is known about the last steam trawling company operating in NSW. The only surviving documents are two logbooks kept at the National Archive in Canberra.\(^{496}\) Arthur A. Murrell, a former clerk, began his business as a fish retailer at Oxford Street in 1925 with a staff of two, and later became a licensed fish agent and fish merchant. In 1926 Murrell bought his first vessel, \(^{497}\) the Scottish built trawler **SS David Blake**. The **David Blake** was originally built to the British Admiralty as a minesweeping vessel in 1918, but was merchandised in 1921 and steamed for various British owners until it was sold to A.A. Murrell in 1926.\(^{498}\) The vessel was typical of the type of trawlers that had been bought in the 1920s by the private steam trawling companies, which favoured second hand steam trawlers of ‘Castle’ class, built before 1920.

A. A. Murrell was successful in his venture and by early 1929 he owned two large retail shops, a wholesale and distribution agency and a trawler, and employed about 50 people. His business setup put him in control of all steps from capture to consumers, and produced an annual turnover of between £70,000 and £89,000.\(^{499}\) In January 1929 he expanded the business further by adding **SS Samuel Benbow** to his fleet. **Samuel Benbow** was sister ship to **David Blake**, also built to the British Admiralty in Aberdeen.\(^{500}\) The last vessel to be acquired by A. A. Murrell in the 1920s was the trawler **SS Tongkol**. The vessel was originally built as an investigation trawler for the Fisheries Authorities in British Malaya after David Stead, who was the Malay Fisheries Investigator from 1921-23, recommended that a steam trawler be deployed to investigate the waters around the peninsula, in order to pave the way for the

\(^{496}\) The logbook is for the trawler **Jongkol** dates from January 1938 to September 1939 and for **Samuel Benbow** from November 1935 to November 1939. The logbooks consist of large size copypaper with pre-printed field, each page is a copy of an original which have been ripped out. The pages contain information on: Name of Skipper, time and date left, time and date of return, Date and number of hull, Position, duration and catch (flathead or mixed) per haul and remarks. NAA: Log book of trawlers owned by AA Murrell [CP436/16/12]

\(^{497}\) Lorimer, M., 1984, p. 75.

\(^{498}\) **SS David Blake** was wrecked 15 March 1934 on Mimosa Bay, Araganui Beach (sapphire Coast), NSW.

\(^{499}\) *SMH:* Trawling Fleet, 1 February 1929, p. 13.

\(^{500}\) www.aberdeenships.com [10.03.2010].
introduction of modern (British) fishing methods.\textsuperscript{501} After several years of investigations it was found in 1928 that trawling in those waters was not commercially feasible and Tongkol was sold to Ceylon. In 1929 A. A. Murrell bought it for £9,000 and had it sailed to Sydney. The price was considered very favourable, since the Tongkol was reported to be in excellent condition. There was evidence that A. A. Murrell contemplated selling Tongkol as a fisheries investigation vessel before it arrive at Murrells wharf at Woolloomooloo Bay on 24 November 1929, but eventually it became part of his fleet.\textsuperscript{502} As we shall see in the next chapter, Tongkol’s history illustrates how fisheries development, private industry and fisheries investigations often were entangled during the 1920s

**NSW investment in trawl fishery**

Unlike the other steam trawling companies, trawl fishing was only a minor part of A. A. Murrell’s fish merchant business and catches were mostly traded through his own retail outlets or wholesale customers.

Coastal Trawling Company, Cam and Sons, Red Funnel Fisheries and A. A. Murrell were not the only companies trying their luck in trawl fishing. The Register of Companies\textsuperscript{503} produced by the NSW Registrar General from the Department of the Attorney General and of Justice, show that several companies were formed in the 1920s trying to exploit what seemed to be a lucrative market. Few of them got beyond the registration stage, and none of them were active for more than a few years. They were often formed by people without prior association with the fishing industry and their Memoranda and Articles of Association were very broadly formulated and included production, wholesale and retail sale of a broad range of food products and activities related to the marine sector. The following two companies were typical of the short lived Sydney based fishing companies that cropped up during the 1920s.

\textsuperscript{501} Butcher, J., 2004, p. 139. In his report on the fisheries of British Malaya, Stead expressed his trademark confidence in modern trawling methods to supplying a growing population with fish, without taken into consideration the nature of the resources.

\textsuperscript{502} NAA: CSIR, Head Office – Correspondence; Proposal by D.G. Stead re purchase of vessel for marine biology “Tongkol”, 1929-30 [A9778/3 G16/TZ10].

\textsuperscript{503} The information recorded in the register varies slightly over time, but the following main information can be found: the company’s name, capital, date of registration, memorandum of association, articles, agreement, increase of capital, special resolutions, registered office, name of secretary or manager, if the company was winding up and appointment of liquidator and often liquidator’s report.
The Coastal Fisheries Ltd. was incorporated on 7 June 1922, with capital of £5,000 divided into 5000 shares of £1. It was located on Schwebel Street in the Sydney suburb of Marrickville. The company’s objective was to conduct trawling and other business related to maritime pursuits, as well as to sell unspecified products. None of the underwriters had listed any maritime profession as their occupation. There were no signs that Coastal Fisheries ever began operating or owned any fishing vessels. In 19 January 1924 Joseph Arthur Mansfield, 347 King Street Newton (calling himself a Furniture Warehouseman), one of the shareholders and president of the company, wrote to the Register of Companies to have the company wound up since it had ceased trading 18 months prior.504

Another company focusing on trawling was the East Star Trawling Co. Ltd. which was incorporated 18 September 1928, with capital of £15,000 divided into 15,000 shares of £1. The seven underwriters were all from a financial background and they invested in one share only. These seven shares were the only ones ever traded. Like Coastal Fisheries the company’s objective was to conduct trawling and other general business related to maritime pursuits. The company was located on 113 Pitt Street in Sydney. On 16 February 1930 the director Morris Leventhal, (a property merchant) requested that the company be wound up stating that the company had not conducted any business activities since its inception.505

The companies set up by small scale investors (as with Coastal Fisheries) or financiers (as with East Star Trawling) were driven by the notion that commercial trawling provided a golden opportunity that would be a profitable investment for anyone who was able/or willing to raise the necessary capital.506 In reality only a few and experienced fishing companies in NSW survived the first years of private commercial trawling in NSW, but the two examples above show that the belief that the trawling industry had not yet reached its full potential was strong throughout the 1920s. By the end of the 1920s the optimistic view of the industry would be challenged by falling catch rates and the companies’ growing financial difficulties.

504 SRNSW: Item7943, The Coastal Fisheries Ltd [17/5528].
505 SRNSW: Item 12046 East Star Trawling Co. Ltd [17/5689]. In 1928 the company bought the forty year old cargo vessel SS Kurrara and converted her into a fishing trawler in 1929 under the name SS East Star. There was no evidence that the vessel ever went fishing.
506 Another unsuccessful small scale investor was A R.J. Butler, Sydney who for some weeks in May 1929 trawled with the fifty-one year old converted cargo ship SS Palmerton until it collided with Millimumal on 29 May 1929 and sank off Jervis Bay.
After 1923 several short-lived trawling companies tried to move into the vacuum left by the STI in the fish market, with varying degrees of success. By the end of the 1920s the private steam trawl companies had matured and concentrated into three companies: Red Funnel Trawlers; Cam and Sons and A. A. Murrell. By the end of 1929 the total Sydney based trawling fleet consisted of 18 vessels, seven which had been added during 1929. Most of the trawlers were of Castle class, from 220-278 tons gross register, with crews of 13, who were paid fixed rate wage and catch bonuses. The vessels had cruising speeds of 9 to 11 knots and were equipped with wireless telephone so they could be in contact with their shore offices and the other vessels. Before each voyage the trawlers would bunk 15 tons of ice used to cool the fish in specially insulated chambers. The fishing was done with otter trawl and, from 1925, with the introduction of the modified Vigneron-Dahl otter trawl, fishing effectively with increases of about a third.507 At the beginning of the period the trawlers were usually at sea for three to four days after which they returned to Sydney with their catches. By 1930, when the trawlers had to steam further away from Sydney to keep up catch quantities, the length of voyages increased to as much as nine to twenty-five days.508 As shown above, private companies were able to buy the assets of the former STI at much reduced prices, making establishment costs low and affordable for even small scale investors. The private trawling industry benefitted from the fact that the NSW Government had introduced trawl fish to the consumers and developed a market that could absorb large landings of sea fish like flathead. The result of this support was that the private industry grew rapidly and expanded to the point where overfishing became possible.

The fish disappear, 1928

Two events halted the progress of the steam trawling companies by the end of the 1920s; the downturn of the Australian economy during the Great Depression, and the environmental collapse of the fishery at the Botany Ground in 1928.

The 1920s had been characterised by significant public spending on infrastructure funded by overseas borrowing (mainly English capital) to stimulate economic growth. The State

508 Commission of Taxation v. Cam and Sons, 1936.
Government’s investments had heavily favoured activities in urban and metropolitan areas.\textsuperscript{509} The collapse of the American stock market in 1929 triggered what is known as the Great Depression, a global economic downturn that lasted until the late 1930s. Australia’s economy was hard hit by the Depression, because the nation relied on the export of industrial and agricultural products. When the prices of wool and wheat fell in early 1929, and exports dropped along with the withdrawal of English capital that had fuelled many of the 1920s public projects, Australians faced a severe financial crisis.\textsuperscript{510} Confronted with various challenges that emerged during the Depression the policy of private growth by public investment was reappraised. In reality however the retreat from public provision of infrastructure did not begin in earnest until after Second World War.\textsuperscript{511} Of all the jurisdictions NSW was worst hit by the economic downturn. Unemployment in the industrial sector rose to a point where one in three unionists in NSW was unemployed in 1932. The highest rate of unemployment was found in the State’s industrial districts and throughout the cities.\textsuperscript{512}

A stagnant economy and reduced economic activity hit the trawling companies hard. With the trawling companies selling their catches nearly exclusively at the Municipal Market they were vulnerable to changes in urban demand for their product. Due to its relatively high price fish was often considered a luxury food item for the average household and only when landings were abundant, and prices were lower than normal, fish could be considered a basic staple on a par with meat.\textsuperscript{513} Falling demand, low prices and increased costs strained the finances of the companies, a situation that lasted most of the 1930s. Despite this situation, the first sign that the STI was in difficulties was not the economic recession but the ecological collapse of the fishery on one of the trawling grounds.

It was a wakeup call for the industry when the flathead fishery at the Botany Ground collapsed during the season 1927/28. The Botany Ground was instrumental to establishing the private industry during 1923 and 1924 and was considered financially important to the continued prosperity of the industry.

\textsuperscript{509} Butlin, N., 1982, pp. 28-36.
\textsuperscript{510} Clark, M., 2006 (1963), p. 266.
\textsuperscript{511} Butlin, N., 1982, pp. 36-37.
\textsuperscript{512} Kingswood, B., 2006, pp. 142-143.
\textsuperscript{513} Annual Report on the Fisheries of NSW for the Year 1929, p.2.
In 1928 Colin W. Mulvey, a marine engineer associated with the industry summarised the early history of private steam trawling in NSW for Stanly Fowler, the organiser of a series of federal fisheries conferences. According to Mulvey, immediately after the four private companies took over the fishery over May to July 1923, they began to flood the wholesale market with flathead from the easily accessible Botany Ground. The market had problems absorbing the catches, since the network of State shops no longer existed and the consumers were wary of trawl-fish after having experienced less than pristine products from the STI (Mulvey joked that the aroma from the shops was emblematic of the management).

Prices were about 18 to 24 shillings per box, which was close to cost price and left the trawling companies with no profit to pay instalments owed on vessels. When the ‘Botany Glut’ occurred later that year, catches doubled and the market was flooded by flathead. As a result prices fell as low as 4 to 2 shillings per box. Research from 1952 revealed that the phenomenon was caused by an annual concentration of spawning flathead on the ground. As Mulvey described it “There was no talk of limiting catches, it was just kill and quit”. The glut proved a breakthrough for the industry because retailers embraced the cheap supply and new outlets were opened daily. When the glut ended after six weeks, it had created a higher demand for trawl fish and prices of flathead rose again, aided by the fact that retailers were more confident to sell large quantities of fish for a relatively small profit margin.

Because of rising retail prices, the industry was now facing the risk of losing market share and had to increase landings by investing in more trawlers. This circle of continued reinvestment to keep prices low to stimulate sales by increase productivity came under threat when catch per effort again began to fall.

514 C. W. Mulvey, was closely associated with trawling interests in England and NSW. He was one of the original founders of Red Funnel in 1925 and had in 1927 been manger of Victorian Fisheries Co Pty Ltd in Melbourne. Victorian Fisheries had bought Jane Wright in England and sailed her to Melbourne in August 1927. The same year she was sold to Can and Sons and renamed Camro. In 1936 he was negotiating with the New Zealand Government on behalf of a Melbourne Syndicate to establish a fish factory and fishing company relying on an English workforce. The New Zealand Government did not support the plans for the Southern Fisheries Development Company and without their approval the proposal was not followed through.

515 Coastal Trawling, Tricabia Fisheries, ‘Our Boys’ and Cam and Sons.


517 PCLJ: Letter from Colin W. Mulvey to S. Fowler, Secretary to the Australian Fisheries Conference, 28 February 1928.

518 PCLJ: Letter from Colin W. Mulvey to S. Fowler, Secretary to the Australian Fisheries Conference, 28 February 1928.
The Botany Ground was not the only one frequented by the trawlers, and as the fleet grew, the range of its operations increased to fishing off grounds along the whole of the NSW coast (see Figure 1-1). It was therefore ominous when the Botany Ground no longer yielded any fish, amid the overall catches per vessel declined as well. Before 1928 a skipper from Red Funnel would on average land 402 boxes (12.8 tons) of flathead after a six-day voyage but in 1929 the amount was only 254 boxes for the same cruise time. The Fisheries Department estimated that landings in general had declined from an average of 400 boxes (12.7 tons) of fish per vessel per week in 1926 to 360 boxes (11.4 tons) in 1927, to only 270 boxes (8.6 tons) of fish per week in 1928.

Decreasing productivity had a serious effect on the financial situation of the companies. Estimates prepared by Colin W. Mulvey, in February 1928 for the Australian Fisheries Conference, calculated costs and earnings of a trawler engaged in the Sydney trawl fishery around 1927 and 1928. Based upon an average catch of 400 boxes per week sold at 21 shillings, total costs including commissions and fees (organisation expenses not included) amounted to £16,070 making a profit of £4,930 before taxes per year per vessel. Because those vessels built in NSW were about 50 percent more costly in insurance and depreciation than their British counterparts, and generally more expensive to run, they only earned a profit of £3,760 before tax.

Using Mulvey’s information about costs and earnings, it is possible to roughly estimate the economic impact of reduced landings. If landings dropped to 270 boxes per week per vessel and were sold for the same price (21 shillings), the total cost per vessel would be £14,800 but the profit would instead turn to an annual loss of £623, and even more for the trawlers built in NSW. Mulvey based his calculation on an average wholesale price of 21 shillings which he considered a realistic one. However, the Fisheries Department believed that an average price of 30 shillings per box during 1928 was more correct, but it is likely that this figure represented consumer not wholesale prices. If trawled fish was sold wholesale for the prices quoted by the Fisheries Department, but in reduced quantities, the profit would be more or

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519. SMH, 12 December 1929.
521. PCLJ: Letter from Colin W. Mulvey to S. Fowler, Secretary to the Australian Fisheries Conference, 28 February 1928.
less the same as before provided that costs remained the same. But as the Botany Grounds yielded less fish, fishing efforts on the more distant grounds intensified, raising production costs. In addition the companies had continued to invest in new second-hand trawlers to keep up production (the trawling fleet increased from 11 to 18 vessels in 1929) which had to be paid off. The economic downturn beginning in 1929 would also have contributed to reduced earnings. Based upon the estimates above noted there is no doubt that from about 1928 the industry experienced growth in overhead costs/operational costs and decline in earnings causing significant financial stress, especially when the catch from the Botany Ground did not recover. The collapse of this important, near city fishing ground was symptomatic of a general depletion of the NSW trawling grounds. Although landings and the number of vessels involved in the industry had increased, the average landing per vessels had declined dramatically.

Faced with falling productivity and rising costs the companies’ first response was to appeal to State and Commonwealth governments for assistance in the form of fisheries research. Trawling in Australian waters was first considered by the Commonwealth Government in 1908 when it had financed the building of *Endeavour* and employed Harald Dannevig to locate fishing grounds. When steam trawling was first established in 1915 it was financed by the NSW Government. In 1929, when the economic future of the private companies began to look dire, the companies insisted that the same government again fund fisheries research and investigated trawling grounds to develop the industry and solve the problems of falling catch rates.

At the same time the Commonwealth Development and Migration Commission had in 1927 initiated an Australian Fisheries Conference to look into the state of Australia’s fisheries and how they could be further developed. The conference had representatives from all State fisheries departments and from the major scientific institutions such as CSIR and University of Sydney. During the next two years a series sub-committees prepared reports on various aspects of the industry and who would develop it. The reports and their recommendations were approved by the whole Conference in July 1929. One of the overall recommendations of the Conference, which will be discussed further in the next chapter, was to establish a permanent national body to conduct marine and fisheries research.
The companies actively lobbied for the commissioning of a federal investigation vessel specially dedicated to trawl-research, and targeted the special Deep-Sea Fishery Investigation Committee,\(^{523}\) established by the Australian Fisheries Conference. Cam and Red Funnel were able to influence the Committee as the only large fishing companies in Australia engaged in deep sea fishing. The Deep-Sea Fishing Committee’s focus was on how best to develop a pelagic industry in Australia and on how to expand the existing industry to other jurisdictions. The Committee held that the greatest obstacle to the industry was a lack of knowledge about marine resources and it recommended that a research vessel, equipped with commercial trawling gear should begin commercial fisheries investigations as soon as possible. The proposal was enthusiastically supported by the companies on the basis that they could only continue its development if a research-trawler located new fishing grounds and researched the habits and migration of commercial species. For the benefit of NSW Government officials the trawl owners argued that making information about the seasonal movement of fish available to the industry it would result in more efficient fishing and bigger catches that ultimately would reduce consumer prices to “within the reach of everybody”.\(^{524}\)

The companies also declared that they could not afford to look for new fishing grounds, and lacked the expertise to map the habits and migration patterns of their target species. Acute difficulty in locating the new location of the fish from the Botany Ground was mentioned by Chas Caminiti from Cam and Sons as the type of problem that required a research vessel. The trawl owners also held that they were entitled to government funded research, since other primary producing industries, such as farming already had dedicated research organisations to serve their research needs.\(^{525}\)

As the economic downturn continued, both Cam and Sons and Murrell responded in 1929 by trying to reduce their tonnage and offered to sell the Commonwealth Development and Migration Commission trawlers from their fleet to be used as a research vessel.

It was not only the Commonwealth Government that the trawling companies lobbied for scientific assistance. As the financial difficulties for the NSW trawling industry became more

\(^{523}\) Sometimes called the ‘Trawling Committee’.

\(^{524}\) NAA: Stanley Fowler – Correspondence files; Report of the Committee appointed by the Australian Fisheries Conference 1927, p. 11, [P2783/1 (2)].

\(^{525}\) NAA: Stanley Fowler – Correspondence files; Report of the Committee appointed by the Australian Fisheries Conference 1927, p. 12 [P2783/1 (2)].
pronounced, a series of articles emerged in The Sydney Morning Herald. From December 1929 to January 1930 the issue of a (federal) research trawler undertaking fisheries investigations and the state of the industry was discussed by trawl owners, marine scientists and government officers. The debate started when Captain Edward L. Hales, Superintendent of Red Funnel Fisheries Limited, proclaimed that the situation was so dire that unless scientific assistance was given to the industry he believed “that a great contraction of operation is inevitable” and that NSW could risk losing its trawling industry all together.

Hales broadened the aim of fisheries research from finding new trawling grounds and helping to develop pelagic fisheries by mapping the movement of fish, to also include providing management for existing fishing grounds. Hales was worried that large landings of flathead with roe from the Botany Ground had caused the depletion, and wanted the NSW Government to provide industry with direction on how best to conserve resources, if necessary by using policy to seasonally close the ground. By inviting a program of State management of trawling grounds based on scientific data, Hales tried to move the responsibility of regulating resource exploitation from the industry to the State.

While the NSW Government supported the idea of fisheries research, it also held that the matter was a federal issue, as agreed on at the Australian Fisheries Conference in Sydney in 1929. Therefore the NSW Government was unlikely to fund the type of fisheries research Hales wished for. To deflect any accusations that the NSW Government was not willing to support an industry it had been responsible for instigating, and which supplied about half the State’s fresh fish in 1929, Chief Secretary Chaffey instead replied to Hales’ article by denying that there was any depletion of fish. According to the Minister’s information any shortage of fish was caused by their movement to other grounds not frequented by the trawling fleet and that fish also naturally migrate with changes in sea temperature.

It was the Minister’s view that the alleged depletion of flathead was more likely caused by the industry itself since there were more trawlers sharing the same catch. In turn the Department held that the occasional absence of fish was a natural and common phenomenon in most fisheries around the world requiring vessels to sail further afield for their catch.

526 SMH: Help for the Trawling Industry, 12 December 1929.
527 NAA: Stanley Fowler – Correspondence files: Australia Fisheries Conference 1927-1929. Its origin, activities, and recommendations, p. 9 [P2783/1(2].
528 SMH: Trawling. Minister’s Comments, 13 December 1929.
Director of Fisheries, A. W. Wood called the industry reports ‘unreliable’ and stated that if he were provided with detailed catch data he “would be in a position to set a rest the false impression that our supplies of trawled flathead are being depleted.” Instead, Wood implied that industry members had started a false rumour to drive up the price of fish, in an attempt to cover costs involved in the recent expansion of the trawling fleet. The view that marine resources in NSW were unlimited and fluctuations in catches were caused by forced or seasonal migration of fish was supported by other debaters in The Sydney Morning Herald, most notable among them David Stead, who observed that “It is ridiculous to suggest that we have wiped them [tiger flathead] out anywhere and there is no evidence of this.”

Hales replied to the Minister by providing statistics that showed that landings had indeed decreased in 1928 even when the number of trawlers had tripled since 1924, and he continued to criticise the Fisheries Department for lack of support and for being passive in providing (scientific) information to industry. Only one official accepted that observations about the depletion of flathead might be genuine. T.C. Roughley was economic zoologist at the Technical Museum, a position he had held since 1911. He warned that the State could not afford to overlook a request for help from an industry of such importance, and urged the Commonwealth to show leadership and provide the necessary funding for an investigation trawler and a marine biological station to assist the industry in NSW and also develop Australia’s fisheries in general.

Although all parties agreed that knowledge of marine fish in Australia was limited, and would benefit from more investigations with a dedicated research trawler, no timeline for when this could happen was offered. The industry, represented by Hales, held that it was a NSW Government responsibility to regulate the resources and provide guidance such that industry could be self-managing.

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529 Annual Report on the Fisheries of NSW for the Year 1929, p. 3.
530 SMH: Fish Migration, 8 January 1930.
531 SMH: Trawling, 2 January 1930.
532 SMH: Marine Resources. Australia’s Sea Wealth, part 1, 20 August 1929, SMH: Marine Resources. Australia’s Sea Wealth, part 2, 21 August 1929, and SMH: A Review of Trawling Problems, 17 January 1930. It might have been coincidental but after the publication of the first article Roughley was refused the assistance of the Fisheries Inspectors in connection with his scientific work unless the Fisheries Director A.W Wood had authorized it in writing. Since 1924, Roughley had occasionally worked with the department studying oysters and providing the Branch with scientific information, and it seems suspicious that Wood suddenly would revoke their mutual beneficial agreement. See SRNSW: State Fisheries; Memorandum from A.W. Wood per Director of State Fisheries to all Inspectors, 1 October 1929 [4/7129].
The steam trawling companies appeal to the NSW Government for assistance was embedded in their understanding of the relationship between public and private sector, originating from colonial socialism where the interests of the two sectors were closely linked. However, the general economic reorganisation following First World War had changed the relationship. Although a structure of what Butlin has called a ‘complex interpenetration’ of public and private action and decision making existed, to protect Australian industries from international competition in the 1920s, there was also a growing tendency that States depended more on Commonwealth institutions to provide support and management framework.

Neither the Minister nor the Fisheries Branch were convinced that the industry’s motives were innocent and both were more concerned about food security and consumer prices than protecting flathead stocks. In their view fisheries research was a Commonwealth responsibility, and they had no intention of supporting such research. The NSW Government was also reluctant to admit that the trawling industry in NSW might have been based upon a false or too optimistic understanding and assessment of the marine environment which would render its efforts to initiate a sea-fishing industry unjustifiable. The trawling companies requested that the NSW Government devised a program of scientific based, government controlled management of trawling grounds, which could have been a key moment in the will to govern and an ecological refocus of fisheries management. But it was lost when the Fisheries Branch refused to acknowledge a depletion of resources and instead interpreted the situation as the companies trying to increase prices.

The problems raised by industry members about lack of State support did not result in a change of policy, and the NSW Government lost its chance to change and influence the sector. The matter of scientific assistance to the trawling industry remained unresolved until the CSIR (Council for Scientific and Industrial Research) established its Fisheries Division in 1937. Research into the fishery at the south east continental shelf did not begin until after Second World War. The debate in the Sydney Morning Herald also highlighted that despite nearly 40 years of contemplating marine fisheries in NSW and 15 years of steam trawling there was no real understanding of the marine resources and the effect of fishing on the continental shelf’s demersal populations. In hindsight the collapse of the trawl fishery on the

Botany Ground really was the first serious blow to the continued progress of the private steam trawling industry in NSW. It was also the first test of robustness of the State Government-private industry relationships, and when the NSW Government proved unwilling to provide governance for the industry when asked to do so, it lost a chance to engage: by the end of the 1920s the relationship between State and Industry was defined by growing antagonism and distrust of the other party’s motives.

**Stagnation and early industry decline, 1930-1939**

While the period 1923 to 1928 can be considered the golden age of steam trawling in NSW, the 1930s signalled the beginning of the long decline of the trawling companies. The 1930s was characterised by the industry’s growing financial difficulties and the range of alternative fishing strategies adopted by the companies in order to continue operations. The relationship between industry and State and Commonwealth governments during this period could be described as indifferent at best.

When the catch declined by 30 percent between 1928 and 1932, further straining the companies’ finances, the trawl owners’ immediate response to the crisis was to unite and use their market dominance to improve conditions. During the 1920s they had founded the Sydney Steam Trawler Owners Association, through which the three companies could share information and influence market conditions by solidarity in action. The Association was powerful; since the late 1920s the trawling industry controlled about half of the fresh fish market in Sydney. Until the fishery closed in 1961, the trawl owners continued to work in unison especially when dealing with governments, and would at times act like a cartel.

As a direct result of price and cost rises and the unwillingness of the State to assist the industry, in August 1930 during the annual flathead glut the Steam Trawler Owners Association decided to lay up five trawlers to increase prices and reduce costs.\(^{535}\) Throughout the lay-up the companies continued to deliver to their private wholesale customers which included hotels, restaurants and fish and chip shops which, in 1929, accounted for approximately one fifth of total trawl landings, but they reduced the amount of flathead put through the Sydney Municipal Market. This action created a shortage of fish on the retail

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\(^{535}\) Annual Report on the Fisheries of NSW for the Year 1929, p. 2.
market, driving up prices, which was possible because inshore fisheries were unable to fill the gap created by the trawling companies’ withdrawal from the wholesale market. The action continued for some months, prompting the Fish Buyers Association briefly to boycott purchase of flathead at an action in November 1930. 536

During the second half of the 1920s the trawling companies had tried to develop a market in Victoria, by having the trawlers occasionally land in Melbourne. It was a strategic move designed to create opportunities for expansion of the industry. Since many of the southern fishing grounds were closer to Melbourne than Sydney, this tactic made sense as long as the potential for development seemed unlimited. As the catch declined, the companies concentrated on supplying their core market in Sydney. Another possible reason for abandoning the Melbourne market was the high cost of bunkering coal compared to Sydney. 537

As the youngest and largest trawl operator with eight trawlers in 1929, 538 Red Funnel Fisheries was hit hardest by the economic recession. In November 1930 Red Funnel Fisheries Limited applied to the Supreme Court of NSW for permission to reduce the nominated value of its shares (its capital) from £175,000 to £70,000, by reducing the nominated value of each share from one pound to 8 shillings. In its application management also disclosed that, of the original shares two seventh of them were still unissued. 539

Unfortunately this act was not enough to stop the demise of the company. Having already lost SS Guundaal in November 1929 outside Cape Howe, Red Funnel lost its second trawler SS Koraaga in September 1931. Coincidentally the vessels were the last two of the three original trawlers the NSW Government had bought in England. 540 By September 1933 Red Funnels shares were traded for as little as 3 shillings and 2 pence on the stock market. On 19 October 1933 all company assets were sold to a new company called Red Funnel Trawlers Ltd. which

536 *Canberra Times*, 5 November 1930, p.1.
537 Among the documents from the Australian Fisheries Conference’s ‘Deep-Sea Fishery Investigation Committee’ was one mentioning that coal was sold for 26/- per tons in NSW, but for 40/- per tons in stats like South Australia. See NAA: Stanley Fowler – Correspondence files [P2783/1 (6)].
538 SS Dur-een-bee (1925), SS Bar-ea-mul (1925), SS Goonambee (1926), SS Koraage (1926), SS Guundaal (1926), SS Millimamul (1926), SS Gooldgai (1928) and SS Durraween (about 1929)
539 SRNSW: Item 9920, Red Funnel Fisheries Limited [17/5605].
540 SS Albert San (ex. Brolga,) had been wrenched off East Gippsland Coast in August 1926, while she steamed for Coastal Trading Company Ltd.
continued operations when the old company ceased trawling. Later that year, on 4 December, it was decided voluntarily to wind up the old company, Red Funnel Fisheries Ltd, and appoint Queensland National Bank Chambers, 27 Hunter Street, Sydney as liquidator. The final meeting was held in 17 December 1935, to inspect the winding-up of the company and decide how to dispose of any remanning property.\textsuperscript{541}

Prior to, or just after the creation of the new company, Red Funnel had sold \textit{Dur-een-bee} to Cam and Sons. Sometime after 1934 Cam also obtained \textit{Goonambee} from Red Funnel. Trawlers built at the government dockyard was known to be more expensive to run than those built overseas and, by selling them, Red Funnel got rid of its most expensively tonnage. The new company was then left with four trawlers and a trimmer organisation. Later, around 1938, when the company’s financial position had improved, Red Funnel bought the 19-year old steam trawler SS \textit{Korowa}.

During the 1930 Cam and Sons also lost several of its trawlers, which were only partially replaced. Also A. A. Murrell also lost one of its trawlers and did not replace it. Aside from some changes in ownership the number of NSW trawlers involved in south-east continental shelf fishery declined in the 1930 as the fleet aged. It was not before 1946 that newer (second-hand) trawlers were introduced to the fishery (see Figure 5-1).

\textsuperscript{541} SRNSW: Item 9920, Red Funnel Fisheries Limited [17/5605]. It is likely that the former STI Fish Depot in Newcastle was transferred to a second company which in 1933 began operating as a fisher merchant under the name Red Funnel Fisheries Newcastle Pty. Ltd.
Figure 5-1. Approximate number of steam trawlers engaged in fishery in NSW per year, 1915-1961.

When in 1928 the trawling companies had overfished the Botany ground, and the catch was becoming costly, the companies turned their attention to southerly trawling grounds, but by 1931 the catch was declining at all known grounds and the companies were desperate to find a way to make their trawlers pay. Beginning to realise the limits of the productivity of the trawling grounds found on the continental shelf, Cam turned attention to trawling grounds in New Zealand waters. The New Zealand fish exporters had, for some time, exported fish to the Sydney Market; trawl owners like Sanford had in 1925 established a branch in Sydney. By 1932 New Zealand exported about 550 tons of fresh or frozen fish to NSW, or 51 percent of the total value of fresh and frozen fish imported into NSW. If Sydney-based trawlers could capture the fish in New Zealand and deliver the catch directly to Sydney there were considerable economic gains for both the companies and the NSW Government. The companies could sell fish without a 10 percent import tax and the added costs of trading through a middle-man, and the Government would reduce import and gain tax from the profit made by companies. Yet the economic advantages flowing to the NSW trawlers were reduced in 1934 when all admission of New Zealand fish became free of duty in Australia.

It is not known when exactly Cam began to trawling in New Zealand’s waters, but on 15 January 1933 Alfie Cam was discovered trawling outside the Manukau bar off Auckland by the local coaster Hokianga. A crew member onboard Alfie Cam had injured his hand and had

\[\text{Annual Report on the Fisheries of NSW for the Year 1932, p. 6.}\]
to be shipped to land for treatment.\textsuperscript{543} Had the coaster not been around to offer assistance the activities of the trawlers would have remained unknown to the New Zealand’s authorities since Cam and Sons was reluctant to publically share information’s about the company’s activities.\textsuperscript{544}

According to a later report made by CSIR’s Division of Fisheries \emph{Alfie Cam} made seven voyages of twenty-two days each to New Zealand waters during 1934.\textsuperscript{545} Its activity was discovered by the New Zealand authorities when in October 1934 it came to Wellington to bunk coal. Over the following years, \emph{Alfie Cam} was repeatedly spotted fishing in New Zealand waters by other New Zealand fishing trawlers. A pattern developed where \emph{Alfie Cam} would steam to Westport on the South Island to bunk coal, leave for the trawling grounds to fish, and from there steam directly to Sydney when its holds were full.\textsuperscript{546} By December 1935 it was joined by \emph{Oliver Cam}, and finally in September 1938 by Red Funnels \emph{Korowai}. The activity of the Sydney-based steam trawlers continued until they were abruptly stopped by the outbreak of Second World War in 1939.

The Sydney based steam trawlers ‘invasion’ of the fishing grounds angered the New Zealand authorities and fishing industry, but little could be done. As long the fishing activity took place outside territorial waters (all waters within three miles off shore) nothing in the New Zealand’s Fisheries Act of 1908 forbade foreign vessels fishing in its waters. Only if the trawlers were fishing within New Zealand’s territorial waters did they need a licence, and until 1937 these were given automatically to all applicants.\textsuperscript{547}

Trawling in New Zealand waters was not the only alternative fishing strategy the companies explored in the 1920s. Seine boats, using Danish seines, had been introduced into the shelf fishery in 1936, and by 1937 Red Funnel had acquired its own large seiner \emph{Nanagai}. Seine boats had the advantage of being smaller, locally built, and more affordable than the larger, more expensive and imported steam trawlers. Cam and Sons were said to have owned three seiners prior to World War One, but it has not been possible to confirm this information. The

\textsuperscript{543} Johnson, D., 2004, p 128.
\textsuperscript{544} \textit{Canberra Times}, 26 January 1933, p.1.
\textsuperscript{545} NAA: CSIR Head Office – Correspondence; Division of Fisheries; Conclusion of Research Period May 1938- May 1943 and Proposed Program for Future Research, April 1951, p.4 [A9778 G16/3/F/11]
\textsuperscript{546} Johnson, D., 2004, p 130.
\textsuperscript{547} Johnson, D., 2004, pp. 128-131.
Danish seine technology targeted pelagic fish, tapping into a previously unexploited resource. Despite its potential, seining was only attempted by Red Funnel in the 1930s, although briefly during Second World War Cam and Red Funnel tried to build a small fleet of seiners, but these were taken over by the Navy before they could be fully integrated into the business. The seining technology was particularly embraced by small independent fishermen along the coast, and with government assistance this industry proliferated after the war.

Cam and Sons also considered other fisheries schemes in the late 1930s. Cam had threatened local industries in New Zealand with talk of permanently placing three steam trawlers in Wellington, opening an oyster-canning factory on Stewart Island and entering the blue-cod fishery at the Chathams. However, nothing became of these plans, and they were likely no more than bravado.

More serious thought was given to tuna-fishing by Cam and Sons. In November 1939 Cam indicated to officers at the CSIR’s Fisheries Divisions that their company intended to go into tuna fishing and wanted to build a canning factory, equipped with machinery purchased in the United States of America. Nothing more was heard about the project and by 1941 it had been shelved.

Being the most versatile of the three trawling companies Cam and Sons also turned to coal mining during the 1930s. Since coal was the source of fuel used to power the trawlers’ steam engine, it made up a large part of the trawlers’ working expenses. To reduce costs in July 1934 Cam acquired a lease on the Aberfield coal-mine just south of Swansea, NSW, near what was coincidentally called Cam’s Wharf. The mine was run by a subsidiary company, controlled by Cam, called Aberfield Coal, which supplied Cam’s trawlers. When it turned out that the mines produced more coal than the trawler consumed, it was decided to expand the venture into retail distribution of coal. When the quality of the coal in the Aberfield mine proved to be too poor a quality for household purposes, a second lease was taken out in 1935 for a mine located close by. Similar to the first mine, the North Wallarah Mine was run by a subsidiary company called Wallarah Colliery Pty. Ltd. As the New Zealand fishery improved, Cam and Sons decided in 1938 to leave the coal distribution trade to concentrate

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549 NAA: Stanley Fowler – Correspondence, files: Cam and Sons [P2780].
on the fish part of the business, and instead sold excess coal to an independent distributor, R.W. Miller Pty Ltd.  

**On the edge (of the continental shelf): The trawling companies’ situation by 1939**

By 1939 all the known trawling grounds on the Australian South East continental shelf were fully exploited, and the trawlers had increased their trawling depth and extended the fishery to the edge of the shelf. The companies’ situation had improved somewhat as the Depression eased off, but the general economic outlook for the industry was still not promising.

The official biographer of Cam and Sons, describes the 1930s as a period of growth and prosperity for the company, since it increased its rate of activities, bought or leased more land and expanded the vessel fleet. But it was Cam’s venture into trawling in New Zealand and branching out to coal that gave Cam a competitive edge over the other trawl owners and allowed the company to remain viable.

Red Funnel also recovered somewhat from economic hardship and the decline in landings caused by overfishing of the continental shelf. By 1937 the annual profit was £13,619 (before taxation and costs of market dues and boxes, legal expenses, donations, interest on overdraft, bad debts and depreciation), but already in 1938 the profit had dropped again to £8,927 and in 1939 declined further to £5,347. The net earnings per vessel (the earning of the ship after its working cost had been deducted but without taking into account any market or organisational costs), declined from an average of £5,390 in 1937 to £2,800 in 1939.

Confidential information about the finances of an anonymous Sydney steam trawling company (Red Funnel or A. A. Murrell) given to the Commonwealth Crown Solicitor in 1941 revealed a similar pattern. The net earnings per trawler declined from about £5,600 in 1937 (financial year ending June) to £4,000 in 1939.

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552 NAA: Navy Office; Letter from Troup Harwood and Co, Charter Accountants to Red Funnel Trawlers, 30 September 1941 [MP150/1 74/201/3230].
553 NAA: Navy Office [MP 150/1 674/203/442].
While the other two trawling companies had extended their operations to include other types of gear or fishing grounds, A. A. Murrell had continued to rely exclusively on fishing with steam trawlers on the continental shelf, supplying primarily its own shops and wholesale business. Having lost one trawler in 1934, the company continued to fish with *Samuel Benbow* and *Tongkol*, but found it hard to make the operating of the vessels economically viable.

In November 1939 Murrell sold *Samuel Benbow* to Cam and Sons for £9,400, with £3,000 on delivery and the rest in instalments of £80 per week. The 21 years old vessel was rumoured to be due for classification, and without the funds to pay for the necessary repairs Murrell was forced to sell the vessel. Cam spent a small sum of money on it after acquisition, but the Navy took it over in July 1940, and had to spend another £6,000 to make it seaworthy.

By the end of 1939 Murrell had virtually left the fishing industry and relied on its fish merchant business. Another sign that not everything was well in the industry was the rumour that in the late 1930s Cam experienced some difficulty getting company ships insured because of their poor condition and costly compensation claims. By the end of the 1930s the NSW trawling industry had shrunk to an aging fleet of thirteen trawlers.

**Second World War, 1939-1945**

The outbreak of the Second World War radically changed the situation of the trawling companies, and brought them out of the deadlock they were in. The Royal Australian Navy needed commercial trawlers for minesweeping in Australian waters. In September 1939, the RAN requisitioned six of the Sydney trawlers for mine sweeping. During June and July 1940 another four trawlers were requisitioned from Red Funnel and Cams and Sons. Finally during May and June 1942 another two trawlers were requisitioned, leaving only *Bareamull* from Red Funnel and *Dur-een-bee* from Cam and Sons to supply the market. The situation was initially not without appeal to the trawl owners. The Navy’s requisitions reduced the companies’ burden of maintaining and running aging vessels and the charter hire paid by the

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554 Initially Cam was only able to pay the second instalment and Murrell offered the vessel to Red Funnel instead for £7,000. Cam eventually paid the instalments, although it was rumoured that they were partly paid in fish for Murrell’s shops.

555 NAA: Navy Office [MP 150/1 674/203/442].
Navy provided the companies with a stable source of income, instead of having to rely on the return from fishing the limited resources on the continental shelf.

As was the case during the First World War private fishing vessels, especially steam trawlers, were an essential part of Australia’s naval defence and the owners, controlling the only fleet of large trawlers in Australia, used the situation to their advantage. When negotiations about rates of hire began, they pressed for high rates. Red Funnel approached the Secretary of Navy Offices suggesting that a reasonable charter hire for a trawler like Korowa was £2 per gross ton per month. They were rather disappointed when the Naval Charter Rates Board instead offered a basic fixed rate of 9 shillings per gross ton per month, based upon rates given by the British Admiralty to British vessels.\footnote{556} While the trawl owners did not have any success in influencing the rate of charter, they did manage to get the RAN to reimburse the companies’ requisition expenses and pay a yearly ‘establishment charge’ designed to cover organisational expenses proportional to the earnings normally made by the requisitioned trawlers.

In 1941, the trawl owners used A. A. Murrell as a mouthpiece to suggest to the Navy Offices that they outright bought the vessels from the owner instead of hiring them. A. A. Murrell ensured that all the trawl owners were prepared to repurchase the vessels from the Navy after the war.\footnote{557} Since the value of fishing vessels had increased dramatically since the outbreak of the war, the companies stood to gain a profit they could use to reinvest in newer trawlers after the war.

On 16 June 1943 the RAN bought Gippsland from Red Funnel for £10,462. Red Funnel had purchased the former tourist passenger carrier Gippsland from Brisbane in September 1940 and converted her to a carrier of fish from vessels fishing on the south coast, so they did not have to sail to Sydney to offload catches.\footnote{558} Later in June 1943 the RAN also purchased all six steam trawlers\footnote{559} requisitioned from Cam and Sons for a total sum of £65,000 (Gorangai was lost on duty in 20 November 1940). Tongkol was purchased from A. A. Murrell on 7 July 1943 for £15,500.\footnote{560}
Taken that *Gippsland* was 35 years old and only 133 tons gross, the price received by Red Funnel was very profitable. Also A. A. Murrell profited from the sale, having only paid £9,000 for *Tongkol* in 1928. All of Cam’s trawlers were between 23 and 30 years old; five of them had in 1934 been valued at £12,500 (except from *Goonambee* and *Samuel Benbow* which was of similar age but had been purchased later). Even if the Cam trawlers’ value in 1934 might then have been put below market prices for taxation purposes, the price rise between 1934 and 1943 was impressive. Given that the trawlers were old and poorly maintained Cam made a generous return on their initial investment.

The high prices received from the vessels was a combination of the Navy’s need for trawlers for minesweeping and the Sydney trawl owners ability to work together as a cartel and support each other’s claims. The loss of SS *Goorangai* illustrates how much the trawl companies benefited from RAN’s need for trawlers. In 1926 Cam purchased the previous STI trawler SS *Goorangai* for £3,500 and used it for trawling on the continental shelf. Not built to class the trawler sailed unclassified, in addition Cam had for some time prior to 1939 been unable to get insurance cover for any of its vessels because of heavy losses. In April 1939 Cam had SS *Goorangai* insured for £7,000 at the Queensland Insurance Company. It was requisitioned by RAN on 8 September; before the trawler was about to sail to Melbourne Cam had tried to take out a cover of £12,000 but the underwriter, Hartford Company, was only willing to ensure the trawler for £8,000. After the RAN took control of her (see Figure 5-2), the Department of the Navy, with the consent of Cam, had the vessel surveyed by Lloyds on 2 November 1939, which estimated the ship’s market value at £3,500. The charter hire Cam received from the Navy was £680 per month.
On the 20 November 1940 HMAS Goorangai collided with HMAS Duntroon off Port Philip Bay and sank with its crew of 24 and became the first Royal Australian Naval surface vessel to be lost in war. When the sum of compensation was to be decided, Cam and the RAN could not agree about the amount. Cam claimed that the vessel was worth £20,000 based upon the earnings of the boat in 1939. In correspondence with the Admiralty about vessel charters, very similar values were quoted by all three trawling companies and may indicate that the owners had agreed among themself to fix the values of trawlers high to increase profit. Alternative estimates given by Lloyds to the Navy placed the market value of a vessel like Goorangai at the time of loss to be £14,000 if the vessel had been used for fishing, but only £8,000 if the vessel had been used for other purposes. The dispute did not reach its conclusion before 1942, when in a court settlement the two parties agreed upon a compensation of £9,500 to Cam and Sons for the loss of Goorangai.

Of the company’s remaining fleet of fourteen ships (including six seiners build during the war), the Navy re questioned thirteen, of which the company repurchased six after the war.\footnote{Fisheries Newsletter: Obituary, October 1947, vol 6 no 5, p.19.}
Fishing during the war and immediately post-war

As the war continued the RAN requisitioned more steam trawlers, along with most of the independently owned seiners and fish landings dropped dramatically while market prices rose.

The only trawler to continue the fishery throughout the war was *Bareamull* owned by Red Funnel. *Bareamull* was requisitioned by the Navy on 7 September 1939, but due to the deteriorated state of the wooden hull the Navy estimated that repairs needed to make the vessel fit for service would be too costly, and decided to return the trawler to Red Funnel a few days later. The fishing effort was also affected by the loss of two trawlers at sea. Red Funnel’s *Millimumul* was lost after hitting a mine off Barren Joey on 26 March 1941, and seven crew members died when the ship went down. Cam and Sons lost a trawler when *Durr-eeen-bee* was attacked by a Japanese submarine on 3 August 1942 and wrecked north of Batemans Bay, three crewmembers died on that occasion.

By 1943 the fishing fleet was down to one steam trawler, Red Funnel’s *Bareamull*, and the annual steam trawl landing was as low as 1,032 tons, but prices, compared to pre-war level, had on the other hand more than doubled.\(^{562}\)

The other companies did not totally miss out on the favourable market conditions, lacking a fishing fleet they instead increased their agent activities and began selling fish from the inshore fishing industry. In second half of 1944 the RAN also released a trawler to each of the three trawling companies, to increase productivity.

The conversion of the trawlers back to fishing vessels, and their return to the owners was slow due to a labour shortage, congestion of dry docks and slipways and industrial trouble. Most of the seven trawlers were not returned before the second half of 1946. When the trawlers were surveyed before being refit, it was discovered that many were in great need of repair. In the case of Red Funnels *Goolgwai* and *Durraween*, Lloyd’s surveyor in May 1946 found that the all of the steel decking, and a large part of the superstructure and engine room casing had to be replaced for the vessels to be in class. The officer in charge assessed that the cost of the repairs and necessary reconversion amounted to about £22,000 for *Goolgwai* and

\(^{562}\) Klaer, N., 2006, p. 48 and 114.
£20,000 for Durraween. Despite the damage being due to normal wear and tear mostly sustained before the RAN took over the ships, the Navy had very little luck with getting Red Funnel to share the costs. In July 1946 Red Funnel successfully argued that the charter rate had been too low compared to what the company could have earned if the trawlers had been engaged in fishing during the time the vessels were charted, and since the trawlers had been in class when they were taken over by the navy it was the RAN’s total liability to bring them up to standard. In the end the Navy bore the brunt of the costs, acknowledging that they returned the vessels: “in a condition vastly superior to that in which they were taken from the owners.”

Although all three major trawling companies complained that they had lost money by chartering their vessels to the Navy rather than using them for fishing, there is no doubt that the companies ultimately benefitted financially from the war.

With a newly reconditioned fleet, continuous high wholesale prices, a comfortable net worth and relatively high catch rates the trawling companies were ready to renew their interests in steam trawling on the continental shelf. Red Funnel and Cam had bought or built six seiners during the war which after completion had been taken over by the Navy, but discontinued their investment in seine fisheries and focused their attention on their steam trawling fleets. Both Red Funnel and A. A. Murrell also invested in newer trawlers from New Zealand, the first since the 1920s. Red Funnel, which had lost one vessel during the war, bought three former Royal New Zealand Navy minesweepers in 1946. HMNZS Aroha, HMNZS Waiho, and HMNZS Waima were all built in New Zealand by the New Zealand Navy during the war, at an average cost on delivery of £73,200. The vessels were all steam trawlers of the Castle Class and similar in design to those already fishing from Sydney. Having no need for the trawlers after the war the vessels were mercantiled in 1946 and sold to Red Funnel for a lump sum of £16,700 each and renamed SS Maldanna, SS Matong and SS Moona. A. A. Murrell bought the two sister vessels: HMNZS Awatere and HMNZS Pahau under similar conditions the same year. The very reasonable price allowed the companies to invest in

563 NAA: Navy Office [674/201/3230].
564 NAA: Navy Office; The Deputy Superintendent to the Department of the Navy, 10 May 1946 [674/201/3230].
565 A forth trawler SS Mulloka was bought by Red Funnel around the same time.
several vessels at the same time, instead of having to expand their fleet more gradually. It also boosted the activity of the trawling companies in similar ways to those appearing after the sale of the state trawlers in 1923.

In the post-war period the NSW steam trawl industry entered its next and final stage, characterised by emerging scientific management of marine resources and increased government control of the market. The rise of a Commonwealth fisheries research organisation in the 1930s and the slow move towards a science based management strategy for the shelf fishery will be further discussed in the next chapter. How the NSW Fisheries Department gradually gained control over the trawling companies by market regulations in the 1950s will be the subject of chapter seven.

**The end of the NSW steam trawling industry**

To understand the reasons why the private trawling industry collapsed during the 1950s and early 1960s, despite the capital injection and rejuvenation of the fleet that had taken place after the war, it is necessary to look at the market for trawled fish in NSW and to examine how changes in catch composition and prices for fish affected economic returns to the industry.

Throughout its history the NSW steam trawling industry targeted several species, but flathead from the continental shelf was the main target species and the most valuable in terms of price per kilogram.

When the STI started its operations it landed most of the fish caught by its trawlers and sold them through its own fish shops; still most of the fish sold in the state shops was flathead, leatherjacket or gurnard. In his report on State Trawling Industry to the 1920 Royal Commission George Mason Allard calculated that during the financial year 1918/19 flathead composed 52 percent of the total annual catch but only 45 percent the previously year. The percentage of leatherjacket also raided from 4 percent in 1917/18 to 11.3 percent in 1918/19, but Gurnard only made up 16.5 percent of the landings in 1918/19, having declined from 26.5 percent the year before. Similar percentages are reached by Klaer who estimating

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that the total catches by species during the period from 1918 to 1923 composed of 52 percent flathead, 19 percent leatherjacket, 12 percent latchet (which is often confused with gurnard, and therefore often recorded together) and 17 percent other species.\textsuperscript{568} Compared to the original calculations from 1920 is seems that Klaer has overestimated the proportion of leatherjackets, and underestimated latchet in 1918. His estimate of flathead however seems sound.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Flathead</td>
<td>45.00</td>
<td>52.09</td>
<td>50.21</td>
<td>48.25</td>
</tr>
<tr>
<td>Gurnard/Latchet</td>
<td>26.44</td>
<td>16.46</td>
<td>17.68</td>
<td>17.16</td>
</tr>
<tr>
<td>Leatherjacket</td>
<td>4.02</td>
<td>11.26</td>
<td>10.17</td>
<td>14.54</td>
</tr>
<tr>
<td>Other species</td>
<td>24.54</td>
<td>20.19</td>
<td>21.94</td>
<td>20.05</td>
</tr>
</tbody>
</table>


Having established that Klaer’s estimates on total catch correspond within reason with the earliest historical records, his estimate of the changes in catch proportionate to species reveals that after 1939 there was a clear trend towards decline in catches of flathead and an increase in catches of less valuable species such as morwong and redfish (see Figure 5-3).

\textsuperscript{568}Klaer, N., 2006, p. 129.
Until 1939, flathead composed about half the catch of the steam trawlers, but after 1939 the proportion declined rapidly until flathead made up only 6.8 percent of the catch in 1961. Leatherjacket and latchet follows a similar trend, their proportion of the catch being reduced slowly since 1930 and nearly disappearing in the post-war period, although latchet in the final years increased to post-war levels. To compensate, catches of morwong and redfish increased dramatically, especially in the post-war period. In 1915 morwong only made up 5.6 percent of the catch but in 1961 as much as 38.7 percent of all catches. The increase in redfish was more modest, from 4.5 percent in 1915 to 17.9 percent in 1961. By the end of the period ‘other species’ made up nearly one third of landings. Changes in species composition were most likely due to the impact of previous decade’s unrestricted exploitation of the continental shelf.\textsuperscript{569}

\textsuperscript{569} See also chapter 1 on ‘Ecological changes on the south-east continental shelf 1915-1961’
Information on monthly and annual prices received for fish by Red Funnel Trawlers is available from 1939 to 1952. The data can be used to establish a pattern for value of fish in NSW during the period, as well calculate overall trend in trawling companies’ earnings.

<table>
<thead>
<tr>
<th>cents/kg Index 100=1945</th>
<th>flathead</th>
<th>gurnard</th>
<th>latchet</th>
<th>leatherjacket</th>
<th>morwong</th>
<th>mean, all fish</th>
</tr>
</thead>
<tbody>
<tr>
<td>1939</td>
<td>10.99</td>
<td>2.17</td>
<td>5.60</td>
<td>2.56</td>
<td>6.91</td>
<td>8.44</td>
</tr>
<tr>
<td>1940</td>
<td>12.39</td>
<td>2.56</td>
<td>5.35</td>
<td>2.75</td>
<td>10.28</td>
<td>7.87</td>
</tr>
<tr>
<td>1941</td>
<td>15.26</td>
<td>3.39</td>
<td>5.99</td>
<td>3.26</td>
<td>10.98</td>
<td>10.16</td>
</tr>
<tr>
<td>1942</td>
<td>16.71</td>
<td>4.30</td>
<td>6.25</td>
<td>4.06</td>
<td>16.71</td>
<td>10.49</td>
</tr>
<tr>
<td>1943</td>
<td>21.29</td>
<td>6.15</td>
<td>7.77</td>
<td>7.20</td>
<td>14.76</td>
<td>15.13</td>
</tr>
<tr>
<td>1944</td>
<td>27.01</td>
<td>8.07</td>
<td>8.08</td>
<td>10.09</td>
<td>18.31</td>
<td>20.71</td>
</tr>
<tr>
<td>1945</td>
<td>22.64</td>
<td>8.31</td>
<td>8.30</td>
<td>10.24</td>
<td>18.42</td>
<td>17.19</td>
</tr>
<tr>
<td>1946</td>
<td>20.40</td>
<td>8.05</td>
<td>8.84</td>
<td>10.06</td>
<td>18.07</td>
<td>17.01</td>
</tr>
<tr>
<td>1947</td>
<td>20.56</td>
<td>7.72</td>
<td>7.73</td>
<td>8.58</td>
<td>16.18</td>
<td>16.18</td>
</tr>
<tr>
<td>1948</td>
<td>22.21</td>
<td>6.99</td>
<td>7.00</td>
<td>7.78</td>
<td>14.66</td>
<td>14.66</td>
</tr>
<tr>
<td>1950</td>
<td>21.60</td>
<td>5.78</td>
<td>6.26</td>
<td>14.32</td>
<td>10.74</td>
<td></td>
</tr>
<tr>
<td>1951</td>
<td>19.74</td>
<td>9.50</td>
<td>5.25</td>
<td>15.22</td>
<td>11.97</td>
<td></td>
</tr>
<tr>
<td>1952</td>
<td>20.37</td>
<td>8.09</td>
<td>8.43</td>
<td>5.80</td>
<td>13.54</td>
<td>12.45</td>
</tr>
</tbody>
</table>


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Table 5-2 clearly shows a significant increase in prices from 1941 which gradually falls during the post-war period, but by 1952 still was higher than before the war. A system of fixed prices for fish had been introduced during the war, to avoid overpricing and black marketing. Still the prices received by Red Funnel during the war and immediately during the post war period were significantly higher than peace-time prices. In December 1951 fish was removed from price control and the system of fixed price abolished, resulting in an immediately increase in price and quantities of fish available on the open market (despite restriction quantities of fish had been sold on the black market). 571

The financial impact of the changes in catch composition for the steam trawling industry was severe. Despite the fact that prices remain high after the war and that there was an absolute increase in volume of landing (see Figure 1-2) because of increased fishing effort, the value of landings in cent per kilogram had decreased, due to the changes in species composition.

571 SRNSW: State Fisheries [41/2076].
The trend in diminishing value of the catch, become even clearer when correlated for the number of trawlers involved in the industry. There was a dramatic increase in earnings per vessels from 1941 to 1944, hereafter earnings began steadily to decrease (Figure 5-4).

It was the valuable flathead catch that kept the total earning per steam trawler up. In 1939 flathead comprised 57 percent of total catch in weight by the NSW fleet, but 74 percent of the total value of annually landings, calculated from the prices recorded by Red Funnel. By 1952 flathead was only 22 percent of the catch, but totalled 36 percent of the value of annual landings.

From the mid 1940s effort had increased. In 1944 the companies had the first trawlers returned from the Navy, and during 1946/47 added several new vessels to the fleet. However the earning per vessel fell rapidly. For example in 1949 earnings per vessel were lower than

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**Figure 5-4. Annual earning per steam trawler, based upon total landings and prices received by Red Funnel Fisheries, 1939-1952. Source: Klaer, N., 2006.**
in 1939. As the downward trend in flathead catches continued after 1952 so did earnings per vessel.

By the early 1950s only Cam and Sons and Red Funnel remained in business after A. A. Murrell had sold off three trawlers around 1947. Cam was fishing with five trawlers and Red Funnel with seven trawlers. In September 1950 the Secretary of Red Funnel, Gordon Francis Thomson and the Managing Director of Cam and Sons, Rocco Edmund Cam testified to an Industrial Commission that both companies had sustained substantial losses the last two years. The hearing was held because of demands that the trawling companies paid union members overtime instead of ‘basket money’ bonuses.

In October 1954 Cam and Sons announced that it was selling its site on Blackwattle Bay with buildings and wharves to be auctioned publicly. On 2 November Olive Cam was wrecked at Twofold Bay, Eden, and on 5 December the company made public that it was selling their four remaining trawlers and leaving the fishing industry. The trawler Goonambee, which had originally been build to the STI in 1917, was taken over by one of their former skippers, John Reid, who had married Mary Cam in 1929 and was the shore supervisor and co-director if the company. He continued trawling with Goonambee throughout 1955 before it was finally sold for scrap in 1956. A similar fate was experienced by Mary Cam which was sold to Alfred ‘ Alfie’ Cam and scrapped in 1956. In the meantime Red Funnel was able to continue its operations for another four years, scrapping Korowa in 1954 or 1955 and wrecking Goolgwai on May 1955 at Long Bay outside Malabar, Sydney. Durraween was stripped and scuttled around 1956 after having been laid up for some time.

Due to financial difficulties, Red Funnel was gradually forced to lay up its remaining fleet of four steam trawlers, the last in 1958. The reason why Red Funnel was able to continue longer

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572 Alfie Cam (built 1920), Beryl (built 1914), Goonambee (built 1917) Mary Cam (built 1918) Olive Cam (built 1920)
573 Durraween (built 1918), Goolgwai (built 1918), Korowa (built 1919), Maldaana (built 1942), Matong (built 1944), Moona (built 1943), Muloka (built ?) might not have been added to the fleet before 1955. Bar-ea-mul was scuttled in December 1950 after having been laid up for several years.
574 SMH: Trawlers’ Losses. 12 September 1950, p. 10.
578 Cook, D., 2006, p. 64.
than Cam and Sons was likely due to the fact that the four active trawlers had an average age of about 11 years in 1955, while Cam’s vessels were much older. Another reason for Cam and Sons decision to wind up its operations was probably the fact that the shareholding member of the Cam family was near retirement age. The founder, Charles Cam, had died in 1947, and of his sons, Rocco, Charles and Alfred Cam and son-in-law John Reid, only Charles Cam was still alive by 1961. The remaining family members decided to close the company on 10th October 1961 at an extraordinary general meeting.\(^{579,580}\)

In July 1959 Captain Products Ltd of Sydney,\(^{581}\) which was the producer and distributor of canned fish products, acquired shares in Red Funnel Trawlers and set out to resume the fishery operating from No 5 Wharf at Woolloomooloo. Captain Products was directed by two brothers, E. R Mansfield and J. Mansfield, who together with E. R Mansfield’s son Richard, ran the two companies.\(^{582}\) In February 1960, after an extensive overhaul the fishing was resumed by Moona.\(^{583}\) The plan was to gradually expand the activities to include all the trawlers, but it never happened and by 1961 it had left the fisheries and the NSW steam trawling industry was no more.

Red Funnel Trawlers Ltd continued to hold the lease to the premises on No 5 Wharf until the 1980s where the buildings were demolished as part of the Woolloomooloo harbour-front development. The company still exists but has ceased trading.

**Conclusion**

The success of the private steam trawling industry was based upon access to affordable equipment, resources and capabilities left over from the NSW Government State Trawling Industry as well as easy access to rich fishing grounds. The 1920s was the golden era of steam trawling and the size of the fleet increased significantly during this time. The decline of the industry began around 1928 when the fishery at the Botany Ground collapsed and later when the depression reduced consumer demand and increased costs.

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\(^{579}\) Cook, D., 2006, pp. 37-38. For unknown reasons the liquidation was not completed before December 2002.\(^{580}\) Another Cam family business, R.E. Cam Cold Stores Pty Ltd which was first registered in May 1958 and likely designed to continue the fish agent side of Cam and Sons gave up business in November 1962. See SRNSW: Item 52041 R.E. Cam Cold Stores Pty Limited [1779538].\(^{581}\) Former Downs Holdings Ltd.\(^{582}\) *Fisheries Newsletter*, July 1959, vol 18 no 7, p. 9.\(^{583}\) Roughley, T., 1961, p. 179.
The 1930s was a period of decline in catch per unit effort and some degree of consolidation for the trawling companies, which had to rely on alternative fishing methods to keep their companies viable. As the only company that relied exclusively on fishing by steam trawlers on the south east continental shelf, A. A. Murrell was forced out of the fishery by 1939 but was able to continue as a fish merchant. The general reduction and aging of the trawling fleet illustrate the financial stress the companies were under.

The companies’ financial circumstances improved slightly during Second World War when the Royal Australian Navy leased or bought most of the trawlers for minesweeping at very profitable rates. At the end of Second World War the industry had somewhat recovered from the long decline during the 1930s. The recovery was not achieved because of a wiser use of marine resources, but was caused by improved market conditions which were continued into the post war period.

Of around 30 steam trawlers from Sydney which were engaged in the south east continental shelf fishery from 1923-1961, 21 of them were built by the NSW Government or by the Canadian, British or New Zealand navies for defence purposes. In effect the industry relied heavily on government initiatives.

The reason for the final collapse of the private trawling industry over the period from 1954 to 1961 was the combination of overcapacity in the trawling fleet, the return a free-price system in December 1951, combined with long-term decline in landings of the most valuable species (flathead). Together these three factors undermined the economy of the industry which resulted in the collapse of the steam trawl industry in NSW.

The steam trawl fishery was open without any government restrictions on fishing effort. As the trawling companies considered resource management a government responsibility they never showed any inclination to self-regulate the fishery. In 1929 the companies showed awareness of their inability to self-govern by request that the NSW Government took over the management of the trawling grounds. However the Government declined on the basis that they thought it a ploy to raise prices. After that the relationship between company and the NSW Governments deteriorated along with the marine resources.
Chapter 6
Science goes fishing, c. 1927-1955

Australia has rich fish resources but their people, though fish-hungry and fish-starved, must remain very largely unsatisfied until investigation and research have disclosed the factors governing profitable production and distribution – the food, habits and migrations of our edible fish and the nature and location of the fishing grounds and the best means for the capture and disposal of the fish either in a fresh or preserved state or as by-products.\textsuperscript{584} Said by Colin W. Mulvey at the second Australian Fisheries Conference in July 1929.

Introduction

The fishing grounds frequented by NSW steam trawlers were located outside State territorial waters, which meant that the power to govern the fishery lay with the Commonwealth. The approach to fisheries management adopted by federal authorities, supported by their State counterparts, was essentially ‘developmentalistic’ in nature and based upon a technocratic faith in science as a mean to achieve development by overcoming ecological ‘problems’. After Endeavour was lost in December 1914 with Dannevig and all crew no federal institutions were equipped to provide scientific advice, but a desire to increase Australia’s fishing industry and reduce imports provided the political support necessary to create, in 1937, a new institute for fisheries research under the Council for Scientific and Industrial Research (CSIR).

The Commonwealth’s approach to commercial fisheries development mirrored early (failed) attempts at scientific fisheries management by the NSW Fisheries Branch during the 1910s. After the First World War, CSIR’s Fisheries Division had to hand over fisheries development responsibilities to the Department of Commerce and Agriculture, but throughout the period matters relating to trawling on the south-east continental shelf were, as a rule, handled by the CSIR’s Fisheries Division.

\textsuperscript{584} NAA: Stanley Fowler - Correspondence files; Report of the Australian Fisheries Conference, July 1929 [P2783/1(6)].
This chapter will look at the founding of the first national institute for fisheries science and how it evolved from an institution dedicated to developmental oriented research to one challenging the developmental ethos and advocating scientific based fisheries management to protect Australia’s marine resources.\textsuperscript{585} The rationale and objectives behind establishing a legislative framework in the 1950s for fisheries management outside State territories will also be examined.

Libby Robin has written that “The confluence of science and governance is a hallmark of the modern nation-state.”\textsuperscript{586} As a settler nation Australia was characterised by high (economic) dependency on primary production, and its scientific research was directed to aiding industries that utilised these resources. It is beyond the scope of this study to discuss when Australia became ‘modern’; however by Robin’s definition Australia could, in the 1930s, be considered modern, because there was a well established practice of setting up scientific organisations to inform policy-making. For the purpose of this study I will point out that while a partnership involving terrestrial science and governance has existed in Australia since colonial times, marine science, or rather its economic oriented subfield of fisheries science, emerged much later in Australia. By then fisheries science was an international, well established discipline with its own terminology, hypotheses and theoretical framework(s). The arrival of fisheries science into the field of industry development and governance in Australia illustrates that the marine realm of the nation was ‘settled’ later than the rest of the nation. The STI was the first commercial enterprise that systematically explored and exploited demersal fisheries beyond the coastal waters. A lack of traditional or inherited settler-knowledge and of a tradition of marine research meant that fisheries science played a significant role in government policy-making. In Australia, Commonwealth fisheries research pre-dates any national fisheries management.

In Australia, federally funded applied science after 1926 was unified under CSIR which had superseded several other organisations. In 1916 the Advisory Council of Science and Industry

\textsuperscript{585} Throughout the period from 1927 to 1955 there was a conflict in terms of what fisheries research stood for and in the historical material investigations, research and science were often used interchangeably. I will use the term ‘research’ when writing about industry applied studies that were not necessarily conducted in line with scientific principles. The terms ‘scientific’, ‘scientific research’ or ‘fisheries science’ are used to indicate that a given study was driven by scientific methods and although such studies often had an applied aspect, they also contained elements of pure science, compared to the strictly problem-solving approach of ‘Research’. ‘Investigations’ will be used as the overall term for any type of fisheries studies.

was established by the Australian Government to bring a national position to scientific research. Four years later, in 1920, the Advisory Council was replaced by the Commonwealth Institute of Science and Industry (CISI) which continued the work of the Council. In 1926 further changes were made, resulting in the creation of the CSIR in June. Its main function was to promote and aid research on a national level for the benefit of industry. Industry research was also conducted in some State departments, but in general their scientific staffing resources were small, poorly equipped and involved in too many projects, while also doing administrative and regulatory work (see also chapter 3). The creation of the CSIR was partly a response to the scientific inadequacy of the State departments in general, but the aim was to avoid creating rival research institutions that duplicated State research. Instead the CSIR was to cooperate with the States by encouraging and assisting the work of their existing authorities. State committees were created so that they could initiate research programs and control the progress of major investigations. To secure the State’s influence, the chairs of each of the six committees were also members of the Council. The other three members of the Council were the members of the Executive Committee which held all the power and functions of the Council when dealing with day-to-day operations. The Chief Executive Officer was David A. C. Rivett, who later became responsible for many of the decisions regarding the CSIR’s fisheries investigations unit.

The legislation that constituted the CSIR allowed for considerable influence by successive Commonwealth Governments and until 1949 the Minister had to approve all policy decisions, staff appointments and expenditures but the responsibility for initiating policies resided with the CSIR. In practice, however, the Executive Committee was in control of the organisation. Since the selection criteria for all Committees highly favoured scientists, the Council’s management and research policy was largely controlled by scientists.  

Early studies in the CSIR included plant and veterinary research; later studies branched out into economic botany, forestry and food research. As research programs were formulated, institutions and facilities were built to accommodate the growing need of the

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institution. Although fishing was a primary industry, it had only limited economic importance and therefore was not a priority for the CSIR’s Executive Committee. It was not until the Australian Fisheries Conferences in 1927 and 1929 that the Council began looking into the possibility of developing a fisheries research program and establishing a marine biological station.

**Different views of the objectives of a national fisheries research institution**

The first federally funded venture into fisheries research, in order to advance the nation’s marine fisheries, was the appointment of Harald Dannevig to Commonwealth Director of Fisheries in 1908. The loss of the *Endeavour* with crew and three years worth of research data onboard in December 1914 put a premature end to the scheme and the marine investigations work was discontinued. Later in 1929, members of the Australian Fisheries Conference bemoaned the vanished, valuable data onboard *Endeavour* declaring that “the loss of data resulting from the last three years of operation is to be deplored as deeply as is that of her own and of her gallant Director and crew.”

The prospect of a marine biological station was first examined in 1917 by the Advisory Council of Science and Industry, a forerunner of CSIR. The Advisory Council recommended that a station be built near Port Jackson, NSW, in close association with the University of Sydney, so that staff and research students from the University could use the facilities, and the station could draw upon the University’s library and administration. For unknown reasons the plans were never realised, and the option to construct a biological station was not raised again before January 1926, when Sir Frank Heath, secretary of the Department of Science and Industry in the United Kingdom, delivered a report recommending how to reform the Commonwealth Institute of Science and Industry to the Bruce Government. Among his recommendations was one that the new institution should include fisheries research in its program and that the centre for national fisheries program should be placed in

593 NAA: Stanley Fowler - Correspondence files: no 2, Report of the Committee Appointed by the Australian Fisheries Conference 1927 to consider practical methods of giving effect to the following resolution of conference [P2783/1(1)].

594 Clearly the notion of rationalise cost when dealing with research was not a new idea
Tasmania. The Acting Director of CISI, Gerald Lightfoot responded in March to the report by suggesting that David G. Stead be consulted before any decision was made. Stead, who had just finished his work as the NSW Rabbit Menace Enquiry Commissioner, submitted a report on the subject in April the same year. Stead used most of his report to argue why a fisheries research station should not be placed in Tasmania. His rejection of the location was firmly based upon his conviction that fisheries research was an applied science and as such should be placed where the most developed and intensive fisheries occurred, and not in the ‘backblock’ of Tasmania “so far removed from the ordinary scientific and commercial life of the community.” According to Stead, fisheries scientists should concentrate on problem solving and let their research be directed by what is most useful (for the industry and ultimately for the wider community). On that basis he recommended that the research station be placed in NSW. He concluded his report by writing:

I am constrained to point out that I am the only Australian investigator who has dealt broadly in a private or public capacity with general scientific and economic fisheries investigations (including applied ichthyology). Incidentally I may state that the only established great deep sea fisheries of Australia were made possible as a result of the preliminary investigation work carried out by myself.

Stead conveniently forgot to mention Dannevig’s role in locating the trawling grounds in his attempt to situate himself for a position at the proposed Commonwealth fisheries research station.

The prospect of reorganising the national research effort made the Premier of Victoria approach Prime Minister Bruce in February 1926 to suggest that the Commonwealth Government establish a national marine biological station to help develop the nation’s fishing industries which were hampered by lack of scientific information. The Prime Minister referred the matter to the CSIR for consideration. After the CSIR’s Executive Committee had considered the proposal they replied that, in members’ opinion, fisheries investigations were

596 Mawson, V., 1988, p.16 and LJPC: Assorted documents relating to CSIR.
597 Mawson, V., 1988, p.16 and LJPC: Assorted documents relating to CSIR.
598 Stead’s troubled relationship with Dannevig and his aspirations for a leading research position have previously been discussed in chapter 3.
599 NAA: Stanley Fowler - Correspondence files; Australian Fisheries Conference. Its Origin, Activities and Recommendations, 1927-1929 [P2783/1(2)].
more economic than scientific in nature and, therefore, better dealt with by the Commonwealth Department of Markets and Migration or the Development and Migration Commission.\textsuperscript{600}

The matter of industry development and scientific assistance to fisheries persisted and in 1926 the Prime Minister called a national conference under the auspices of the Development and Migration Commission to discuss the development of fishing industries in Australia. Invited were members of state and federal governments and departments, as well as marine scientists. CSIR was requested to prepare information for the conference on the state of fisheries research in Australia and be ready to give advice on what activities a potential Commonwealth Fisheries organisation should undertake.

The idea of placing a marine biology station in Tasmania was again brought up in June 1927 by Theodor T. Flynn,\textsuperscript{601} Professor in biology at the University of Tasmania and advisor to the Tasmanian Sea Fisheries Board. Flynn wrote to Herbert William Gepp\textsuperscript{602}, Chairman for the Commonwealth Development & Migration Commission, to suggest that a national fishery research institute be placed in Tasmania in association with the University. Professor Flynn wrote about the desirability of placing such an institution in Tasmania, since the sea around Tasmania had large schools of fish. Arguing the need for a national program of marine research he stated that there was “the almost entire lack of knowledge of the biology and economics of our marine food fish”.\textsuperscript{603} He continued to argue that in order to build an Australian fishing industry and lower the country’s dependency on imports, more research was needed. Flynn also forwarded his correspondence to the Chairman of CSIR’s Tasmanian Committee, suggesting that CSIR might have some interests in the case.\textsuperscript{604} Later in

\textsuperscript{600} NAA: CSIR, Head Office – Correspondence; Report of the Committee appointed by the Australian Fisheries conference 1927 to Consider and report upon the constitution, activities, and financial requirements of a marine biological institution or institutions to study the scientific problems connected with Australian Fisheries and to collect and disseminate authoritative information and advice in the matters concerning those [A9778/3, G16/3A].

\textsuperscript{601} Theodor T. Flynn was the father of actor Errol Flynn. His was most known for his early studies of marsupials and his marine research.

\textsuperscript{602} Flynn knew Gepp from Hobart, where Gepp had been the general manager of the Electrolytic Zinc Co. of Australasia Ltd at Risdon from 1917 to 1923.

\textsuperscript{603} NAA: CSIR, Head Office – Correspondence; Letter from Professor TT Flynn to the Chairman, Development & Migration Commission, Commonwealth, 30 June 1927 [A9778/3 G16/3A].

\textsuperscript{604} NAA CSIR, Head Office – Correspondence; Letter from Professor T.T. Flynn to Chairman of the Tasmanian Committee, CSIR, 4 July 1927 [A9778/3 G16/3A].
September Flynn attended the Australian Fisheries Conference as one of the Tasmanian representatives.

In September 1927 G. Lightfoot, now Secretary for the Executive Committee, prepared for the upcoming conference, on behalf of the Committee, a document outlining three principal functions of a future Commonwealth fisheries organisation. The principal functions envisioned by CSIR’s Executive Committee were: scientific investigations; technical investigations into fish preservation and utilisation of by-catch; and control of fisheries beyond territorial limits. Later the new organisation could extend its tasks to include statistical and economic research, control of fisheries in the Northern Territory and aquaculture. Because of the national and economic importance of fisheries development, a program of scientific investigations of fish growth, age of maturity, migration, spawning and lifecycle was essential to “formulation of suitable regulations and for intelligent control.”

In the opinion of the Executive Committee, the State Fisheries Departments did not have the necessary (scientific) knowledge about their marine resources to effectively control and conserve their fisheries and did not possess the facilities to undertake the necessary research. In the case of the NSW Fisheries Department, Lightfoot wrote that the NSW authorities held the short-sighted view that such investigations were unnecessary due to the State’s “practically virgin ocean fishery”. Because of the strong emphasis on practical fisheries management and expected high annual costs, the Executive Committee maintained that the proposed fisheries organisation was best placed outside the CSIR as a branch of a Commonwealth Department. Members envisioned a structure similar to the USA Bureau of Fisheries, the scientific work of which was reviewed by an advisory committee of external scientists.

The significance of the document authored by Lightfoot is that while the State was responsible for overseeing fisheries activities within territorial waters “control of fisheries beyond territorial limits and in the Northern Territory waters is the function of the

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605 NAA: CSIR, Head Office – Correspondence; Notes for Fisheries Conference, 16 September 1927 [A9778 G16/3A].
606 NAA: CSIR, Head Office – Correspondence; Notes for Fisheries Conference, 16 September 1927 [A9778 G16/3A].
Commonwealth, thereby addressing for the first time the Commonwealth’s obligation to manage fisheries activities beyond three nautical miles. In its response, the CSIR’s Executive Committee also foresaw that a core function of a future Commonwealth fisheries organisation would be to manage offshore fisheries based upon scientific recommendations. Although CSIR understood the need to govern fisheries according to their biology, they were addressing a political system whose will to govern was still oriented towards developmentalism.

**Australian Fisheries Conferences, 1927-1929**

The first Australian Fisheries Conference was held in Melbourne from 16 to 20 September 1927 and was organised by the Development and Migration Commission. The chair of the Conference was H. W. Gepp, who was also chairman of the Commission; the Secretary of the Conference was Stanley Fowler, who also was an officer at the same Commission.

The Commission was formed in 1926 to conduct economic surveys and administer a scheme to settle British emigrants in Australia. In the 1920s the political relationship between the United Kingdom and outposts of the Empire was changing as a result of growing economic uncertainty. Emerging from a series of so-called Imperial Conferences, the doctrine of imperial self-sufficiency was developed, mainly to be achieved by means of preferential import-export agreements. Funds to conduct scientific research to improve economic efficiency were also made available to the Imperial Conference members. The Commission and, to some extent, the CSIR were established as Australia’s response to the policy on self-sufficiency. The two organisations were expected to work in complementary but independent fashion, the CSIR providing scientific information and the Commission producing economic data. From the beginning the relationship between the CSIR and the Commission was marked by problems concerning acceptable levels of political interference. The Commission needed technical and scientific data from the CSIR, but the latter’s Executive Committee feared that the Commission’s focus on political economy would override the functions of the Council and corrupt its scientific methods. The problem was

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607 NAA: CSIR, Head Office – Correspondence; Notes for Fisheries Conference, 16 September 1927 [A9778 G16/3A].
solved in 1930 when the Commission was disbanded, but fear of political contamination remained strong in the Executive Committee. Its reluctance to be subjected to a primarily political agenda characterised much of the Committee’s dealings over the question about whether and how to create a fisheries sciences unit and determine its objectives.

The key topic of the 1927 Australian Fisheries Conference was the broad issue of developing national fisheries and allied industries, and it attracted participants from each State fisheries department and the CSIR. NSW participants were A. W. Wood, Officer-in-Charge of Fisheries; H. K. Anderson, Inland Fisheries Officer; and T. C. Roughley, an economic zoologist at the Technological Museum. Roughley had joined the public service in 1911 when he became the Technological Museum’s microscopist and photographer. As an economic zoologist he focused on the commercial use of marine resources. In 1916 he published *Fishes of Australia and their Technology*, which possibly contained the earliest description and photographs of the steam trawling industry. During the 1920s he studied oysters, and on several occasions was seconded to the NSW Fisheries Department to conduct scientific investigation of oyster fisheries. His scientific publications on Australian oysters and the discovery that they change sex during their life cycle came to William John Dakin’s, Professor of Zoology at University of Sydney, attention and in 1933 Roughley was awarded a B.Sc for his work. In 1939 he was transferred to the NSW Fisheries Department, from which he retired in 1951 as Superintendent of Fisheries.610

Although the question about whether to establish a marine biological station was only one of several items on the 1927 conference agenda, it featured prominently in the discussion. Delegates agreed that the key to successfully developing fisheries was scientific research; fisheries’ research was largely understood to be applied, but the exact focus and subject of research to be undertaken eluded most of the non-scientists among the delegates. T. C. Roughley had prepared a paper for the conference in which he declared that Australia was backward compared to other civilised countries when it came to the study of fisheries problems. He argued that fisheries research was a national matter because marine resources transcended state waters, and he asserted that without a scientific program it was impossible to develop and conserve the nation’s marine resources. To address the problems at hand

610 www.adb.online.anu.au [accessed 01.03.10].
Roughley proposed that the Commonwealth Department of Fisheries be re-established, and a research station be established in Port Jackson with the aid of a marine biologist from Great Britain. 611 Yet the two delegates from the NSW Fisheries Department, Wood and Anderson, were not particularly interested in this matter. Anderson declared that, as an inland fisheries officer, he could contribute little to the discussion about the development of sea fisheries, and Woods showed most interest in the marketing aspects of the industry. In the end the NSW Fisheries Department was only represented by Wood in two of the seven appointed subcommittees, namely the Committee for Trawling and Related Industries (also called the Deep-sea Fisheries Investigation Committee) and the Committee for Preservation, Transport and Distribution of Fish. Roughley, the only scientist in the NSW delegation, was a member of four committees, most notably the Committee for Establishing and Maintenance of a Central Marine Biological Institution.

Debate at the 1927 conference affirmed the need for a marine biological institution to study scientific problems connected with Australian fisheries and to advice on matters concerning those fisheries. A special sub-committee was appointed to “report upon the constitution, activities, and financial requirements of a marine biological institution or institutions to study the scientific problems connected with Australia Fisheries and to collect and disseminate authoritative information and advice in the matters concerning those fisheries.” 612 The committee held a meeting on the 12 and 13 January 1928 in Hobart. The committee consisted of seven members, one from each State, and most of them had academic training; the only exception was the committee’s secretary, Stanley Fowler from the Development and Migration Commission. The Chairman of the committee was Professor T. T. Flynn from the University of Tasmania; the other members were Professor W. E. Agar, University of Melbourne, Professor L. Harrison, University of Sydney, Professor G. E. Nicholls, University of Western Australia, Professor E. J. Goddard, University of Queensland and T. C. Roughley, from the Technological Museum, Sydney.

After two years of contemplation the committee was ready in July 1929 to recommend the establishment of not one but several marine biological stations. In its report the committee

611 LJPC: Report (verbatim) from Australia Fisheries Conference 1927, Appendix no. 3.
612 NAA: CSIR, Head Office – Correspondence; Report of the Committee appointed by the Australian Fisheries conference 1927 [A9778/3 G16/3A].
recommended that those stations should be built along Australia’s coastline and be equal in status if not size. It was also recommended that a council be established to coordinate and formulate research policy for the stations to follow and, in case a Federal Bureau of Fisheries was later established, the stations should be an integrated part of it. Establishment costs, equipment and maintenance should be shared fifty–fifty by Commonwealth and State governments. It was the opinion of the committee that the first station should be located in the vicinity of Sydney because it was a centre of population and the State fishery was far more developed there than elsewhere. Students could be recruited from the University of Sydney, where the chair of zoology, the newly appointed Professor William John Dakin, had a wide experience in oceanographic studies and marine biology. Outside the University, the Linnean Society and the Australian Museum were involved in research in marine biology; the latter organisation being in possession of a large collection of marine specimens. The NSW coast was on the track of large shoals of migratory fish, and covered both sub-tropical and temperate marine fauna, while the State’s trawling industry could provide research samples of more marine specimens.

The final argument brought forward by the committee was that the facilities already existed to achieve such ends: “We understand that the New South Wales Government has kindly offered to place at the disposal of the University of Sydney a marine hatchery for the purpose of Marine Biological Research.”613 The hatchery in question was of course, the closed Cronulla Marine Hatchery built by Dannevig between 1902 and 1905.

While the location of the biological station was determined by NSW’s relatively large fishing industry, the committee’s proposed research program was focused less on applied fisheries science and more on general marine science. In the committee’s report was included a long list of desirable research areas which were mostly designed to improve knowledge about marine biology and not necessary directed towards fisheries development, although some of the selection criteria for research projects were that they studied commercially important species.

613 NAA: CSIR, Head Office – Correspondence; Report of the Committee appointed by the Australian Fisheries conference 1927 [A9778/3 G16/3A].
T. T. Flynn favoured a purely scientific research organisation, and was often in opposition to Roughley, who advocated a research program linked to commercial interests. Roughley had worked closely with the NSW Fisheries Branch during 1924-1926 to investigate mortality in oyster fisheries\textsuperscript{614} and was keenly aware of the economic importance of the fishing industry. Not always in agreement with Branch policies, Roughley supported the NSW trawling industry’s request for aid in 1929, when overfishing had created financial problems for the industry.

Over time the problem of whether the research program was too scientific and not sufficiently related to industry would surface repeatedly. Should the new Division be doing fisheries research targeting the problems that held back the industry’s ability to grow, or should the Division have a broader marine research program that would address the obvious lack of knowledge about Australia’s marine environment which would, in time, benefit the industry?

The CSIR and the Development and Migration Commission, which were the federal authorities responsible for implementing the committee’s recommendations, were only partly supportive of its ideas. While the committee was still working, the Commission’s chairman, H. W. Gepp, who also chaired the Fisheries Conference, wrote to the Chief Executive Officer David Rivett: “You must have got some amusement out of certain of its recommendations! Later we must have a chat over things, but in the meantime I just want to say that in our opinion here the possibility of an embarrassing situation developing is becoming rather obvious.”\textsuperscript{615} The problem was that the committee had proposed an integrated program of pure and applied science including studies of economic problems at research stations in each state, thereby mixing the responsibilities of the two federal institutions. Senior members of both institutions felt that the proposed scheme was too ambitious and academic, indulging in non-essential areas of research.

Despite reservations from the two federal institutions involved, the committee’s final report was presented and adopted at the second Australian Fisheries Conference on 12 July 1929 in


\textsuperscript{615} NAA: CSIR, Head Office – Correspondence; Letter from Chief Executive Officer, CSIR to H.W. Gepp, Development and Migration Commission, 31 January 1928 [A9778 G16/3A].
Sydney\(^{616}\) (see Figure 6-1). The 1929 conference also unanimously recommended that in order to develop the nation’s fisheries, the first priority was for the Commonwealth Government to set up a research organisation to undertake “scientific, statistical, and practical investigation of the fisheries aiming at their commercial development.”\(^{617}\) It was also agreed that the CSIR should lead the process of implementing the Marine Biological Research Committee’s suggestions.\(^{618}\) Although Rivett was not impressed by the proposed scheme, the CSIR Executive Committee took control of the process of setting up a marine research station. However, it adopted a cautious approach, and did not apply for funds for fisheries investigations in its 1929-30 budget.\(^{619}\)

![Figure 6-1. Photo of the delegates at the Second Fisheries Conference in Sydney by Stanley Fowler, 12 July 1929. Source: DataNet@csiro [01.03.2010].](image)

\(^{616}\) NAA: Stanley Fowler - Correspondence files; Australia Fisheries Conference. Its origin, activities and recommendations. Resolution Unanimously Agreed Upon, 1927-1929 [P2783/1(2)].

\(^{617}\) NAA: Stanley Fowler - Correspondence files; Australia Fisheries Conference. Its origin, activities, and recommendations, 1927-1929, p. 27 [P2783/1(2)].

\(^{618}\) NAA: Stanley Fowler - Correspondence files; Australia Fisheries Conference. Its origin, activities and recommendations. Solution Unanimously Agreed Upon, 1927-1929 [P2783/1(2)].

\(^{619}\) Mawson, V., 1988, p. 16.
In relation to the location of the marine laboratories, the Executive Committee was not in favour of a large-scale and national network of marine biological stations and instead preferred to establish one station for the time being and gradually build up expertise. It was also concerned about finding enough qualified marine scientists to staff more than one station. The Executive Committee then began collaborating with Dakin to establish the proposed NSW research station. Due to Dakin’s position as head of the Zoology Department at the University of Sydney and his knowledge of marine biology, it was considered advantageous to have him proposing a small station in partnership with the University of Sydney which could act as an icebreaker for future federal funding. Dakin had already sent two promising students to England for further training in marine biology and they were expected back within two years to take up positions at the station. The plan was for Dakin to lead the station, partly funded by the CSIR.

By the second half of 1929 the plan for a small Sydney-based research station in collaboration with the University of Sydney was advanced and possible appointments were discussed, as well as the acquisition of a suitable research vessel. In November 1929 Stead wrote to CSIR suggesting that it purchase the former research trawler *SS Tongkol* as a fisheries investigation vessel. While in British Malaya from 1921 to 1923, Stead had recommended that a steam trawler be employed to investigate the waters around the Malay peninsula, in order to pave the way for the introduction of modern (British) fishing methods. The fisheries authorities in British Malaya had the steam trawler *Tongkol* built, and it then was used to survey possible trawling grounds in the Straits of Malacca and the South China Sea between 1926 and 1927. In 1928 the main finding of the survey was that trawling in those waters was not commercially feasible. The interests of the fisheries authorities shifted elsewhere and *Tongkol* was sold to Ceylon. As noted in chapter 5, A. A. Murrell bought *Tongkol* cheaply for £9,000 in 1929 and the vessel sailed to NSW where it arrived in Port Jackson on 24 November 1929. After possibly being told by Murrell himself that it might be up for sale, Stead wrote a series of letters to leading figures within the CSIR and to the Prime Minister to persuade them to buy the vessel from Murrell and use it for marine

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620 NAA: CSIR, Head Office – Correspondence; Memorandum Re Marine Biological Research to A.C. Smith, Prime Minister’s Department, 13 December 1929 [A9778 G16/3A].
621 NAA: CSIR, Head Office – Correspondence; Letter from Chief Exe. to Dr. C.M. Yonge, Great barrier Reef Expedition, Low Island, 11 June 1929 [A9778/3 G16/3A].
622 Butcher, J., 2004, p. 139.
research or “experimental trawling, general fisheries and oceanographic work”\textsuperscript{623} as Stead chose to describe it.

In his second letter to John Joseph Daly, Vice-President of the CSIR Executive Council and minister in charge of development and migration, Stead confided that “Most people (even among those of scientific bent) have the idea that a marine biological laboratory with a vessel doing marine biological work, will solve our difficulties.” He also explained that “the need [...] is for a vessel to carry out practical fisheries investigations work and not general marine biological research.”\textsuperscript{624} Stead clearly still perceived trawling as the main way to develop Australia’s fishing industry and dismissed marine biology as a pure science, not suited to address real problems facing the industry.

Dakin inspected \textit{Tongkol} on 25 November 1929 and found the vessel useless for marine research since it was built largely as a normal commercial trawler without laboratory facilities. Because of the political and economic climate the topic of a research vessel was not pursued further. Despite Dakin’s efforts, the matter of establishing a Commonwealth fisheries research organisation had dropped out of the political spotlight, first when the power of government went to the Australian Labor Party led by James Scullin in October 1929 and because of the financial crisis in 1930-31.\textsuperscript{625}

The discussion among scientists about the objectives of a national organisation for fisheries research or marine biology illustrated a generational change in marine science exemplified by the likes of Flynn and Dakin. While early zoologists and naturalists such as J. Douglas Ogilby or Reverend J.E. Tenison-Woods had focused upon making accurate descriptions of marine species, the new generation of scientists emphasised the need for experiments. They considered fisheries science an applied branch of zoology. Stead mostly viewed fisheries investigations in terms of fish-finding and mapping of resources. His own extensive work of cataloguing NSW’s marine species was something he considered separate from his fisheries work. In many ways Stead, and to some degree Roughley, were traditional scientists where fisheries research and marine zoology existed side by side but rarely mixed. Dakin, on the

\textsuperscript{623} NAA: CSIR, Head Office – Correspondence; Letter from Stead to George Julius, Chairman CSIR, 7 November 1929 [A9778/3 G16/TZ10].

\textsuperscript{624} NAA: CSIR, Head Office – Correspondence; Letter to John. J. Daly from David G. Stead, 12 December 1929 [A9778/3 G16/TZ10].

\textsuperscript{625} Schedvin, C., 1987, p. 113.
other hand, considered that the subject of fisheries science was the study of fish stocks and their productivity, in order to assess the size of resources available and the impact fishing had on the stocks’ natural fluctuations. The objective of fisheries science, Dakin believed, was to help regulate fisheries in order to avoid overfishing. Discovery of new fishing grounds and tests of fishing gear were not scientific matters, and could be undertaken by relevant government departments. But it was only the CSIR that had the necessary expertise, perspective and position to undertake fisheries science in Australia.626 Dakin’s approach to fisheries science reflected the emerging understanding of the effect of fishing on stocks and the role of fisheries scientists in predicting fluctuations that had emerged internationally during the 1920s.627

**Move to place Fisheries Research under control of the Commonwealth Development Branch, 1932-1935**

The question of establishing a marine biological research organisation was revisited in early 1932. By then the Development and Migration Commission had been abolished (in 1931) and most of its staff absorbed by the Commonwealth Development Branch, under the Prime Minister’s Department where they continued many of the Development and Migration Committees policies. At the same time the CSIR was experiencing difficulties; the organisation was largely unknown, had problems attracting qualified scientists and an uneven record in applied biology (one of the CSIR’s main research areas), and the CSIR’s Executive Committee had to rely on a few politically influential friends.628

In early 1932 the CSIR was asked by the Prime Minister’s Department to provide advice on a proposal submitted by Australasian Fish Industries Ltd, to create a public funded company to fish for home consumption and export, producing a range of edible and industrial products. The Commonwealth Government was considering supporting the scheme as a way of advancing the national fishing industry. A committee consisting of George A. Julius (CSIR Executive Committee) W. J. Dakin (The University of Sydney) and A. W. Wood (NSW Fisheries Department) reviewed the proposed scheme and made a number of objections: catches and revenues were exaggerated, the proposed leader’s qualifications could not be

626 Dakin, W., 1934.
verified, and there was a fundamental lack of scientific and economic data about fisheries. The CSIR advised the Government against becoming financially involved with the company and instead used the opportunity to reintroduce the view that the Commonwealth Government should formulate a policy to obtain the necessary scientific and economic data to enable new private fishing industries to be developed. The recommendation was taken up in April the same year by the newly appointed Alexander John McLachlan, Minister in charge of development and scientific and industrial research from 1932 to 1937 (a portfolio which included the CSIR). He instructed CSIR’s Executive Committee and John Gunn, the Director of the Development Branch to collaborate on preparing a “comprehensive scheme along the lines suggested by the [Australasian Fish Industries assessment] Committee”.

The heads of the two organisations met shortly afterwards and began preparing a document that would define the policy of inquiry and research into fisheries problems. The document was largely based upon a statement by Stanley Fowler then based in the Development Branch, about the economic benefits of developing the national fishing industry and its contribution to relieving unemployment.

Fowler had been an investigation officer at the Development and Migration Commission and organising Secretary of the Australian Fisheries Conferences of 1927 and 1929. Despite having no prior knowledge of fisheries or science, Fowler was involved in most of the Conference’s sub-committees. Born in 1895 he had served in Gallipoli, Egypt and France where he was seriously injured; his injuries continued to trouble him for the rest of his life. In 1920 he entered the Commonwealth public service where he joined its Bureau of Commerce and Industry. In 1927 Fowler became investigation officer in the Development and Migration Commission with responsibility for fisheries and tobacco. When the Commission was abolished he continued fisheries work in the Development Branch. In

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629 NAA: CSIR, Head Office – Correspondence; Letter from CSIR to J.G. McLachlan, Esq., C.M.G., Prime Minister’s Department, Canberra, 24 March 1932 [A9778 G16/3/Q5/15 (RDA964-1.1)].
630 J.G. McLachlan and also served as the vice-president of CSIR Executive Council from 1932-1934.
631 NAA: CSIR, Head Office – Correspondence; Confidential letter from Secretary of Prime Minister’s Department to the Secretary CSIR about the development of the Fishing Industry, 7 April 1932 [A9778 G16/3/Q5/15 (RDA964-1.1)].
632 NAA: CSIR, Head Office – Correspondence; Letter from J. Gunn, Director of Development to Julius, CSIR’s Executive Committee, 18 May 1932 [A9778 G16/3/Q5/15 (RDA964-1.1)].
633 An impressive set of cranial x-rays with bullet trajectory are kept in his personal correspondence files P2780 at the National Archive of Australia in Hobart.
fisheries development, Fowler found his ‘cause’ and began championing the great potential value of pelagic resources and the need for their commercial exploitation, and as a result he advocated an industry oriented approach to fisheries investigations. His strong commitment to pelagic fisheries development resulted in his transfer to the CSIR as a Fisheries Officer in 1935, where he carried out a program of pelagic resources investigations by means of aerial photos from 1936 to 1947. As the rest of the chapter will show, his career with the Council was characterised by conflicts between his hands-on approach and a purely scientific approach to fisheries research. In his obituary in the Western Australian Naturalists’ Club, where he was well known and liked, he was described as a ‘crusading type’ and it was said that ‘He firmly believed in the richness of Australia’s fisheries … and persistence to advance these views uncompromisingly in defiance of the prevailing scientific thought of the time.’

By September 1932, the joint report on The Development of the Fishing Industry was placed before McLachlan, recommending that the Commonwealth establish and assist exploratory and scientific fisheries research, primarily through already established research institutions. The report was co-authored by George Julius, W.F. Dakin and Director J. Gunn and Fowler from the Development Branch. As Gunn shortly afterward became increasingly involved in an ongoing Wool Committee, Fowler began acting in his place whenever fisheries were discussed.

Due to the Depression the joint report’s recommendations were a very moderate version of the 1929 marine station scheme. Instead of a permanent fisheries research institution operating a research station, it was proposed that research and investigations be done within existing state and federal institutions and that the Commonwealth Government only invest in a research vessel. The work could be controlled by a small committee with members from the CSIR and the Development Branch. The key concept in the recommendations was that fisheries development should happen on the basis of research done in cooperation with industry. The new element, compared to previous proposals, was that the industry was

634 *Fisheries Newsletter*: CSIR research pioneer retires, December 1948, vol 7 no 6, p. 5.
635 NAA: Stanley Fowler - Correspondence files; Application for position at the State Electricity Commission of Victoria, 6 December 1946, [P2783/1 (38)].
636 Western Australian Naturalist, October 12 1961, vol. 8, no. 2, 12, pp. 53-56.
637 NAA: CSIR, Head Office – Correspondence; Report to Senator Han A.F. Lachlan on ‘The Development of the Fishing Industry’ [A9778 G16/3/AN/14 (RDA964-1.1)].
expected to contribute actively to the development effort instead of relying on the Government to provide the necessary aid. The report recommended that investigation efforts should focus upon pelagic fisheries, explicitly stating that investigations of trawling problems should not be conducted as long as the steam trawl owners were unwilling to cooperating with the Commonwealth Government. As a result, in October 1933 a sum of £20,000 was provided by the Cabinet to the Development Branch in consultation with the CSIR for purchasing a research vessel and it began a program of industry development.  

However the funding did not spark any immediate action from the Council, possibly because the scheme allowed for very little scientific independence, and the Executive Committee did not pursue the matter further. Clearly frustrated by the lack of development, Fowler, supported by the Minister, began to take steps in 1934 to set up a special section of the Development Branch to operate a research vessel and do fisheries research, including marine research. Fowler viewed marine resources in terms of raw materials ready for industry development, and saw fishing as a means of ‘harvesting’ the ‘crops’. Fisheries research was mostly a matter of locating the resource and experimenting to find the most economical way for the industry to extract said resource. Science, as done by the CSIR, could provide answers to specific problems that hampered the development of the fishing industry, but, as a scientific organisation, the Council could not govern industry development. Therefore, in Fowler’s opinion, the Development Branch was better suited to manage (applied) fisheries research and development efforts, drawing on the CSIR’s resources only whenever pure scientific research was needed. He feared that if the responsibility of fisheries research was assigned to the Council, the scientific component of the research would outweigh the practical aspects of fisheries development.

When the news reached the Council in August, Rivett immediately wrote to Fowler asking for a copy of the minute that authorised Fowler to set up a special section of the Development Branch to conduct research (he did not, however, dispute the development aspect). In his letter to Fowler, Rivett commented that he found it “very extraordinary” that the Government

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638 Mawson, V., 1988, p.17.
639 Harrison, A., 1991, p. 27.
should not use the CSIR for its scientific research needs. Fowler stiffly replied, confirming the plans and arguing that in his opinion research and development were one and the same thing in fisheries. Later the Prime Minister’s Department confirmed the Minister’s approval, stating that the Council would be consulted on various aspects of the scientific work and appointment of scientific personnel, although such appointments would ultimately be under the control of the Director of Development. The threat of a competing scientific research organisation finally pushed the Executive Committee of the CSIR into action:

We must, I think, take rather a serious view of all this. Here is another Government Department deliberately usurping our function and allegedly obtaining Ministerial authority to do so. To me the position is intolerable and calls for very definite action by the Executive Committee. We cannot; of course, do anything until we have official notification of the position, but, if things are as Fowler asserts them to be, then I think it is a case of a pretty stiff fight.

The question of how and where to place a marine biological and fisheries research unit now became a matter of principle for the Executive Committee. Realising that it would be difficult to separate marine biology from general fisheries research it began working to bring the new fisheries investigation unit under the control of the Council. A rapid exchange of letters between the Prime Minister’s Department, the Development Branch and the Executive Committee followed. In January 1935 a compromise was reached between the two organisations, a committee of three (two from the Development Branch, one from CSIR) were to manage future fisheries investigations.

As the appointed biological advisor to the Executive Committee, on 5 July 1935 Dakin had submitted a report to the Committee in which he formulated a preliminary program for fisheries investigations. He emphasised the need to obtain an exploration vessel to discover new pelagic resources (especially pilchards). Dakin also suggested that while the section was waiting for the ship, a study of how fish were transported and stored should be done in order

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640 NAA: CSIR, Head Office – Correspondence; Letter from Rivett, Chief Exe. CSIR to Fowler, Esq. Development Branch, 31 August 1934 [A9778 G16/5 (M/8)].
641 NAA: CSIR, Head Office – Correspondence; Letter reply from Fowler (signed Commonwealth Fisheries Officer) to Rivett, CSIR Executive Committee, 3 September 1934 [A9778 G16/5 (M/8)].
642 NAA: CSIR, Head Office – Correspondence; Letter reply from A.C. Smith Prime Minister’s Department to Rivett, CSIR Executive Committee, 27 November 1934 A9778 G16/5 (M/8)].
643 NAA: CSIR, Head Office – Correspondence; Letter from Rivett, CSIR Executive Committee to George Julius and Professor A.E.V. Richardson, 26 November 1934 [A9778 G16/5 (M/8)].
644 NAA: CSIR, Head Office – Correspondence; Memorandum, 23 January 1935 [A9778 G16/5 (M/8)].
to improve the quality available to the consumers. He also suggested beginning a systematic data collection from sources such as NSW State Fisheries Branch’s inspector reports.\footnote{NAA: CSIR, Head Office – Correspondence: Report from Dakin, 5 July 1935 [A9778 G16/5/M/3].}

Exploration of new trawling grounds was deliberately not part of the program because the steam trawling companies were still not cooperating. Dakin noted that “it is a curious fact that the NSW Trawler Companies seem more or less apathetic in regard to the desirability of searching for new trawling grounds by means of Government aid […] sooner or later we shall need to know what our seas have to offer beyond the 1000 fathom line”\footnote{NAA: CSIR, Head Office – Correspondence: Report from Dakin, 5 July 1935 [A9778 G16/5/M/3].}. At that time the steam trawling companies were only somewhat recovered from the crisis of the early 1930s and Red Funnel and Cam’s were successfully exploiting resources outside Australia. Still relying on an ageing trawling fleet they did not have the capacity to pioneer new grounds. Having been disappointed by the lack of response after their request for research aid in 1928-29, it is possible that they were biding their time to see the outcome of negotiations related a fisheries investigation section before they committed themselves.

With Dakin’s report in hand, the CSIR Executive Committee approached McLachlan on the 25 July 1935 declaring that a joint committee was impractical. The Committee argued that part of the CSIR’s function was to advise and make recommendations to the minister; in the case of fisheries it was difficult to do so if they were not in full control of all aspects of the investigations, including practical exploration with a research vessel. To assure the Minister that industry development remained a priority in the new CSIR branch, the Committee instead suggested that Fowler became second-in-charge of the new section and that he and another officer be transferred from the Development Branch to the CSIR.\footnote{NAA: CSIR, Head Office – Correspondence; Memorandum from Rivett to McLachlan, Minister in charge of CSIR, 25 July 1935 [A9778 G16/5/M/3].}

McLachlan reluctantly accepted the argument that CSIR should be fully in charge of all fisheries research, but warned the Executive Committee that he expected it to limit scientific research and concentrate on the present need to test fishing gear and locate new fishing grounds.\footnote{Harrison, C., 1991, p. 29.} The Executive Committee took the warning to heart, and would on several occasions impress upon the Division’s marine biologists that their research had to have practical value and objectives. In August 1935 the Cabinet approved that the CSIR establish
a new fisheries investigation section of the Council (sometimes also called the Fisheries Investigation Branch), which in May 1940 became the CSIR Division of Fisheries. Fowler was in charge until a qualified scientist could be appointed. The main priority for the new section was to build research vessels, develop a research program, and appoint a skeletal scientific staff.

Fisheries investigations, with its dual purpose of research and development, did not naturally find a home in the CSIR. Originally the Executive Committee was more than willing to allow another department to handle the management and development aspects of fisheries as long as the CSIR was asked to do the scientific research needed. It was when faced with the threat of another organisation conducting scientific research and development that the Executive Committee took steps to ensure that the new integrated unit came under the CSIR’s control.

The process of establishing a national fisheries research organisation as described above reveals two competing perceptions of the role of fisheries research and development. The ‘developmentalist’ understood fish as a commodity and fisheries research as a instrument to solve problems relating to resource extraction, and tended to favour studies that were economic or technological in scope or aimed at expanding exploitation. According to this world view, studies of fisheries were concerned to investigate matters that would progress the industry (and society in general). ‘Developmentalists’ tended to describe studies of marine resources in terms of ‘fisheries research’ and ‘fisheries development’. A competing position was held by many scientists who considered marine life in terms of zoology and fisheries and who saw research as a study of the size and dynamics of fish stocks and how exploitation affected mortality. Associated with this position was the insistence that fisheries (development) should be understood within an ecological context.

This duality of research and development positions was inherent in the new CSIR Fisheries Investigation Section, which was renamed CSIR Division of Fisheries in May 1940.649 During the years leading up to Second World War and during the post-war period the research done by the Division was focused on aiding the industry but it contained strong

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649 Although the organisation first officially became a Division in May 1940, it was often referred to as CSIR’s Fisheries Division. In January 1956 the Division was renamed Division of Fisheries and Oceanography. To avoid confusion the organisation will be referred to as the Fisheries Division.
elements of pure science. Discussions among scientists, public servants and policy makers, and politicians revealed the ongoing tension between the two positions.

**The establishment and early research of the CSIR Division of Fisheries, 1935-1939**

The new Division had its temporary headquarters in Melbourne. Although Fowler was the fishing industry’s favourite choice,\(^{650}\) he was a non-scientist and therefore not considered qualified to lead the Division. Lacking Australian candidates, Rivett and Dakin began looking abroad to find a fisheries scientist to head the Division. The search was difficult and it was not until November 1936 that the British Government Fisheries Expert in Newfoundland, marine biologist Harold Thompson, accepted the position as Officer-in-Charge of the Fisheries Investigation Division. Thompson was born in 1890 in Aberdeen, and had a degree in chemistry and zoology from the University of Aberdeen. In 1921 he began working at the Marine Laboratory of the Fisheries Board in Aberdeen, where his studies of haddock year classes and predictive modelling became internationally recognised.\(^{651}\) This work earned him a degree of Doctor of Science in 1927. In 1930 Thompson took up a position at the Research Laboratory at St. Johns, Newfoundland as Director of Fisheries Research from where he was recruited to CSIR in 1936. He took up this position in March 1937, and began to build up the Division.\(^{652}\)

Securing the long awaited research ship, which had featured prominently in recommendations since the Fisheries Conference in 1929, moved a step closer in November 1935 when the Commonwealth-owned Cockatoo Island Dockyard forwarded plans and specifications for a vessel. Tenders were called in May 1936, but the specifications proved to be faulty, and it was not until May 1938 that a research vessel named FRV *Warreen*, was delivered from Williamstown Dockyard in Melbourne. The late delivery delayed the exploration part of the Division’s research program; this was disappointing for Fowler who believed that finding new resources should be the Division’s top priority. In order to move exploration for pelagic resources ahead he negotiated with the Royal Australian Air Force about using their Seagull

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\(^{650}\) Mawson, V., 1988, p. 20.
\(^{651}\) Rozwadowski, H., 2002, p. 86.
\(^{652}\) Fisheries News: Dr. Harold Thompson retires, December 1954, vol 13 no 12, p.11.
airplanes for aerial surveys and photography of fish shoals. The result of the negotiations was that Fowler got an airplane, free of charge, placed at his disposal and from October to December 1936, surveyed the coast from Sydney to Hobart.\textsuperscript{653} This was the beginning of a large program of aerial reconnaissance conducted by Fowler covering large parts of the Australian coastline and adjacent waters which continued until 1948 when Fowler retired from the CSIR due to ill health. The result of Fowler’s pioneering effort was more than 13,000 photos of fish shoals, rookeries, fishing ports, vessels and fishing gear, many of which remain unsorted and identifiable only by notes in Fowler’s shorthand (see Figure 6-2 and Figure 6-3).

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{fowler_shadow.png}
\caption{Fowler’s shadow is captured when he photographs a winch. His photos of gear and vessel at work gives valuable insight into early modern fishing in Australia. Photo courtesy of Rob Birtles, CSIRO, Canberra.}
\end{figure}

\textsuperscript{653} Harrison, A., 1991, p. 32.
Figure 6.3. Schooling fish swimming just below the surface. Such photos supported the idea that Australia possessed large unexploited marine resources. Photo courtesy of Rob Birtles, CSIRO, Canberra.

Realising that investigations of ocean fisheries could not begin before FRV Warren was delivered, Thompson instead used the opportunity to send young biologists Dominic Serventy overseas for training in 1938 and later Maurice Blackburn and Alan Tubb in 1939.654

Because of the Division’s cramped facilities in Melbourne, soon after taking up the position, Thomson began to look for a more suitable location for a marine biological laboratory. He finally recommended to Council that Dannevig’s old hatchery at Port Hacking be the new laboratory and headquarters for the Fisheries Division. The hatchery had not been used for marine research since Stead left the NSW Fisheries Department in 1915. Having little use for the facilities, the NSW Government had already offered the site for a Commonwealth marine biological station at the second Australian Fisheries Conference in 1929. In April 1938 the hatchery was officially transferred to the Fisheries Division and work began to construct a new laboratory in connection with the already existing facilities.

Due to the lack of facilities and the delay of FSV Warreen, fisheries investigations did not start properly until September 1938, when Thompson wrote to the Executive Committee about employing the young biologist Geoffrey L. Kesteven, who had been a student of Dakin’s and in 1937 had joined the NSW Fisheries Department as its first research officer since Stead. Kesteven had proposed a comprehensive study of oysters to Thompson, who had

654 NAA: CSIR, Head Office – Correspondence; Letter from Thompson to Rivett, Chief Exe, Re sending abroad of Tubb and Blackburn, December 1938 [A9778 G16/5/S1 (1)].
forwarded the outline along with his recommendation to the Executive Committee. After having read the proposal, Rivett replied that the Executive Committee considered the shellfish project too scientifically ambitious, and not focused enough on addressing problems vital to the industry from an economic standpoint: “What I mean by that is that the study of marine biology, essential as it is for the ultimate development of fisheries work in its broadest aspects, is something which must remain subsidiary to the study of the first broad problems as to whether or not we possess the basis; how they are to be caught and treated, and so forth.”

In his reply, Thompson acknowledged Rivett’s critique and assured him that he intended to keep exploration a primary objective of the Division’s work. Paraphrasing the Executives Committee, Thompson summarised the point that he had every intention of making the Division’s research priority to establish whether enough marine resources existed to develop the industry further and, if that was the case, to identify what species of fish could be commercially caught and treated. Thompson stated that he believed that if they were successful in answering such questions, “biological and hydrological investigations should run parallel with fish-prospecting, so we may arrive at the scientific basis for any new fishery. […] if the aim is a large and sustained industry, a scientific basis is essential” To further defend his position that pure marine science should be part of the initial investigation program because it was essential to sound industry development, Thompson elaborated his argument by pointing to the NSW steam trawling industry. He argued that while exploration by Endeavour had successful located fishing grounds, there was still a lack of basic biological information about the fish found at the grounds. Because of the uncertain status of the resources the steam trawling industry was not securely founded and “may face crisis at any time now owing to lack of fish.” Thompson stopped short of saying that the trawling industry was unsustainable but expressed grave concerns for its future. This disagreement would not be the last between Rivett and Thompson about the right direction for the Division’s work.

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655 NAA: CSIR, Head Office – Correspondence; Letter from Rivett to Thomson, 20 September 1938 [A9778 G16/5/M/3].
656 NAA: CSIR, Head Office – Correspondence; Letter reply from Thomson to Rivett, 27 September 1938 [A9778 G16/5/M/3].
657 NAA: CSIR, Head Office – Correspondence; Letter reply from Thomson to Rivett, 27 September 1938 [A9778 G16/5/M/3].
Thompson introduced to the development debate the concept of scientific-based fisheries management, that science should guide exploitation to ensure that efforts were sustainable. In 1938 he was only talking about it in relation to developing new fisheries, but as his example with the NSW STI showed, it was an easy step to envision that science could also be used to manage existing fisheries.

The full investigation program which Thompson submitted later in 1938 for the Executive Committee’s approval reflected an approached more oriented to industry. By then the Division’s staff consisted of about nine scientists and researchers. A large part of the program was based upon investigations at sea: FRV Warren was mainly to be used to locate unexploited resources of pelagic fish, supported by Fowler’s aerial investigation of surface fish. Blackburn was to study the biology of Clupeoid groups of fishes, especially pilchards, and Serventy the biology of the tuna group of fishes. Experiments into fish preservation, spoilage and methods of sterilising fish premises were conducted by J. Ferguson Wood. In January 1939 Kesteven joint the Division from the NSW Fisheries Branch; at Cronulla he continued the studies of mullet and oysters he had begun while at the Branch. Other areas of scientific research undertaken in the first years were marine bacteriology studies, fish and shellfish pathology, hydrography and plankton studies. A library was under construction and Fowler would also prepare motion and still-picture records of Australian pelagic fish life.

In June 1939 the buildings at Cronulla were completed and the Division moved there. Fowler and his program dealing with aerial reconnaissance remained in Melbourne and would, for all practical purposes, become semi-independent of Thompson and the Division’s headquarter in Cronulla. Fowler’s opportunistic approach to fisheries development would increasingly put him at odds with the other scientists from the Division. As Thompson took over control of the Fisheries Division, Dakin was no longer needed and was not involved in the decision-making. He retained some influence as the Fisheries Advisor to the CSIR’s Executive Committee until, in 1948, he became a member of the Council. As an advisor Dakin provided advice and recommendations on fisheries matters, including research, directly to the Executive Committee independently of Thompson and his Fisheries Investigation Division.

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658 NAA: CSIR, Head Office – Correspondence; Division of Fisheries – Project for Investigation, 1938 [A9778 G163/F13].
By 1939 the official tasks set before the new Fisheries Investigation Division were to locate and explore new pelagic fish resources and solve or advise on problems obstructing the industry (e.g. sickness in oysters or improved methods of fish preservation). Knowledge of most marine species, their abundance and fluctuations was generally very limited. There were no plans for any investigation into problems that related specifically to the steam trawl industry, nor any attempts to locate new resources suitable for trawling.

Relations between NSW Fisheries Department and Division of Fisheries

In 1937 Kesteven had been the first scientifically qualified officer to be appointed to the NSW Fisheries Branch, since Stead had left in 1914. While at the Branch Kesteven had done several studies: A general statistical survey on commercially important estuary fish, and more detailed studies on mullet and tiger flathead. A larger project on Murray cod was conducted in collaboration with Dakin. Kesteven also began researching mortality in oysters and experiments with alternatives to black mangrove sticks in oyster culture. The ambitious and wide-ranging program was cut short in 1939 when Kesteven resigned to take up his position in the CSIR. To replace Kesteven, Roughley was transferred from the Technological Museum to the Fisheries Branch and shortly after began reviewing the Branch’s investigation work, on 22 October 1940 submitting a report entitled “Plan for the Investigation and Administration on the Fisheries of the New South Wales.” Because of the economic importance of the State’s fishing industry and the fact that the productivity of these fisheries had been steadily declining, scientific investigations were urgently needed in order to adopt correct measures of conservation. To address these problems Roughley proposed that a permanent fisheries research division be set up within the Chief Secretary’s Department, where the Fisheries and Game Branch was located. A minimum of three qualified scientists and one scientific assistant was needed, according to Roughley, to study important problems within NSW saltwater fisheries, freshwater fisheries and the oyster industry.\(^659\) Because the proposal required additional appointments, the case was routinely turned over to the NSW Public Service Board for consideration, but it advised the NSW Government that there was no justification for having a State fisheries research unit when fisheries investigations were already conducted by the CSIR. Following the Board’s recommendations the Government

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\(^659\) SRNSW: State Fisheries; Report on scientific investigation in connection with fisheries requested by minister, by Roughley, Superintendent of Fisheries, 22 August 1947 [10/41730].
decided against conducting its own fisheries investigations and rejected Roughley’s program. So although Roughley originally was appointed as a research officer he found himself, to his annoyance, working in a purely administrative capacity.\textsuperscript{660} Instead the NSW Government adopted the policy of entrusting the CSIR’s Fisheries Division with all its future fisheries research, drawing upon the Division’s superior resources and ability to study fisheries problems across State boards. To compensate the Division and ensure that sufficient attention was given to State fisheries problems, the Government agreed to fund an additional research officer for the staff at Cronulla; one was briefly employed but after he resigned it was decided to let the matters stand over until after the war.\textsuperscript{661}

The decision to depend on the CSIR for investigations into fisheries problems was not entirely supported by the various fisheries organisations in NSW. They were unhappy with the fact that most of the CSIR’s research was done on offshore fisheries, and not on problems relating to the NSW inshore and oyster fisheries. In their opinion the Fisheries Branch only administered the Fisheries Act and did not display any interest in supporting the industry by rebuilding and improving declining fisheries.\textsuperscript{662} In October 1944 the NSW Fishing Industries Association\textsuperscript{663} requested that the administration of State Fisheries be transferred from the Chief Secretary’s Department to the Department of Agriculture, because members had lost confidence in the existing arrangement. The transfer to the Department of Agriculture was designed to utilise the skills and laboratory facilities there to also conduct fisheries investigations.

Roughley, who favoured a strong State-based research program into local problems, supported the Association’s request against his own department, and testified that, in his opinion, the Fisheries Branch was too severely understaffed to make any substantial

\textsuperscript{660}SRNSW: State Fisheries; Report on scientific investigation in connection with fisheries requested by Minister, by the Chief Secretary, 22 August 1947 [10/41730].
\textsuperscript{661}SRNSW: State Fisheries; S.L. Anderson, Under Secretary of Chief Secretary’s Department to Dr. H. Thompson, Chief of the Fisheries Division, CSIR, 31 October 1944 [10/41728].
\textsuperscript{662}SRNSW: State Fisheries; Representation received by Hon C.R. Evatt, assisting Minister, from the Fish Industries Association, requesting the transfer of the Fisheries Department from the Chief Secretary’s Department to the Department of Agriculture, 17 October 1944, [10/41728].
\textsuperscript{663}The NSW Fishing Industries Association was founded 1933 and included representatives from the fishing industry incl. steam trawlers owners, seine boats owners, licensed fishermen, fish agents, oyster farms, and wholesale vendors. Two public servants, one of which was Roughley attended the Association’s meetings, acting as advisors and liaison between the industry and the public service.
contribution to solving fisheries problems. Roughley’s critique was a direct challenge to the policy adopted by the Government and his own Branch but matters did not progress further. When Thompson was asked about the Fisheries Division’s thoughts on the matter, he replied that the CSIR was the only organisation suitable for doing this type of research, but suggested a system of periodic review of the Division’s research program and its application in NSW be established, taking into account both industry and government interests. In fact such a system already existed in the CSIR State Committees, which had the power to initiate CSIR research, but it was controlled by scientists, not state officers.

In the end NSW Premier McKell stated that he was not prepared to fund a separate state program of fisheries research and that any under-staffing at the Branch was an unavoidable consequence of the war.

The incident illustrated that despite dissatisfaction among stakeholders and parts of the Fisheries Branch; the NSW Government was unwilling to fund fisheries research and maintained a policy of relying on the CSIR for investigations. As a consequence the Fisheries Branch remained a mainly administrative authority, with little ability to provide progressive scientific based management. It was not until towards the end of Roughley’s career that the NSW Fisheries Branch got a research program and a dedicated scientific research unit.

CSIR Division of Fisheries and centralised control over fisheries, 1940-1945

When the Second World War broke out in September 1939 members of the CSIR Department of Fisheries had only just started their investigations. Cruises with FRV Warreen had established the main areas and seasonal distribution of bluefin tuna and pilchards on the continental shelf, and other investigation areas were progressing as well. The Division’s research into food production was considered important for the war effort and all scientists and researchers were given reserved occupation status, which meant that they were exempt

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664 SRNSW: State Fisheries; Reply from Roughley on the Fish Industries Associations request of transferring the Fisheries Branch to the Department of Agriculture, 26 October 1944 [10/41728].
665 SRNSW: State Fisheries; Letter from Thompson, CSIR to Anderson, Under Secretary Chief Secretary’s Department, 24 November 1944, [10/41728].
666 SRNSW: State Fisheries; Letter to Finnan from Premier W.J. McKell, 12 December 1944, [10/41728].
from being conscripted, and were required to remain in their positions. In May 1940 the Division was officially renamed the CSIR’s Division of Fisheries with Harold Thompson as chief. During the first years of the war, the investigation program continued largely as planned.

In October 1940 CSIR’s Council, which consisted of the Executive Committee and the heads of the state committees, met in Sydney where it was decided that the Division should resume its normal activities as they were submitted by the Division. Concurrently Fowler had submitted a separate report directly to the Chief Executive Officer David Rivett, in which he suggested a series of steps to develop the fishing industry in order to meet the wartime shortages of fish and build a better industry. He suggested renewed efforts be put into locating new marine resources; better methods of capture be investigated; harbour facilities be upgraded, and the Government provide inexpensive loans to fishermen in order to improve the fishing fleet. To carry out his development-oriented program Fowler suggested that a new authority be established to administer the commercial aspects of the fishing industry and managed (economic) stimulus to development, while CSIR remained in charges of exploratory research. Of all his suggestions, only the already planned fisheries investigations of Western Australia were adopted by the Council at that time.

Later that year CSIR called a national fisheries conference which included eight representatives from the fishing industry. The conference was much smaller in scope than those in 1927 and 1929 but the delegates’ positions about exploration, biological studies and industry development were similar to the ones expressed during the Second Fisheries Conference in 1929. The conference did consider the question of a special fisheries development unit, and recommended the establishment of a special Commonwealth fisheries development committee. A similar suggestion to transfer the responsibility for fisheries development and administration to a permanent Commonwealth fisheries authority was also recommended by the Tariff Board in 1941 after a public inquiry. The inquiry heard witnesses

668 The activities were: Tuna Investigations (testing of commercial fishing methods), Clupeoid studies, Barracouta, Salmon investigations, Mullet conservation, Oyster culture: (to increase productivity and quality), Hydrography and plankton (ultimately to forecast fluctuation in economic important species) and Processing (Canning, Smoking, fish oil, spoilage). See NAA: CSIR, Head Office – Correspondence; Meeting of Council, Resume of activities of Fisheries Division, October 1940 [A9778/3 G16/3/AN1].

669 NAA: CSIR, Head Office – Correspondence; Report on the Australian Fishing Industry by S. Fowler, 25 October 1940 [A9778/3 G16/3AN/12].

from CSIR’s Division of Fisheries, State fisheries departments, and representatives from fisheries interests, retailers, manufactures and consumers. Both Fowler and Thompson gave statements but only in a private capacity. 671

It was the Board’s view that the development of fisheries was the responsibility of the Commonwealth more than the States because of the limitations imposed by the territorial-sea and the lack of unified regulations. Overall the Board was in favour of developing a large national fishing industry and argued that Council’s fisheries investigation program should be continued and preferably expanded. 672

The Council was positive about the suggestion for a separate fisheries development authority. It was the CSIR’s Executive Committee’s (especially Rivett’s) view that any such authority was best placed outside the organisation so the CSIR could concentrate on fundamental marine investigations. With this separation of responsibilities in mind he called for another national fisheries conference in early 1941 to discuss the relationship between the proposed Commonwealth fisheries development authority and the CSIR. The conference did little to clarify the matter declaring it impossible to make clear demarcation lines between marine science and fisheries development. A complicated compromise was reached by the delegates on how the proposed authority should be organised: an executive committee would be in charge of day-to-day business while a standing committee composed of representatives from each State and one from CSIR would make the policy decisions. 673 The proposed authority had little power and its top heavy and bureaucratic structure made it ill-suited to innovative industry development; it was promptly put on hold by the NSW Government after December 1941 when Japan entered the war. Subsequently the focus shifted to food security and war-time production.

The first impediment imposed by the war to the Division’s investigation work came in December 1941 when the construction of a planned second research ship, designated to conduct fisheries investigations in Western Australia, had to be shelved. In July 1942 it was decided to lay up FRV Warreen until the end of the war unless the Royal Australian Navy

671 Roughley from NSW Fisheries Branch and representatives from Red Funnel Trawlers and Cam & Sons also gave evidence. See NAA: Navy Office; Tariff Board’s Report on Fishing Industry, 23 June 1941 [MP257/6 (1)].
could find a use for it. The RAN, already having requisitioned all except one of the Sydney based steam trawlers, and most of the seiners in NSW, was in great need of more ships, and in October 1942 it took possession of the ship. FRV Warreen was renamed HMAS Stella and used as a survey vessel until October 1946 where it was handed back to the CSIR Division of Fisheries. However, it did not recommence cruises until January 1947. The temporary loss of the research vessel put a stop to all exploratory fisheries investigations and fish prospecting, except Fowler’s aerial surveys which continued in Western Australia. Instead, officers at Cronulla gradually became involved in other work. In October 1941 the Division published the first issue of the Fisheries Newsletter “with the idea of bringing the scientific work on fisheries problems in closer touch with those people who depend on fish or its by-products for a living.”674 The newsletter was sent to all relevant state and federal organisations, industries and, from November 1943, to all licensed fisherman. In the early years articles were primarily written by staff at Cronulla, but later editions contained a wide range of articles from State and federal institutions, national and international fisheries and science news. The editorial of the second issue, published in January 1942, opened with the declaration that it was a matter of urgency to conserve the nation’s fish stocks because “No-one will suggest […] that Australia’s marine resources are inexhaustible”.675 The article was a response to increased pressures to open up coastal and estuary fisheries which previously had been protected by State legislation, in an attempt to increase food productivity and compensate for the slump in foreign imports of fish products. But the editorial was also the first of several frontal attacks on the dogma that boundless marine resources were available for commercial development. As the editorial expressed the view of the CSIR’s Fisheries Division it was, in effect, the Division’s renouncing basis for more than 60 years of public fisheries development policy and fishery management in Australia.

The understanding had not been reached suddenly by the Council’s marine scientists, but had slowly developed as scientific and industry data were accumulated. Other public institutions had begun to reach the same conclusion. In June 1941 the Commonwealth Tariff Board’s Report on the Fishing Industry expressed the opinion that Australia’s inshore waters and

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674 Fisheries Newsletter, October 1941, vol 1, no 1.
675 Fisheries Newsletter, Editorial, January 1942, vol 1, no 2.
demersal resources were extensively fished and could not be developed (much) further. The Board believed that finding new unexploited pelagic stocks would increase the industry’s productivity. The most controversial contribution to the debate was published in the October 1942 edition of the newsletter, *Our Fishery Resources – the shadow and the substance*. This was deliberately not accredited to anyone in the Division, although Serventy was later revealed to be the main author. The article was written as a reaction pressure from Fowler and the CSIR’s Executive Committee (and some industry interests) to prioritise fish prospecting over other types of investigations. Its twofold purpose was to reject the idea of Australia’s ‘unlimited marine resources’ and the lack of private entrepreneurship and to offer an alternative vision of what role the Division should play in relation to the fishing industry. It was argued that Australians incorrectly and uncritically assumed that there existed great marine resources similar to those found in Newfoundland and the Grand Banks and the historical lack of a successful private fishing industry was evidence of this misconception. The prevailing idea of unlimited resources was in fact the greatest threat to the development of the industry, because it promoted overfishing. To avoid that outcome and conserve the limited resources, it was necessary to begin controlling the nation’s fisheries. By having developmental work as the main objective of fisheries investigations the CSIR was doing the fishing industry a disservice. According to the article: “The true purpose of biological research in fisheries is to so control the utilisation of the resources that it will remain a permanent source of supply”. The proper function of the Division should be to provide scientific advice when conservation measures were needed in order to secure the optimum level of productivity across the fishing industry.

The article was the Division’s statement of intent to take the lead in fisheries management, which previously had been dominate by industry interests and political tendencies to

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676 Concern about the impact of extensive fishing in inshore waters was nothing new, it had motivated NSW first fisheries act in 1865.
677 NAA: Navy Office; Tariff Board’s Report on Fishing Industry, 23 June 1941 [MP257/6 (1)].
678 In May 1943 Dom Serventy was transferred to Perth to start a branch of the Division in Western Australia.
679 Mawson, V., 1988, p. 36.
680 *Fisheries Newsletter: Our Fisheries Resources – the shadow and the substance*, October 1942, vol 1, no 5, p. 17.
developmentalism instead of ecology. The article further deepened the conceptual trench between Fowler and his developmentally oriented supporters, and the conservation oriented scientists within the Division.

Arguments for a change in direction continued. In July 1943 the *Fisheries Newsletter* editorial outlined the likely problems facing the trawl fishery on the south-east continental shelf after the war. It was the Division’s belief that the fish stocks targeted by the trawlers (primarily flathead) had benefited from the reduced fishing effort that the Royal Australian Navy’s requisitions had caused. It was correctly assessed that catch per haul would increase to levels higher than experienced before the war. The Division also correctly predicted that high catch rates would lead to over-investment and overfishing, and that subsequently the fleet would have to be reduced again for the fishery to be economically sustainable. To avoid this situation and secure a permanent increase in yield, the editorial argued that fishing effort needed to be controlled to conserve resources. These control measures should derive from biological studies of the impact of fishing effort on the resources, and be aimed at providing the industry with an upper and (biological) safe limit of fishing that could be taken from each fishing ground per year. Suggested management tools included limiting the number of fishing vessels allowed to operate, and protecting spawning and undersized fish through legislation.

The decision to use the trawl fishery to argue the need for conservation and scientific based fisheries management was an appropriate choice: the industry had been a model for fisheries development and the consequences of long-term exploitation were undeniable. Reduced catches and the economic hardship experienced by the steam trawling companies where well known and documented, and a significant body of scientific evidence of overfishing was accumulating as well.

On 30 November 1942 Thompson had been asked to provide a report to the Executive Committee about what work had been done, noting its significance, research procedures and results. In January 1943 he submitted a statement of work and main findings which the same year was published in the November 1943 issue of the *Journal of the Council for Scientific*

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682 *Fisheries Newsletter*, July 1943, vol 2, no 5.
and Industrial Research. The report briefly summarised work on pelagic fishes, demersal and onshore species, shark investigations, technological problems, plankton and hydrological problems, as well as work by thirteen scientists and assistants employed at Cronulla. In relation to the trawl fishery some of the ecological characteristics of the south-east continental shelf were established to create a method of predicting annual fish productivity, and preliminary work was done on trawl fish conservation.683

Thompson controversially concluded that the failure to establish a pelagic fishing industry on a commercial basis was not because lack of skills or effort but because Australian waters lacked fish in commercial quantities. The reason for this fact he attributed to the absence of cold water currents; this did not sit well with Fowler, who still advocated a developmental approach. After reading a draft of the article, Fowler wrote to Thompson in December 1943 arguing that Thompson’s assessment of the size of marine resources was “false or ill-founded” 684 given that his own aerial reconnaissance had shown plenty of fish schools. Meagre commercial outcomes were the result of insufficient technical skills and imagination, some of which his fellow officers in Cronulla were responsible for.685 The letter debate about the magnitude of fish resources continued into 1944, involving Thompson, Fowler and later Blackburn, with the Executive Commission as reluctant referees. In the end Rivett had to step in, offering the opinions to Fowler that Thompson and he did “not always speak quite the same language”686 and that as long as “the arguments [Fowler’s] centre round purely qualitative ideas have the force of conviction”687 there was little basis for reaching general agreement. Fowler’s inability to quantify his aerial observations of fish and provide a summary of findings was severely handicapping his cause, and the Executive Commission was beginning to be wary of the viability of his studies. In one of his responses to Thompson, Rivett wrote: “Fowler has all the enthusiasm of a propagandist and evangelist; admirable people but not always easy to argue with from purely scientific standpoints.”688

683 NAA: CSIR, Head Office – Correspondence; Statement of Work of the Division of Fisheries, January 1943, [A9778/3 G16/3/QS].
684 NAA: CSIR, Head Office – Correspondence; Letter from Fowler to Thompson, 7 December 1943 [A8520].
686 NAA: CSIR, Head Office – Correspondence; Letter from Rivett to Fowler, 21 December 1943, [A8520].
687 NAA: CSIR, Head Office – Correspondence; Letter from Rivett to Fowler, 24 December 1943, [A8520].
688 NAA: CSIR, Head Office – Correspondence; Letter from Rivett to Thompson, 24 December 1943, [A8520].
The exchanges illustrated two important points: First that despite increased knowledge, the interpretation of data still allowed for conflicting views about how the Division could best fulfil its obligations to aid the fishing industries; and secondly that member of the Executive Committee, by supporting the views put forward by its scientists, were beginning to question the rightness of the development oriented approach.

The debate over whether or not the Executive Committee and the followers of the search-for-resources approach would accept the Division of Fisheries’ shift of focus from industry development to provider of scientific based management, was temporarily put on hold in June 1943 when the office of Controller of Fisheries under the Department of War Organisation of the Industry (WOI) was established.689

In early 1942 Kesteven had approached Thompson with an idea to centralise the management of the nation’s fisheries during war-time in a new Commonwealth authority. The objective of the new authority was to optimise production by rationalising the use of resources such as fuel and labour which was in short supply. To meet production targets the authority would also coordinate the administrative activities by State and Federal departments, trade and producers’ organisations. The Fisheries Division’s knowledge of fisheries science, Australia’s marine resources and the fishing industry in general made it well suited to direct the effort.

A proposal was put forward to the Director of General Manpower, Wallis Worth, who asked the Division to provide a national register of people engaged in the fishing industry. Based upon that survey the Office of Controller of Fisheries under WOI was established in June 1943.690

Thompson and Kesteven hoped that if a marine biologist became in charge of the Controller of Fisheries Office, the organisation could act as a catalyst for some of the changes that the Division wanted to implement in fisheries management. When Thompson described to Rivett the function of the new authority and the leading role he expected officers of the Division to play he concluded by saying: “I consider the opportunity is a golden one, and one which may

689 The Department of War Organization and Industry was created in 26th June 1941, and merged with Department of Post-War Reconstruction in 30 June 1945.
690 Mawson, V., 1988, pp. 36-37.
not occur again for a long time, to rationalise and indeed firmly to establish the fisheries in a progressive way.”

As expected Thompson was appointed Controller of Fisheries, leading the Division, with Kesterven as Assistant Controller and another staff member, Cedric Setter, as Research Officer. The three also continued their work with the Fisheries Division while working for the Controller Office. By then Thomson’s health was deteriorating and Kesteven assumed his responsibilities as Chief of the Office. The Office exercised its authority through a system of State Deputy Controllers (appointed from the State Directors of Fisheries) and joint industry and government consultative committees but the Fisheries Division scientists were undeniably in charge of the Office and the formulation of policies.

The responsibilities of the Controller of Fisheries Office were to advise States and Commonwealth Governments on the allocation of manpower (labour), gear, fuel and boats to the fishing industry and help increase productivity and efficiency. Practical work for the Controller of Fisheries included giving advice on prices and marketing, but the Controller of Fisheries also enforced industry control measures, promoted fishing co-operatives and centralised marketing. As a result in November 1944 the Commonwealth took (wartime) control of the marketing of fish in Australia.

The wide range of responsibility and executive powers also gave the Division’s fisheries biologist an opportunity to actively engage in fisheries management outside the control of the Executive Committee and Fowler’s development oriented followers. By the end of the war in 1945 the Controller of Fisheries Office was transferred to the Department of Post-War Development where it remained until it was abolished in 1946. The result was that central control of Australian fisheries was solely in the hands of CSIR’s marine biologists from 1943 to 1946. The long-term consequences were that ‘Control’, especially beyond the three nautical mile limit, became the third leg in the Development-Research-Control debate that came to characterise post-war fisheries management.

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691 NAA: CSIR, Head Office – Correspondence: Policy for the fishing industry 1943, Letter from Thomson to Rivett, 17 June 1943 [A9778/3 G16/20/G6].
With a few exceptions, members of the Division had become convinced that a new direction in fisheries management was needed, leading towards more industry control. Being the ones that could provide the biological facts for such a control, they not only wanted to be part of the management process, but to lead it. Historian Anthony Harrison reckoned that by 1943 “CSIR fisheries biologists clearly saw their role as both the sources of expertise and the formulation of policy.”693

The war provided an opportunity for the Division to act upon their willingness to govern and the establishment of an Office of Controller of Fisheries became a channel for the Division’s management ambitions. Being only in control of a temporary war-time office, the direction of post-war fisheries management would not be solely in hand of the Division, but would depend especially on the Commonwealth Governments will to govern the nation’s marine resources.

**Post-war fisheries management policies**

The CSIR came out of the war strengthened. Its rapidly increasing numbers of scientific staff had made valuable contributions to the war effort, which brought a change in its relationships with government, with widespread support for the Council’s scientific activities.694 Despite this support, CSIR was not closely involved in the planning of the post-war reconstruction effort, mostly because it was considered that the main problems facing the post-war reconstruction effort were economic not scientific. As a consequence the CSIR only came to play a minor role in post-war industry development compared to its vital position during the war.695

However the war-time experience of the Council’s marine biologist in governing fisheries had made the scientists keen to establish a permanent Commonwealth fisheries authority which could continue the policy of centralised, scientific based fisheries management.

In March 1945, Thompson sent Rivett a copy of a general submission for Cabinet about the formation of a permanent Commonwealth fisheries authority responsible for administration

and development work. The organisation sketched out in the letter was based upon a draft made by Kesteven. Similar suggestions about an independent fisheries development organisation had previously been raised by Fowler in 1940 and by the Tariff Board in 1941. Thompson’s argument was that attempts by the Commonwealth Control of Fisheries to re-organise Australia’s fishing industry had revealed fundamental problems, many of which arose from the industry’s inability to impose self-regulation. The problems were caused by a number of external and internal factors influencing the fisheries. One such factor was that CSIR’s own research had showed that Australia’s marine resources were limited and that there had been a tendency to over-exploit and deplete stocks. Another issue was that fishing and marketing methods were uneconomical, outdated and inefficient and had resulted in unnecessarily high production and distribution costs. Drawing on the experiences the staff had had while in charge of the Control of Fisheries, it was thought that the best way to address these problems was to adopt a comprehensive and coordinated policy on fisheries research, development and administration at a Commonwealth level directed by a single authority. While the new body was to be responsible for developmental work and aspects of administration, all research, both applied and pure science, should continue to be in the hands of CSIR. As both development and administration was based upon scientific advice, Thompson envisaged that the Chief of the Division of Fisheries would also control the new authority to make sure that all decisions were made upon a sound scientific basis. The Commonwealth authority suggested by the Division would have the power to intervene in private industry practices through special fisheries legislation and directly engage in commercial operations aimed at developing new industries. It was the management aspect that set the proposal apart from all previous proposals for a national fisheries authority.

While the Executive Committee was comfortable with Thompson and his officers taking extra responsibilities during and immediately after the war, as they had done under the Department of War Organisation of Industries and Department of Post-War Reconstruction, the Executive Committee was not prepared to accept them being in charge of a civil service.

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696 LJPC: Letter from Thompson, Chief of Division, Marine Biological Laboratory Cronulla to David Rivett, Chief Executive Officer CSIR, 5 March 1945.
department while running the Fisheries Division at the same time, especially when Thompson’s health continued to be fragile.  

In an attempt to solve the conflict science versus development, the Executive Committee held a meeting with key staff at the Division on 27 June 1945 to discuss achievements and future work. At the meeting the Executive Committee voiced the opinion that the Division had failed in its exploration responsibilities. To address the problem, Rivett suggested that the Division be divided into a Development and Exploration section and a section for Marine Biology. The formation of a special Exploratory Section was officially announced in August 1946. The first task set before this section was to explore West and South Australian waters. Fowler had expected to be become head of the new section, but the position was instead given to Australian zoologist George W. Rayner in 1948.

Australian fisheries historians such as Harrison have interpreted the move to set up a special exploration section as an attempt by the Executive Committee to ensure that the proposed new Commonwealth fisheries authority did not infringe on the CSIR territory. In my assessment the decision had more to do with attempting once and for all to solve embedded conflict within the Division by carving out a special development oriented unit which could work semi-independently from the rest of the Fisheries Division.

After the meeting with staff the Council decided to support the idea of a new independent fisheries authority. On 18 July 1945 the Executive Committee relayed to Cabinet the decision that the CSIR was ready to support the proposed idea about an integrated approach to fisheries management through a new Commonwealth fisheries authority, on the condition that the CSIR be solely in charge of the scientific work free of political or administrative demands, and have nothing to do with practical fisheries management. The insistence on maintaining a policy of scientific freedom whenever possible was a hallmark of the first Executive Committee, especially of Rivett. During the late 1940s the position of scientific autonomy came under increasing political pressure and was one of the underlying issues behind the moves to reorganise the CSIR. It culminated with the Science and Industry Act in

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697 NAA: CSIR, Head Office – Correspondence; Letter from Rivett to Professor Dakin. Department of Zoology, University of Sydney, 5 April 1945. [A9778/3 G16/5/F18].
698 Fisheries Newsletter: Fisheries Exploration, August 1946, vol 5 no 4, p. 23.
1949, which saw the CSIR transformed to the Commonwealth Scientific and Industrial Research Organisation (CSIRO).\textsuperscript{701}

At a conference at Cronulla on 19-20 September 1945 the formation of the permanent fisheries authority was discussed further by the senior officers from the Controller of Fisheries\textsuperscript{702}. The transfer of the unit from the Ministry of Post War Reconstruction to another department as part of the creation of a new permanent fisheries authority was anticipated.\textsuperscript{703}

The output of the conference consisted of a number of recommendations to the Minister, designed to provide the framework for the policy of the new authority. By then marine biology was no longer a part of the new authority’s functions. In a motion carried by the conference, the organisation’s future authority was categorised into three sections (Administration, Developmental Work and Economic Research). It was also recommended that the new authority became an independent department with direct access to the Minister and that the core staff of the Controller’s Office be transferred to the new department. Several recommendations were made regarding the policies of the authority including minimum fish-prices, marketing, fishing co-operatives, establishing a whaling industry, taxation and setting up a national register for catch and effort. From an environmental management point of view the most radical statement was that conservation should be a key policy of the authority and based upon the notion of industry and administration working together to secure sustainable catches. The idea was that the administration should provide the fishing industry with data on the sustainable level of catches on the basis that the industry would adhere to those guidelines, that productivity would increase, benefiting both industry and consumers; and that overfishing could be avoided.\textsuperscript{704}

The matter was discussed in Commonwealth Cabinet in October 1945. The submission put before the members from the Ministry of Post-war Reconstruction proposed “the closest possible collaboration with the Council of Scientific and Industrial Research on the matter of

\textsuperscript{702} Confusingly the Office of Control of Fisheries also called themself Division of Fisheries after the unit moved to the Ministry of Post-War Reconstruction.
\textsuperscript{703} NAA: Navy Office; Minutes of 1st Staff Conference held at Marine Biological Laboratory, Cronulla on 19-20 September 1945 [MT 105/8 2/67/1435].
\textsuperscript{704} NAA: Navy Office; Resolutions carried at staff conference, 19-20 September 1945 [MT 105/8 2/67/1435].
policy formation and the planning of activities, and further proposed that as much as possible of the administrative activities were to be carried out by State organisations. Upon consideration by the Cabinet it was decided to stand the matter over until a new joint submission was received from the Minister of Post-War Reconstruction and the Department for Commerce and Agriculture. The inclusion of the Department for Commerce and Agriculture in the planning process had long-term consequences for the future policies of the fisheries authority. While the Fisheries Division of the CSIR had been the real influence behind the submission, directing the policies of the proposed authority to scientific based management and sustainable resource governance and selected industry development, the inclusion of the Department for Commerce and Agriculture in the planning process changed the overall direction to one favouring a development and industry oriented approach. A new joint submission was put before Cabinet in late December 1945, with basically the same configuration, but with the new authority becoming a branch of the Department for Commerce and Agriculture.

Since the new authority was to rely on the states to do most of the practical fisheries administration and to avoid overlapping with State authorities, the proposal was also discussed at the Premier's Conference in January 1946. At the Conference it was agreed that State authorities would carry out, whenever practical, the control of fisheries in extra-territorial waters when Commonwealth legislation was enacted.

The new Commonwealth Fisheries Office was established in early 1946 in Sydney under the Department of Commerce and Agriculture (and not as an independent department), and it was therefore no surprise that none of the officers from the CSIR was transferred to the Office. Instead a non-scientist, F.F. Anderson, was appointed Director of Fisheries in September 1946. Anderson came from a position in state government administration and his only connection to the fishing industry was that his father had been a fisherman for a time. The CSIR’s Division of Fisheries was still responsible for providing scientific assistance to the Commonwealth Fisheries Division, including exploratory research. The Council could still instigate projects alone or in conjunction with State authorities, but the officers at the

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705 NAA: CSIR, Head Office – Correspondence; Cabin agendum 950; The Fishing Industry – Permanent Commonwealth Authority, 2 October 1925 [MT105/8/1 2/67/1435].
706 The authority was also briefly called the Fisheries Commission or sometimes the Fisheries Division.
marine laboratory at Cronulla were without any influence on the policies of the Fisheries Office. Instead the Division continued its own marine research program, but now left explicit development activities to the Commonwealth Fisheries Office.

Occasionally frictions between the two Commonwealth divisions would occur. Between February and March 1951 a discussion about how to define the line of demarcation in exploratory work transpired between the heads of the CSIR and the Department of Commerce and Agriculture. The question of what was research, and therefore belonged within the CSIRO, and what was development and therefore the responsibility of the Commonwealth Fisheries Office was blurred; more so because the two organisations regularly collaborated when collecting data. The rivalry was intensified in October 1952 when the Commonwealth Fisheries Office wanted to hire a biologically trained officer to deal with data and recommendations put to the Office by CSIRO’s Division of Fisheries. A compromise was reached when two staff were named to act as liaison officers between the departments. 708

In 1946 Kesteven had expected to be appointed Director of Fisheries, and was severely disappointed when Anderson was appointed instead. He resigned shortly afterwards from the CSIR. From 1947 he served as secretary to the Indo-Pacific Fisheries Council in Bangkok and in 1952 took up a position in the United Nations Food and Agricultural Organisation (FAO) in Rome. Then in 1954 he became chief of the biological branch of its fisheries division. Kesteven briefly returned to the CSIRO from 1960 to 1968 as Assistant Chief of the reformed Division of Fisheries and Oceanography, by invitation of the new Head of Division G.F. Humphrey, who - as a student - had assisted Kesteven in his fieldwork. With Kesteven gone to Europe in the 1950s, the most passionate of the advocates for an integrated scientific based management approach disappeared, and it was not until 1961 that a biological based management approach were formally accepted by State and Commonwealth fisheries authorities.

After 1946 Fowler had become increasingly disillusioned about his situation at the Division and about the fact that the ‘scientific folk’ would not recognise the value of his aerial surveys,

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708 NAA: CSIR, Head Office – Correspondence: Responsibilities of the two Commonwealth fisheries divisions 1951-1953 [A9778/3 G1/20/(R/2)].
and resigned from service in July 1948 as medically unfit. It had been agreed that, during his retirement and as far as his health permitted, Fowler should work on cataloguing his large photo collection which mainly consisted of negatives, and write a final report about his findings. But after retirement and against his wish, his collection of film was transferred from his Office in Melbourne to Cronulla, to be developed upon the order of Rayner. Angered by this move, and lacking the training to synthesize his immense dataset, Fowler’s working relationship with Rayner quickly deteriorated and communication irreversibly broke down in 1951. As a result most of Fowler’s more than 10,000 photos have never been fully identified and a final report quantifying the results of his ten years of aerial fish survey was never produced.709

Other senior scientists from the Division also left, often to pursue international careers. In December 1954 Thompson retired after years of bad health. Blackburn, who had been Acting Head for several years, was not promoted to Chief of Division after Thompson retired, but loyally stayed until G.F. Humphrey was appointed in 1956. He then resigned from the CSIR and took up a position as Professor of Zoology at the University of Hawaii and later became head of the United States fisheries research authority’s pelagic fisheries unit in San Diego. J. Ferguson Wood also found a position in the United States.

Next to Thompson, Kesteven and Blackburn were probably the most experienced fisheries biologists in Australia and it seemed odd that they were unable to secure senior positions in Commonwealth organisations, especially considering their success in achieving prestigious positions abroad. It was allegedly their youth and administrative inexperience that prevented Kesteven and Blackburn from achieving any chief posts within the Commonwealth. However, their views on the development debate and post-war power struggles about fisheries management was likely to have been a factor as well, making them an unacceptable choice for both the Executive Committee and the Commonwealth Fisheries Office.

**The development discussion revisited**

While Blackburn was acting chief of the Fisheries Division he published an article in the *Fisheries Newsletter* called: *How Can We Develop Australia’s Fisheries?* It was no

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709 NAA: CSIR, Head Office – Correspondence; Personal file on Stanley Fowlers [A8520].
coincidence that in it he took care to explain that the views expressed were his own and not necessarily those of the Executive Commission or the CSIRO Division of Fisheries. The article was written as a response to a previous article about fisheries development problems published in the newsletter a few months earlier. In his article Blackburn put forward answers to the question of why it was worth developing Australia’s fishing industries, which industries to develop and how best to achieve it. The arguments presented were controversial as they questioned the Fisheries Office’s abilities to provide effective policies and the decision to leave the Fisheries Divisions scientists out of the decision-making processes.

As Blackburn viewed it, there were three reasons why the Government should support fisheries development: to improve the national balance of overseas trade, for national security and for national development of sparsely populated coastal areas. As a source of food, the cheap and ample quantities of meat compared to fish meant that seafood was nothing but a novelty in the Australian diet. This was a direct criticism of the argument that Australia was ‘fish-hungry and fish-starved’ which had been presented at the Australian Fisheries Conference in 1929 and had been the rationale behind decades of fisheries development efforts. The national security argument in relation to fisheries development had been raised as early as 1894 in relation to NSW in the 1894 Royal Commission on Fisheries and was that the fishing industry in time of war could provide crew and vessels to the Royal Australian Navy (RAN). Focusing on the larger vessels, Blackburn reckoned that the Sydney steam trawlers were likely to go out of business soon due to overfishing in the areas they frequented, but that possibilities for trawl fishery still existed in the Great Australian Bight.

In his answer to which fisheries should be developed, Blackburn rejected any expansion opportunities in whaling (something the Fisheries Officer had spend a lot of time and effort promoting) and instead listed a number of potential fisheries identified by the CSIRO’s Division of Fisheries. Blackburn’s reference to new fisheries identified by the Division related to a longstanding disagreement between the two institutions: at the beginning of the article Blackburn had stressed the fact that his Division had always been actively working for the improvement of the fishing industry as well as science, but the Commonwealth Fisheries Office had largely ignored the results of the Division’s tests and investigations. He had made

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710 It was the same argument that had fuelled the earliest efforts in NSW to initiate a sea fishing industry. See NAA: Stanley Fowler – correspondence; Report of the Australian Fisheries Conference, July 1929 [P2783/1(6)].
a similar point in an unpublished article in April 1951, and as a consequence the article was rejected for publication in the *Fisheries Newsletter* by Anderson, Director of Fisheries.\(^7\) The 1955 article was more carefully worded, which might have been why it was allowed to be published.

Finally, Blackburn identified the lack of investment capital available to the industry as one of the stumbling blocks and agreed with the *Fisheries Newsletter* suggestion that a national Fisheries Development Co-operation funded by the NSW Government would ensure that any investments were made in the best interests of the nation. A similar organisation was formed in South Africa and Blackburn pointedly added that it was his belief that the success of the South African organisation was due to the fact that both the managing director and one member of its board were fisheries scientists.\(^8\)

The significance of Blackburn’s 1955 article was that it reaffirmed that the CSIRO’s Fisheries Divisions scientists still considered a scientifically based management policy the only way to secure continued and sustained industry development.

**Building a (legislative) framework for fisheries management in extra-territorial waters**

The post-war power struggle over the control and direction of fisheries management resulted in a fragile construction of separate authorities where fisheries management and commercial fisheries development became the responsibility of the Department of Commerce and Agriculture’s Fisheries Office; and fisheries research the responsibility of the CSIR’s Division of Fisheries. Responsibility for the *Fisheries Newsletter* had been transferred to the Fisheries Office and it became an important medium to communicate new ideas, international news and general information to industry and State authorities. Scientists from the Marine Laboratory at Cronulla and other regional laboratories that had been established as the Division had expanded often contributed with articles based upon their research.

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\(^7\) NAA: CSIR, Head Office – Correspondence; Letter from J.G. Crawford, Secretary Prime Ministers Department to Dr. Ian Clunies Ross, Chairman of CSIRO, 23 April 1941 [A9778/3 G16/20/R2].

\(^8\) *Fisheries Newsletter*: How can we develop Australia’s Fisheries by M Blackburn, May 1955 vol 13 no 5, p. 5-7.
Part of the powers of the Commonwealth Fisheries Office included the authority to manage fisheries in order to conserve resources. During the immediate post-war period there was growing political acceptance that some fisheries, such as the south-east continental shelf fishery, needed to be controlled for the common good. In the case of the south-east continental shelf fishery, the understanding of the need for conservation was most prominent in State governments and among the marine scientists at the CSIRO’s Division of Fisheries. Since the overall focus of the Commonwealth Government was economic growth, there was less sympathy for the idea of implementing forced restrictions upon the industry, although the need for some measure of control was understood.

The new Fisheries Office’s policy on marine resources was essentially developmentalistic and was based on the longstanding perception that the nation’s marine resources were large and bountiful despite the CSIRO’s repeated warnings of the opposite. When the new authority was presented in the Fisheries Newsletter, considerable attention was given to the development functions of the Office because: “there is no doubt that there are considerable prospects of expansion of the Australian fishing industry.” From the onset the Fisheries Office’s objectives were to develop new fisheries in extra-territorial waters and improve boats, gear and methods in existing fisheries, working as much as possible through existing State Departments of Fisheries.

This development policy adopted by the Commonwealth Government resembled early public fisheries policy in NSW. Special attention was given to help organise the fishers into cooperatives, to promote whaling and tuna fishing and to educate ex-servicemen.

In 1956 the Commonwealth Government established the Fisheries Development Trust Account. The fund did not provide entrepreneurial capital to private investors, but funded research and development projects such as tuna surveys in Western Australia, cray research and testing of a new type of power block. Probably the most controversial project was the funding of a Commonwealth-owned trawling company operation in the Great Australian Bight. To explore the Bight and establish if a commercial trawl-fishery was possible, the

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713 In 1949 CSIR was reorganised and renamed CSIRO (Commonwealth Scientific and Industrial Research Organization).
714 Fisheries Newsletter, Editorial, April 1946, vol 5 no 2.
Commonwealth Government in June 1957 approved expenditure of up to £502,000 to establish the Commonwealth owned Southern Trawling Company Ltd. In 1959 W.H. Langley from Red Funnel, which by then had laid up its fleet, was appointed the Executive Officer of the company. The same year, Southern Trawling Company bought a British diesel trawler which between March 1960 and November 1961 did 31 fishing trips out of Port Adelaide. It quickly became clear that the business was not financially viable, since sales of catches were insufficient to cover costs and in June 1961 the Minister for Primary Industry, Charles Frederick Aderman, announced that the company was up for sale. Southern Trawling Company Ltd closed with a final loss of £100,680. The objectives behind the Commonwealth Government’s attempts to operate its own trawling industry on a commercial basis mirrored those of the NSW Government which had established the NSW Steam Trawling Industry 45 years prior. Their operational experiences were also quite similar, right down to the substantial financial loss.

The renewed attention by the Commonwealth Government on industry development instead of resource protection in the post-war period meant that control measures and fisheries restrictions by Commonwealth authorities were secondary to development programs. The exact nature of the relationship between state and federal authorities was sensitive and raised questions about the legal basis for fisheries management outside state territorial waters.

Since Federation in 1901 there had been a lack of control of fisheries by the States beyond the three nautical mile limit. But most of the nation’s fisheries resources were located in these extra-territorial waters and without any legislative framework or authority responsible for managing these areas, it was impossible to implement any development or conservation policies. The problems of controlling fishing beyond territorial waters had been raised as early as December 1916 by Stead in relation to the NSW STI including the question of who held the rights to exploit the newfound fishing grounds. He suggested that the NSW Government expand the limit of the State territory to include the trawling grounds. Since there was no practical need for managing the fishery at that time, the question was not pursued by the Minister of the day. It had already been established by the Commonwealth

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Attorney-General’s Department in 1931 that the Commonwealth had authority to make laws concerning fisheries in Australian waters beyond territorial limits under the Constitution Act section 51(x). The question arose when the Sydney Steam Trawler Owners’ Association in 1931 approached the Commonwealth Department of Transport with a suggestion that the deliberate sinking of old hulks could only take place outside the 100 fathom line and that their position should be reported and made available to all mariners. The reason for their request was that members of the Association were worried about the damage that their valuable trawler gear could sustain from uncharted wrecks on the fishing grounds. 719 As a consequence, the Beaches, Fishing Grounds and Sea Routes Protection Act of 1932 was passed. The Act explicitly states in the preamble that the Parliament could make laws to govern ‘Fisheries in Australian waters beyond territorial limits’. 720 Despite its broad heading, the objective of the Act was not to regulate or control the fishery but only to protect trawling gear from damage by unauthorised sinking of vessels on the fishing grounds.

During the Second World War, a draft act to control fishing in extra-territorial waters had been prepared by the CSIR Fisheries Division/Controllers Office but the matter had not progressed further. When the Commonwealth Fisheries Office was established in 1946 the question of a Commonwealth Fisheries Act and the new authority’s exact relationship with State authorities resurfaced.

To address the problem, the Commonwealth Fisheries Office called a Conference of State and Commonwealth Fisheries Officers from 24 to 27 February 1947 in Sydney to prepare a resolution about the relationship between Commonwealth and State Fisheries. Participants from NSW were Roughley, Superintendent of Fisheries and Buttsworth, Chief Clerk at the Chief Secretary’s Department. Ferguson Wood was the only one from the CSIR to attend the conference, illustrating the (reluctant) withdrawal of the Fisheries Division scientists from active policy making processes.

In his speech Anderson noted that a fisheries bill was under consideration and explained the responsibility of the new authority and the need to liaise with State authorities.

719 NAA: Department of Transport; Legislative Powers of the Commonwealth Parliament Constitution Act 51(x), 21 May -3 June 1931 [A432/86].
The result of the conference was that the delegates agreed on a principal working relationship between States and the Commonwealth. The Commonwealth Fisheries Office should in the future be responsible for all extra-territorial waters, whaling, pearl fishing and general fisheries development, if necessary in collaboration with State Fisheries. The Commonwealth Fisheries Office should also be responsible for compiling national fish catch statistics and promoting uniform legislation in regard to catch and skipper certificates. It would be the State fisheries authorities’ responsibility to control, when practical, fisheries in extra-territorial waters as well as their own territorial waters and in general work on behalf of the Commonwealth when practical. The State representatives also agreed to provide information to the CSIR whenever it was needed.\footnote{SRNSW: State Fisheries; Correspondence, 1946-62 [10/41729].}

By the end of 1948, a Commonwealth bill relating to fisheries in Australian waters beyond territorial limits was drawn up. The bill provided authority for administration, regulation, assistance to fishermen and research and development. When a version of the bill was presented to the CSIR, F. W. G. White, who had joined the Executive Committee in 1944 as Assistant Executive Officer,\footnote{From 1946 White was a full member of the CSIR Executive Committee.} changed the section relating to the Commonwealth Government providing fiscal assistance to fishermen and removed ‘research’ and ‘exploratory operations’ from the paragraph on ‘Research and Development’, signifying that it was the Council’s view that management powers should not include fisheries research, which they considered the CSIR’s province.

During the next couple of years the bill was not pursued by the Commonwealth Government, but in December 1951, the expected Japanese Peace Treaty made the enactment of a national fisheries legislation urgent. The decisive factor was that under the treaty Japan was obliged to negotiate any fisheries rights with Australia, but without an existing law Australia would not have any legal basis to negotiate upon and would be unable to protect its fishing resources in waters near Australia from exploitation by Japanese fishing. With short notice a meeting of State ministers was scheduled on 23 January 1952 to discuss the policy.\footnote{SRNSW: State Fisheries: Letter from Prime Minister Robert Menzies, Commonwealth to Premier NSW J. McGirr, 21 December 1951 [10/41729].}
Although the NSW Minister of Fisheries was against the idea of a Commonwealth Fisheries Act, he decided to attend the conference with Roughley. The most significant concern for NSW was whether the 3-mile limit would continue to be the border between State and Commonwealth waters. Although no resolution was passed at the meeting, the negotiations reaffirmed the Commonwealth Fisheries Office’s position that they did not want to duplicate State administration, and under the proposed Act there should be some delegation of power.\footnote{Harrison, C., 1991, p. 61.}

The bill was put before parliament in April 1952. In his second reading speech in the House of Representatives, McEwen, Minister for Commerce and Agriculture, explained that the bill was to control fisheries in Australia waters beyond territorial limits. He also warned the House that although the nation’s fisheries were capable of considerable expansion it was also necessary to guard the marine resources against ‘undue depletion’. When the bill was discussed McEwen elaborated that it was “essential to the plan for the conservation of Australian fishing resources”\footnote{Fisheries Newsletter: Dr. Evatt Speaks in Fisheries Bills, April 1952, vol 11 no 4, p. 15.} as well as establish a basis for negotiation with foreign countries (Japan). When asked by Opposition leader Dr. Evatt about the maximum limit of the waters regulated by the bill, McEwen acknowledged that the term ‘Australian waters’ was not defined by the Constitution and it would be a matter of later legal process to define it. Interestingly he had used the term ‘continental shelf’ to define the areas which were regulated by the Pearl Fisheries Bill 1952, a bill presented at the same time as the Fisheries Bill.\footnote{Fisheries Newsletter: Commonwealth Parliament passes historical fisheries legislation, April 1952, vol 11 no 4.}

In March 1952 the Fisheries Act 1952 was passed and from 30 to 31 July 1952 a second conference of State and Commonwealth Fisheries Officers was held to discuss the ways and means of implementing the legislation.\footnote{SRNSW: State Fisheries; Correspondence, 1946-62 [10/41729].} To allow time for adjustment and putting in place regulations, the Fisheries Act did not come into force until 1 January 1955.\footnote{Fisheries Newsletter: Fisheries Act in Force 1 January, December 1954, pp. 3 and 19.}

The Minister’s explanations in Parliament reflected a fundamental change in Commonwealth Government policy. For the first time, conservation and resource protection from over exploitation were considered the objectives for a proposed fisheries management regime. It was understood that fisheries management by regulation or prohibition under the Act aimed
to secure the optimum (economic) utilisation of resources, not to protect their intrinsic value. The Act was only pushed through Parliament because of the fear of unregulated fishery by foreign fishing vessels; the threat to the marine environment offered by Australian vessels had not been enough for the bill to make it through Parliament.

When McEwen used the term ‘continental shelf’, he foreshadowed a later government initiative. It was a relatively new concept in international law that the continental shelf constituted the extent of a nation’s power over marine resources. The United States was the first nation, on 28 September 1945, to claim sovereign rights over the natural resources on its continental shelf and afterwards a handful of other nations had made similar claims. On 11 September 1953 the Commonwealth Government proclaimed that Australia possessed similar rights over its continental shelf and natural resources of that sea-bed and sub-soil. In practical terms the term ‘continental shelf’ covered waters to a depth of 200 metres, which in Australia included all known trawling grounds. At the same time the Pearl Fishing Act was amended to provide for the definition of Australian Waters to be extended to the limits of the Continental Shelf, and the Act was assented on 17 September. The Fisheries Act was likewise amended.

In its final form the Fisheries Act of 1952 consisted of five parts: Preliminary, Administration, Regulation of fisheries, Research and development, and Miscellaneous. The Act provided for delegation of powers to the State Fisheries, in the anticipation that State authorities would provide all policing and much of the administration of the regulation. Public officers, authorised by the Minister of Commerce and Agriculture, were given the right to board, examine, seize, request documentation and make arrests whenever illegal fishing was suspected. The type of regulation that the Minister could impose on the industry included whole or partial closure of waters, prohibition of the taking of specific species, and controls on certain sizes of fish or fishing with certain types of equipment. The Act also requested that all fishermen apply for a licence which could be subject to conditions. On

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730 *Fisheries Newsletter*, October 1953, p. 3.
research and development, the Act only stated that the Secretary, under the direction of the Minister, could undertake research in order to develop commercial fisheries.  

As an instrument for management, the Act lacked vigour and substance; without any objective of management that specified how and when to apply regulation, it was left to the Minister of Commerce and Agriculture’s discretion. The open-ended formulation of the Act gave the Department of Commerce and Agriculture, under which the Fisheries Office belonged, considerable administrative freedom to apply its own interpretation of correct fisheries management. If there had been a commitment to marine conservation, the Minister could have made extensive fisheries restrictions without consulting, but as discussed above, development and not resource protection was the focus of the Government. As it appeared, the Act made little difference to practical fisheries management outside State territorial waters. Also, the formulation of a marine resource policy that provided protection from over exploitation was difficult given the rivalry between the two Commonwealth fisheries institutions. The Fisheries Act was strengthened in November 1954 when it was made compulsory for all fishermen that fished outside State territorial waters to have a Commonwealth licence as well as a State licence for taking fish, for operating a fishing boat and to register fishing gear.  

In a practical sense, the Act was nearly unworkable, since it relied mainly on fisheries officers to implement regulation beyond the three-nautical mile limit. Given that the Fisheries Branch in NSW only had about 40 inspectors to police fisheries within their own waters, and did not own a proper seagoing inspection vessel, it was unlikely that they would be able to police extra-territorial waters.

Over the following years the Fisheries Act was amended several times in order to conserve fisheries resources. In order to maintain uniformity in the management of the fisheries, State and Commonwealth authorities made efforts to put into practice a common program of control. The next chapter will focus on the measures that were applied by the NSW government, from c. 1920 to 1961, to control the fishing industry, and the difficulty of implementing effective fisheries management in a system of overlapping authority.

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731 Fisheries Act of 1952.
Conclusion

Until 1926, successive Commonwealth Governments had shown little interest in (marine) fisheries development. The appointment of Dannevig as Commonwealth Director of Fisheries in 1908 led to a brief period of explorational research, but following the loss of *Endeavour* the work was abandoned and the initiative left to the State Governments and private interests.

As part of the strategy of imperial self-sufficiency, the Development and Migration Commission organised two national fisheries conferences in 1927 and 1929 to discuss how best to develop Australian sea fisheries. One of the main obstacles identified was the lack of knowledge of Australia’s marine resources and it was recommended that a national institute for fisheries research be established. It would be the institution’s task to conduct explorational investigations along with studies of marine biology. Initially, the CSIR was not interested in housing the new institution because it considered the objectives outlined for the unit to be too practical and developmental, and not sufficiently scientific. However, in 1934, when faced with the possibility that the Commonwealth Development Branch under the Prime Minister’s Department would set up its own fisheries investigation unit, the CSIR’s Executive Committee convinced the Minister that the CSIR should host the unit. In 1935 the Fisheries Investigation Section, later known as the Fisheries Division of the CSIR was established, and in 1939 it moved its headquarters to Dannevig’s old hatchery at Cronulla, NSW. From the beginning, the Division was internally torn between its industry-development oriented agenda and a more scientific approach.

In the early 1940s, scientists at the Fisheries Division began denouncing the long prevailing paradigm of unlimited marine resources, and insisted that science should direct fisheries management and especially fisheries development. During 1943-46 marine biologists from the Division were dominating the Controller of Fisheries Office under the Department of War Organisation of Industry. The experiences of centralised control over the fishing industry made the Division’s senior scientists suggest in 1945 that the Commonwealth Government establish a new national based fisheries authority, which was to manage Australia’s fisheries on a scientific basis. The political climate in post-war Australia favoured economic reconstruction and growth which was at odds with the integrated program of research, development and management advocated by the CSIR’s Fisheries Division. The renewed
Commonwealth focus on industry development instead of management and fish protection meant that when the new Commonwealth Fisheries Office was established in 1946 under the Department of Commerce and Agriculture, its main focus was on industry development. In the 1940s and 1950s, Commonwealth fisheries policy resembled some of the early fisheries policies in NSW.

As the Commonwealth Fisheries Office began working, the need for a national Fisheries Act governing fisheries outside the State territorial seas became apparent. A basic act was passed in 1952, but when it was put in force in 1955 it had little practical consequences for the fishing industries and provided little in way of protecting the marine environment. The lack of tangible management objectives and the fact that the States were expected to uphold the Act made it difficult to enforce.

CSIR’s Division of Fisheries did not lack the will to govern fisheries, which senior members of the staff proved at several opportunities, but except for directing the Controller of Fisheries Offices, they were (deliberately) left out of policy making processes after Second World War. Disappointed over the Commonwealth Government’s lack of will to govern fisheries and the Fisheries Offices focus on industry development instead of conservation, senior scientific staff left CSIR in the 1940s and 1950s for retirement or to pursue international careers.
Chapter 7
Fish-marketing and fisheries management: the NSW Fisheries Department, c. 1920-1960

“Ministers come and go but the heads of departments go on forever.”
Officer-in-Charge of the NSW Fisheries Branch, Arthur William Wood’s reply when asked if State Ministers should be represented on a national committee to unify state fisheries policies, 19 September 1927.733

Introduction

This chapter describes how the will of the NSW Fisheries Branch to govern steam trawl fishery evolved from the 1920s until 1961, with a focus on the role of market reforms in managing the State’s fisheries. The objectives of fisheries management changed radically during this period, shifting from increased production as the main objective to ideas of resource protection. To understand what facilitated these policy changes it is necessary to look at the staffing of the branch, scientific advice on management of the fisheries on the south-east continental shelf and difficulties in implementing restrictive management in a multi-governmental system.

Since the 1910s the objective of fisheries management in NSW had been improving the productivity of the inshore fishing industry. Later, in the 1920s, economic competition from STI and the private trawling companies forced the Branch to focus more on protecting the interests of the small-scale fisheries. Politically the period from 1920 to 1939 was characterised by frequent changes of NSW Governments, adjustment to post-war conditions and a retraction from the previous policy of state-operated commercial enterprises. As the Depression deepened in the 1930s, the trend of government withdrawal from private venturer became more pronounced. As a result, fisheries policies were mostly left to a body of conservative bureaucracy who had gained power in the 1911-reorganisation of the Branch.

733 LJPC: Report (verbatim) of Australia Fisheries Conference September 1927, p. 86.
As described in Chapter 6, the Second World War saw a centralisation of authority where all fisheries management became a matter for the Controller of Fisheries Office. After the war the NSW Government, along with the other states, became involved in the Commonwealth-directed effort to develop the Australian fishing industry and raise productivity. The Fisheries Branch responded by initiate comprehensive market reform designed to address issues that had their roots in early fisheries development in NSW. When scientific evidence of overfishing became indisputable after 1948, the market also became a method to regulate the fishing industries environmental impact.

The administration of the Fisheries Branch

Political interest in fisheries issues and the general situation of the public service in NSW had much to do with the will to govern fisheries in the State. After the booming economy during First World War, where Australian industries had dominated the domestic market, State finances became tighter after 1920 and succeeding governments were eager to achieve savings in public budgets. After the costly failure of the State Trawling Industry in 1923 and the controversies surrounding its management, Governments were reluctant to make new attempts to directly influence the development of the NSW fishing industries. From 1920 to 1939 the NSW Government changed eleven times, six of these in the period from 1920 to 1925. In 1921 the Fuller Ministry lasted only one day. Fisheries had never attracted much political attention and, with much more pressing issues at hand such as post-war recovery, financial crisis, and social and health reforms, the Parliament left fisheries management mostly in the hands of the officers of the Fisheries Branch, who for the next twenty years worked with little political interference.

The increased workload at all levels of the public service relating to the Fisheries Branch did not help. In the 1930s, E.B. Harkness, the Under-Secretary of the Chief Secretary’s Department (under which the Fisheries Branch belonged), reported to no fewer than three different ministers: the Colonial Secretary, the Minister for Health and the Minister for Social

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The political significance of the health portfolio in particular meant that the Under-Secretary had little time to deal with the less important portfolio of fisheries.

The Fisheries Branch administration was characterised by a high degree of continuity and few changes in executive positions. Between 1901 and 1961 the head of the Fisheries Branch only changed hands six times, and always to a high-ranking, long-time employee of the Branch.

The Branch’s first Officer-in-Charge, J. A. Brodie retired in May 1920. Brodie had been in the Branch since before Federation, and had lead the Fisheries Branch through the administrative changes in 1902 and 1911. For his service he was presented with a gold watch by the Chief Secretary George Fuller, and a complementary picnic at Lugarno’s pleasure ground hosted by the George’s River Oystermen’s Association. Brodie was succeeded by Arthur William Wood who had been in the public service since 1890 and in the Branch since 1904.

Wood continued as Officer-in-Charge and later Director of Fisheries until January 1931. The position of Director was not readvertised in order to save costs, so Wood’s responsibilities were temporarily taken over by William Barbour who was appointed Acting Officer-in-Charge.

W. Barbour had been in the public service since 1889 and with the Fisheries Branch since 1907. The promotion was made permanent in May 1935, shortly before his retirement in September 1935. At the farewell by the staff of the Chief Secretary’s Department he was given the customary gold watch.

Like Brodie and Wood, Barbour belonged to a group of senior officers who had begun their service in the colonial administration and had spent most of their careers working in the Fisheries Branch. Brodie, Wood and Barbour had been responsible for devising and implementing the administrative changes to the Branch in 1902 and 1911 that had transferred the decision-making process in fisheries management from honorary commissioners into the
hands of professional public servants. Their approach to fisheries management revolved around productivity issues such as marketing, prices and availability to consumers and they were generally unconcerned about the marine environment. Without a background in marine biology or fisheries research they had little understanding of the connection between fishing effort, catch rates and stock abundance and they were reluctant to fund fisheries research (unless it focused on industry progress) or to ask for scientific advice on resource management.

After D. Isherwood took charge of the Fisheries Branch in August 1935 there were some signs of change in the objectives of management. These changes were informed by the rise of a central organisation for fisheries research under CSIR after 1936, and from 1937 the Branch employed a marine biologist, Geoffrey Kesteven, but for the most part Isherwood continued the management policy of his predecessors.

The appointment of a scientific officer to the Branch was the first since David G. Stead had left in 1915 to become the General Manager of the State Trawling Industry. When Kesteven left in 1939 for a position at the newly established CSIR’s Fisheries Division at Cronulla, Theodore C. Roughley became the Fisheries Branch’s new research officer, although he spent most of his time on administrative matters. When Isherwood retired in 1941, Roughley was appointed to the new position of Superintendent of Fisheries. On his retirement in 1952, Roughley was succeeded by N.V. Harris, who for many years had been the senior administrative officer of the Branch.

Considering the comprehensive responsibilities of the Fisheries Branch, which included providing advice to the minister, protecting and improving the State’s fisheries, as well as upholding the Fisheries Act, the staffing was modest. In 1921 the Branch commanded 33 personnel located in the main fishing areas around the country as well as within Sydney. The force consisted of 29 Inspectors of Fisheries, three assistants and a Launch Engineer. It was a small force compared to the size of the waters the fisheries inspectors were to control. The Branch offices in Sydney were directed by Wood, Officer-in-Charge, who oversaw a staff of three draftsmen and Inland Fishery Officer, Henry Knight Anderson, as well as an

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739 SRNSW: Public Service List 1921, Chief Secretary’s Department and Department of Public health and motherhood, Ministerial office, 1921, vol. 3, p. 189.
unknown number of temporary staff, many of whom were female typists. The practice of appointing temporary staff was a result of the NSW Public Service Board’s strict employment and cost-reducing policy, which made it difficult to get new permanent positions or expenditures approved. It became common practice in many departments to appoint temporary staff to positions that in reality were long-term.740

As the Depression unfolded in the 1930s, the Public Service Board’s strict economic management became more evident. The need to keep costs down was repeatedly emphasised in the Branch’s correspondence with inspectors. In August 1923 the Branch passed along a request from the Colonial Treasurer to its inspectors that they adhere to a strict policy of keeping costs low and “to spare no efforts to minimize expenditure in every possible direction.” 741 It was suggested that the inspectors help minimize the Branch’s costs by advising the head offices two to three weeks in advance if they planned to patrol outlying waters, so that the Branch had time to send instructions should other work also be required in that area. The request for economic restraint was again repeated in May 1931, when the inspectors were instructed that unless special approval had been given by the Branch, no inspector was to visit outlying waters more than every six weeks.742 Such administrative procedures did not allow much room for unscheduled fishing inspections.

Staffing at the Fisheries Branch Offices remained approximately the same until a slight increase in office-based employment at the end of the 1930s. There was not a similar increase in the number of field officers and the great amount of paperwork, combined with fisheries inspections at all hours, made for arduous working conditions and frequent overtime. In February 1946 Fishery Inspector Judd complained at the first NSW Conference of State Fisheries Inspectors that the previous week he had worked 133 hours and finished at 2.45 am on Sunday morning.743 By 1948–49, the Branch had a staff of 64, including both temporary and permanent positions and three vacancies. 29 of the positions were administrative staff

740 Tyler, P., 2005, pp. 102 -104.
and only 35 field staff. In an attempt to meet the demand for more field personnel, but without increasing expenditure, the Branch on several occasions appointed Assistant Inspectors of Fisheries in honorary positions. Such positions became common after the mid 1910s. During 1918 thirty honorary Assistant Inspectors were appointed, the majority of who were members of the police force. The system of honorary inspectors of fisheries was still in place in 1961 but seldom used. By then 350 honorary staff inspectors had been appointed since 1901, along with 60 Vigilance Committees totaling approximately 700 members. However, their value as fisheries inspectors was dubious, as Superintendent of Fisheries, N. V. Harris, reported in 1961: “Experience has shown that honorary officers either lack the necessary courage to enforce the law or avoid becoming embroiled with belligerent fishermen which will necessitate their sitting around Court all day waiting to give evidence.”

**Growth of the NSW fishing industry**

In the Annual Fisheries Reports produced by the Branch, the increased workload in the field as well as in the head offices was often mentioned. The reason for the increased workload lay in the overall growth of the State’s fishing industry combined with the need for economic restraint. The increased fishing activity was measurable in both the number of fishing licences taken out and quantity of fish brought to market.

Several types of licence existed: yearly and half-yearly licences for persons involved in commercial fishing as well as licences for fishing boats. In the 1930s licences for boats fishing in extra-territorial waters were introduced as well. The number of licences issued annually in NSW from 1887-1960 is shown in Figure 7-1. Initially the number of fishing licences taken out between 1901 and 1902, the year the new Fisheries Act was implemented, rose sharply from 945 licences to nearly double that the following year. The increase was most likely due to the enforcement of the new Fisheries Act, and did not reflect a real change in the number of fishermen involved in the industry. The overall trend in fishing and boat

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744 SRNSW: State Fisheries; Report in accordance with the provisions of public service regulation no 32 in respect to the Fisheries Branch, Chief Secretary’s Department, 1946-62 [10/41721].
745 Annual Report on the Fisheries of NSW for the Year 1918, p 2.
746 SRNSW: State Fisheries; View on ‘Proposed appointment of Honorary Inspectors’ by Superintendent of Fisheries, 20 April 1961 [13/9535].
747 The main source of income for the branch was the issue of annual or half yearly fishermen-, fishing boat- or oyster vendor licences, and rent from oyster leases. The number of licences and revenue was recorded in the Branch’s annual reports and provide us with good data on the manpower within the fishing industry.
licences was a steady increase in number until 1932; thereafter there was a decline, followed by a brief period of rapid growth from 1940 to 1946.

What appears as an unusually sharp drop in number of licences taken out in 1937 was caused by changes in bookkeeping. Until then the financial year ran from January to December, but after 1936 it was changed to run from July to June. Consequently the Annual Fisheries Report for 1937 only covers the first six months of the year. The Second Wold War and immediate post-war period saw a steep increase in the number of licences issued, but it was estimated by the Fisheries Branch that less than half of the licence holders in the post-war period were engaged in commercial fishing throughout the year. The abrupt decline between 1946 and 1948 of both fishing and boat licence was due to the fact that the Branch began to reinforce the policy that only persons who derived a substantial portion of their income from fisheries required a licence.  

![Figure 7-1. Number of fishing- and boat licenses in NSW per year. Source: Annual Report on the Fisheries of NSW for the Year, 1887-1960.](image)

The number of fishing boat licences taken out by the fishermen generally followed the upward trend in number of fishing licenses, but the ratio of boats licences per fishing licence decreased steadily over the period. A possible interpretation is that fishermen, instead of

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relying on one type of fishery, became increasingly engaged in seasonal fisheries which necessitated different types of gear and boats. It is, however, outside the scope of this thesis to examine the development in the small-scale and coastal-based fishing industry in NSW.

The growth in the number of people engaged in the industry was not the only thing that affected productivity. In the late nineteenth century the internal combustion engine powered by petrol found its way into fisheries. This technology was more suited to small boats, and the NSW estuary-based fishermen began using such motorised boats during the early 1900s. However, due to their generally low economic return, take-up of the motor engine was slow.\(^749\) It is possible that the motorisation of the fishing fleet exacerbated the problem of policing the Act, since it allowed the fishermen to become increasingly more mobile.

Despite the growth of the primary inshore fishing industry and an increase in the market for fresh fish, there had not been a concurrent development of sales methods. Fishermen still had to rely on one of the 14 to 21 private fish agents in Sydney for the sale of their catch. The marketing system was costly and abstruse, and created many opportunities for agents to abuse the system. By 1919 two fish markets existed in Sydney, the Municipal Fishmarket at Haymarket and the agent-owned Commonwealth Co-operative Fish Exchanges Ltd. in Redfern. At both places business was conducted the same way. The fisherman would pay an agent ten percent of the selling price to sell his catch at the market. In addition to the agent fee, the fishermen also had to pay for ice, transport to the market, and were frequently charged for the use of fish-boxes. It had in the past been customary for agents to also provide fishing gear, and not uncommonly fishermen became ‘tied’ to a particular agent due to accumulated debt, although witnesses to the 1912 Royal Commission claimed that improved business ethics had led to the abandonment of this practice.\(^750\)

At both markets fish were sold in concurrent public auction and private sales, which made it difficult for observers to compare prices and could hinder competitive bidding. There were several well known methods for agents to increase their profit when doing private sales. One such method was ‘forestalling’ where the agent bought up fish in the early stages of the

\(^{749}\) Lorimer, M. 1984, p. 48-52.

\(^{750}\) (Royal Commission of Inquiry as to Food Supplies and Prices: Interim Report on the Supply and Distribution of Fish, 1912; Interview with Isaac Barry Evans, Secretary Commonwealth Co-operative Fish Exchange, Limited Redfern 24 August 1911.)
market for resale later, thereby driving up prices and increasing his own profit by not having to pay a share to the fishermen. Another was ‘rake-offs’, where after entering the market baskets or boxes were repacked, so five baskets became six. ‘Whispering’ sales, where larger buyers received preferential treatment, were also a well known problem.\footnote{NAA: Stanley Fowler – Correspondence files; Report on the Transport, Distribution and Marketing of fish in Australia. Prepared for the Australian Fisheries Conference 1927-1929, p. 64.[P2783/1 (1)]} Other known methods included the agents agreeing on minimum selling prices or withholding fish to increase prices.

To make transactions even less transparent, fish were sold by volume instead of weight, but the lack of standardised containers made it difficult to control sales. One of the most common complaints from fishermen was that fish disappeared on the way to the market, either during transport or during repacking by agents at the market. The fish agents on the other hand claimed that shrinkage was caused by sloppy packing by fishermen and that the fish became soft over time, settling closer as the ice melted.

**First market reforms by the Fisheries Branch, 1919-22**

In May 1919 a letter to the liberal leader Mr Fuller, who had held the position of Chief Secretary in Holman’s National ministry since 1916, called attention to the issue of profit made by agents at the expense of the inshore fishermen. Fuller had on several occasions spoken in favour of STI and the need for reliable and affordable supplies of fish.

The letter, written painstakingly by someone who was clearly more used to handling nets and oars than pen and paper was from Geo Sheather, a fisherman from Nambucca Head. He had read about the Minister’s promise at the launch of *Goonambee* from the State Dockyard to supply Sydney with cheap trawled fish.

In his letter, Sheather described himself as:

> a fisherman of twenty ode years standing and I am sending you my last week returns this is for my self and two sons and I think that when you see it you will agree with me that it is fair time that the government took a
hand in handling our fish. I have to support my wife and to children ... 
my income for the last year as not amounted to £100.  

To prove his claim, Sheather had enclosed his latest receipt from his fish agent H. H. Blackwell. On the slip was stated that Sheather on Tuesday 24 April 1919 had delivered five bushel of fish (0.1820 m³) for the agent to sell at the private Redfern market. These sold for £2,12 for this he was then charged by the agent: Commission (£0, 53), Freight (£0,56), Harbour Trust (£0,0,5), Ice and Sawdust (£1,17,6). In total a charge of £ 2,11,2 making the net income for a week’s worth of work by himself and his two sons: £0, 0, 10  On the receipt, the agent had enclosed the well-meaning remark: “I am sorry you are having such rotten luck, don’t you think it advisable to get a move on.”

The incident illustrated how, despite nearly 60 years of regulation and development efforts by succeeding governments, fishermen participating in small-scale inland and coastal fishing were still engaged in an economically marginalized occupation.

Sheather’s letter was forwarded to the Fisheries Branch and later the same month Wood, Officer-in-Charge, wrote a memo to the Minister seeking permission to put the case before the Crown Solicitor, in order to obtain advice on what could be done within the existing legislation to regulate the fish agents. At the same time Wood suggested that the government centralise the control of the fresh fish trade at the fish markets in Sydney.

The Crown Solicitor replied on 7 June 1919 in the affirmative to the Department’s questions and the Fisheries Branch began outlining regulations. The idea was that only licensed agents should be allowed to buy and sell fish, and that agents were to keep records of the quantity of fish in baskets or boxes that they sold, ordered to prevent unfair repacking and that they should report all financial dealings with fishermen to the department.

A “Proposed regulation to the licensing and control of fish agents” was submitted to the Department of Justice for approval in August 1920. After approval, it was put forward to the

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752 SRNSW: State Fisheries; Case no. 92: Proposed regulation of fish-agents, Letter from Geo Sheather, Nambucca Heads to Mr. Fuller, Chief Secretary, 5 May 1919 [4/6636.2].
753 SRNSW: State Fisheries; Case no. 92: Proposed regulation of fish-agents, Letter from Geo Sheather, Nambucca Heads to Mr. Fuller, Chief Secretary, 5 May 1919 [4/6636.2].
754 SRNSW: State Fisheries; Case no. 92: Proposed regulation of fish-agents by Wood, 13 May 1919 [4/6636.2].
new Chief Secretary, Mr. Dooley, who had succeeded Fuller in the position after the Nationalist Holman government had lost to the Labor Storey Ministry in April 1920. To make sure that the new Chief Secretary understood the urgency of the matter, the Officer-in-Charge of the Fisheries Branch, Mr. Wood, and the Under Secretary wrote an unusually strongly worded memo outlining their reasons for recommending the legislation which was aimed at protecting the fisherman from being “fleeeced”.

The regulation was finally ready to be gazetted in July 1921, to take effect from May 1922. The Sydney Corporation (Fish Markets) Act, centralized the marketing of fish in Sydney to the Municipal Market, made sale by weight mandatory and introduced a licence system for agents. The 1922 Fish Markets Act was not received well by the fish agents, who opposed the legislation. A crown case against Fish Agent Nixon, who had sold fish without a licence at the Redfern Market, failed at the Supreme Court in September 1922 because the Commonwealth Co-operative Fish Exchange was not a public market and the authorities could not interfere with how it operated. The ruling meant that the inspectors could not enforce the regulations about repacking and sale by weight, and could only enforce already existing regulations about the sale of undersized fish and the discarding of fish unfit for food, covered under other acts including the 1902 Fisheries Act.

The Act was amended to cover all types of market and the new regulation was brought in to effect from December 1922. The situation was finally resolved in January 1923 when the City Council bought and subsequently closed down the Commonwealth Co-operative Fish Exchanges market.

Despite this attempt to regulate the fish agents, the situation at the Municipal Market remained unsatisfactory. First of all, the task of policing the Act was put to the already overburdened fisheries inspector, who was also responsible for examining and discarding fish he found to be unfit for consumption, monitoring fish sales, keeping statistics and other administrative tasks. Secondly, sales continued to be done by volume rather than weight and by private sale, which hampered regulation.

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756 SRNSW: State Fisheries; Case no. 92: Proposed regulation of fish-agents, 3 September 1920 [4/6636.2].
757 SRNSW: State Fisheries; Case no. 92: Proposed regulation of fish-agents [4/6636.2].
758 SRNSW: State Fisheries; Case no. 92: Proposed regulation of fish-agents [4/6636.2].
**Fish landing in NSW**

As the number of fishermen increased, so did landings. In Sydney the Fisheries Branch kept records of landings through the trading at the Municipal Market. In addition, smaller quantities of fish were sold directly to retailers or consumed in the countryside without being recorded. As the NSW Fisheries Branch did not distinguish between landings from different types of vessel (except between the years of 1952 and 1960), landings from steam trawlers were recorded together with other ocean landings. Until 1933, when Danish seine fishing was introduced in NSW, this was of little consequence, but as the seining industry grew so did their proportion of the catch. To estimate the proportion of trawl landing compared to total landings, it is necessary to combine statistics from the Annual Fisheries Reports with data produced by Klaer. As can be seen on Figure 7-2, the two data sets are not completely in accordance with each other but follow the same general trends.

The overall trend in total landings in NSW shows a steady increase until 1946 and thereafter a decline. The same overall trend was more pronounced in the steam trawl landings, with the exception of the years 1939 to 1946, where landings dropped dramatically due to vessels being requisitioned by the Royal Australian Navy. The abnormal decline in 1937 was due to the aforementioned change in the start of the financial year.

Since 1887, NSW’s annual fish production had been growing steadily. In 1887 the production was 1,630 tons and by 1914, the year before steam trawling was introduced, it had increased to 5,995 tons.

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759 See chapter 1 on the reliability of statistical data on fish catch and landings.
Figure 7-2. Landings of fish in NSW in tons. Source: Annual report on the Fisheries of New South Wales, 1887-1960; Klaer, N., 2000.

Looking at the ratio between total landings and landings from steam trawlers, it appears that the introduction of trawling in 1915 facilitated a continued increase in total landings. But by the time the private trawling industries had consolidated themselves in the mid 1920s, it was clear that the growth rate of trawling catches exceeded that of catches from the non-trawling part of the industry. In fact, inshore fishermen’s landings were declining and they looked in danger of losing their share of the urban market to the trawling companies.

In 1923 the annual catches made by trawlers and sold in NSW was 1,302 tons or 14% of the state’s total annual landing. In comparison catches made by inland fishermen amounted to 7,000 tons.\textsuperscript{761} By 1929 trawl catches had increased to 6,845 tons, or 53% of NSW’s annual landings and non-trawl catches had decreased to 6,138 tons.\textsuperscript{762} 1929 was to be the best year for trawl landings, and the record high landing was not repeated. As described in chapter 5, the steam trawling companies began to feel the effect of the high fishing intensity of previous

\textsuperscript{761} Annual Report on the Fisheries of NSW for the Year 1923.
\textsuperscript{762} Annual Report on the Fisheries of NSW for the Year 1923.
years – since the beginning of the 1930s – and began to experience an overall decline in catches and CPUE.

As the success of the private trawling industry became more apparent in the mid 1920s, the Fisheries Branch became increasingly worried that the success of trawlers bringing large quantities of ocean fish (especially flathead) to Sydney, was having a negative effect on the inland fishermen’s ability to sell their catches.\(^{763}\) The brief decline in number of fishing licences taken out during the first half of the 1920s, as seen on Figure 7-1, further fuelled the Branch’s concern.

While the steam trawl fishery was fully controlled by a Government body, as it was during 1915-23, the Fisheries Branch could exercise some authority over the industry. But when the industry was privatised in 1923 the Branch lost all influence. In 1926 Wood warned the NSW Government of the negative influence that the uncontrolled trawling industry was having on the market: “stress[ing] the danger of the position which has arisen through the competition of the trawlers in the hand of private enterprise,”\(^{764}\) He proposed new legislation that incorporated a more equitable system of sale by auction, and through full Government control of the market. Knowing that existing State fisheries legislation did not cover the activity of the trawling companies, the Branch was eager to amend the existing fisheries legislation to also include trawling on the continental shelf. Without a Fisheries Act that governed the steam trawl fishing, the Branch had limited means of protecting the interests of the consumer and small inshore fishermen against competition from the powerful trawling companies.

**Fisheries management during the 1930s**

*New fisheries act*

Following his report, Wood was, in August 1926, directed by the minister to draw up a scheme dealing with fish supply and distribution and to prepare a new fisheries bill to replace the 1902 Fisheries (amended) Act. The new fisheries bill was drafted and “special consideration was given to the effect of trawling operations on the future yields of the eastern

\(^{763}\) Annual Report on the Fisheries of NSW for the Year, 1926, p.3.

\(^{764}\) Annual Report on the Fisheries of NSW for the Year, 1926, p.3.
fisheries of the State". But before it could be placed before Parliament, the Cabinet in February 1927 decided that the bill should stand over until the next Parliamentary session. A revised fisheries bill was not re-introduced to Parliament until April 1930, but it was subsequently decided to withdraw the bill to make more revisions regarding recreational fishery. It was not reintroduced to Parliament before July 1934, and the new fisheries act – the Fisheries and Oyster Farms Act – was not finalised until December 1935.

The Fisheries and Oyster Farms Act of 1935 did entail some improvement to market conditions: more strict regulation regarding the gutting and handling of fish before sale, and stipulations that only owners or licensed agents were allowed to sell at the Municipal Market. However, it was not the radical market reform envisioned by Wood in 1926. The only remnant of ‘the special considerations’ for controlling the steam trawling industry was that all boats fishing outside NSW territorial waters needed a NSW Government issued licence, a system similar to the one that already existed for inshore fishing vessels. The 1935 Fisheries Act also introduced a mandatory trout fishing licence, a new system of granting oyster leases, mandatory registration of nets and increased fees and penalties.

Overall the Act strengthened already existing regulations and placed all aspects of the State’s fishing industry under the same Act. Because steam trawling operations took place in extra-territorial waters fishing effort could not be regulated by the 1935 Fisheries Act. Consequently, the trawling industry could continue the unrestricted fishery on the shelf; however until 1937 it was open to interpretation how much of the onshore activities and administrative matters regulated by the Fisheries Act could be applied to the trawling industry.

The NSW Government tried in different ways to restrict the activity of the steam trawl companies: In July 1936 the NSW Commissioner of Taxation prosecuted one company, Cam and Sons, for withholding taxes from wages earned on trawlers, but Cam and Sons successful argued that since the majority of a cruise was spent in extra-territorial waters, the State was only entitled to tax income earned within territorial waters.

In May 1937 another attempt was made to control the steam trawling companies when the Fisheries Branch prosecuted Cam and Sons for possession and sale of undersized fish as

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765 SRNSW: State Fisheries; Achievements of the Government, various years [10/41724].
766 Fisheries and Oyster Farms Act, 1935.
767 Commissioner of Taxation v. Cam & Sons. Ltd., 1936.
prohibited under the 1935 Fisheries Act. Cam and Sons objected on the same basis as in the
tax case: because the fish had been caught in extra-territorial waters and were therefore
outside NSW jurisdiction, the 1935 Fisheries Act did not apply. The company also claimed
that if the Fisheries Act was applied to fish from outside State waters the Act in effect was an
illegitimate customs law obstructing free trade between the states. After losing before the
Magistrate’s Court, Cam and Sons appealed to a Full Court which in August 1937 referred
the case to the High Court of Australia. In October 1937 the High Court ruled that NSW had
the right to regulate between the low-water mark and the 3 mile limit and that it was
incidental that the State’s definition of undersized fish interfered with interstate trade. Cam
and Sons was convicted and had to pay the legal costs.768

The case was a landmark in NSW fisheries management for two reasons: it proved that part
of the 1935 Fisheries Act did apply to steam trawling, and that it was possible to partly
regulate the industry’s fishing activities by inspecting the catches at the Municipal Market
and enforcing regulations regarding undersized fish.

During the 1930s there were attempts to mediate the relationship between the Fisheries
Branch and the private industries through the Fisheries Industries Association of NSW. The
Fisheries Industries Association included representatives from the industry769 but only an
observer from the Fisheries Branch, and was envisioned to be a forum in which industry and
Government could raise problems and negotiate volunteer agreements. However, the
Association did not represent the whole industry – small-scale fishermen were only
represented by one member and there was no one representing recreational fishermen or
consumers. Instead, the Association was dominated by fish agents and a few powerful firms
including the steam trawling companies.

The Fisheries Branch found the Association difficult to negotiate with, and by 1939 the
Branch had lost faith in the negotiations; because, as Isherwood described it: “The
Association is divided into several mutually antagonistic sections, which seldom sink their

769 Established in 1933 the Fishing Industries Association of NSW comprised of: Sydney Steam Trawler Owners
Association, NSW Licensed Fishermen’s Association, Retail Fishmongers’ Association of NSW, Fish Agents’
Association, NSW Oyster Farmers’ Association and Roughley from the Technological Museum.
difference save to attack the Department [Fisheries Branch]…The guiding principle of the members has seemed to me to be self-interest”.

Science and resource management

During the 1930s, especially after Isherwood became Officer-in-Charge in 1935, there was growing awareness in the Branch that marine resources were limited and that there might need to be protection from overfishing. However the capacity of the fishery and the best method of conservation were matters to be determined by marine scientists. As the examples below illustrate there were many obstacles to be overcome in a management system with multi authorities and interests: Joint funding, joint management, hostile industry and lack of a Commonwealth legal framework for fisheries protection were all challenges the NSW policy makers had to overcome before science should be an integrated part of marine resource management.

By 1938 there were signs that scientific recommendations were being accepted as a part of the NSW Fisheries Branch’s management process. This did not change the fact that development was the underlying management objective of the Branch; rather that science was seen as a method to secure stable resource development. This was illustrated at the Fisheries Branch’s ‘Conference of the Officer and Field Staff’ in April 1938 where Isherwood urged the fisheries inspectors to continue to promote fisheries but also to keep an eye out for wasteful behaviour among the fishermen: “The commoner species, we know, can stand a great deal of exploitation, but remember that even in the case of those species a limit must eventually be reached.” At the same conference Kesteven gave a talk about ‘The theory of Fishing Statistics’, while Dakin and Alan N. Colefax from the Department of Zoology and the University of Sydney spoke about ‘Science in Relation to Fisheries’ and ‘Marine Biology and Fisheries’. However, the Fisheries Branch’s foray into conducting fisheries research only lasted from 1937 until about 1940 when it became the NSW Government’s policy to have

770 SRNSW: State Fisheries; Memo by Isherwood, Officer-in-Charge on Fishing Industries Association, 29 May 1939 [10/37198].
771 SRNSW: State Fisheries; Report of the Conference of the officer and field staff of the Department, 26-27 April 1938 [4/6639.1].
772 While Kesteven was at the NSW Fisheries Branch from September 1937 to March 1939 he was responsible for studies of estuary mullet, tiger flathead (1938-9), tagging of sea mullet (1938), mortality in oysters (1938-9)
CSIR do most of NSW’s marine research. An agreement was forged between the CSIR’s Division of Fisheries and the NSW Government in which the Government contributed to research costs, however it was not until January 1941 that these funds became available.

The problem of joint funding by different agencies was problematic, as illustrated by the attempt at a Murray cod research initiative. NSW Fisheries Branch and the CSIR decided that the first research project to be undertaken under the NSW-CSIR scheme was one on Murray cod and in July 1941, George Humphrey was appointed to undertake the research. As the fish was found in the Murray-Darling river system which flows through several states, the fisheries departments of Queensland, Victoria and South Australia were also asked to contribute funds. While Queensland was in favour, Victoria was against and South Australia supported the research but was not willing to provide any funding. The issue became redundant when Humphrey resigned in March 1942 to take up a position at the Biochemistry Department at the University of Sydney. The CSIR Division of Fisheries and the Fisheries Branch then decided to let the matter stand because of the war. After the war the issue was not brought up again.773

It was not only joint funding of research that failed. The difficulties in obtaining multi-government agreement on the conservation of sea mullet illustrates the considerable problems involved in implementing responsible resource management in fisheries governed by several authorities.

In 1939 there was growing concern in the NSW Fisheries Branch about the diminution of supplies of sea mullet. Sea mullet was found along the coast from Queensland to Victoria and was one of the main commercial species for the inshore fishing industry. The Branch was ready to introduce fisheries restrictions to protect the resources, but needed more information about sea mullets’ spawning habits and the size of mature individuals in order to set a closed season and minimum length. At CSIR’s Division of Fisheries, Kesteven was doing research on mullet but because the research was ongoing the Division was not ready to make any management recommendations and instead pointed out that if conservation was to be effective the method had to be adopted by both the Queensland and Victoria fisheries.

and experiments with alternatives to black mangrove sticks in oyster culture (1938). A study of Murray cod was done in collaboration with Dakin. 773SRNSW: State Fisheries; Fisheries Administration [10/41728].
In January 1941 Kesteven’s preliminary report on mullet was made available to the NSW Government. In the report he confirmed that stocks in some waters were seriously depleted or exhausted. He recommended a temporary increase in minimum legal size to 14 inches during the migration season, and 13 inches during rest of the year[^774], and that the fishing intensity was reduced through a system of catch quota until further research could be done to assess the condition of the stocks and the fishery. The Branch received his recommendations positively and at a subsequent meeting on 22 January 1941 it was decided that Thomson and Kesteven should attend the next meeting of the Fisheries Industries Association to outline their proposal for the mullet fishery.

At the meeting on the 10 February 1941 the Fisheries Industries Association (surprisingly) seconded the recommendations made by the Division of Fisheries to reduce minimum legal size and asked the Division to make a brochure on the issue for the Association to be printed and distributed in various fishing centres[^775]. The support was likely a result of the fact that the coastal small-scale fishing industry, which targeted sea mullet, was only marginally represented in the Association.

On 22 May 1941 a Conference was held with senior officers from the Victoria, NSW and Queensland fisheries departments and CSIR Division of Fisheries to present the proposed conservation measures and discuss their implementation[^776]. It quickly became clear that because of sea mullet’s migration route along the coast from north to south, NSW was not willing to implement the proposal of increased catch size unless Queensland did so. As Victoria lay furthest south their decision was of little interest to the other two States.

After conferring with the Queensland branch of the Fishermen’s League, the Queensland Chief Inspector of Fisheries, J. D. W. Dick in July 1941 informed the NSW Fisheries Branch that Queensland was not willing to adopt the proposed restrictions. He had been told by the Fishermen’s League that they were strongly against the size restriction and it would only accept a quota of fifteen boxes of sea mullet per crew per week during the season, and a

[^774]: It was estimated that 33 cm or 13” was minimum length of a matured female mullet and 32 cm or 12” for the male fish. To maximise catches the minimum sizes of fish based upon when a species was grown enough to spawn for the first time. The precautionary principle in fisheries management was not invented yet!

[^775]: SRNSW: State Fisheries; Minutes of Fishing Industry Association of NSW, 10 February 1941 [10/41717].

[^776]: SRNSW: State Fisheries; Report of Proceeding of conference in measures for the conservation of the mangrove and sea mullet in the eastern seaboard of Australia, 22 May 1941 [10/41717].
weekly closure of the fishery from midnight Friday to Sunday. Consequently Dick recommend that the Queensland Government accept the proposed minimum size for migrating mullets and 12 inches for the remainder of the season. The NSW Fisheries Branch was not satisfied with this but could see no other solution. In return NSW would not implement the weekend closure.777

Later, the NSW Fisheries Branch put the question of increased legal size of mullet during the spawning season before the coastal fishermen at a series of meetings organised by the local fisheries inspectors. Although all the fishermen had received the Fisheries Industries Association brochure on sea mullet conservation, only nine percent voted in support of the suggested increase.

Conservation attempts met further obstacles in October 1941 when Queensland Chief Inspector of Fisheries, Dick, informed the NSW Fisheries Branch that due to a shortage of fish the Minister would not bring into effect the suggested fisheries restriction. However the Minister was willing to review his decision again in 1942. In response, the NSW Government adopted the same strategy of postponing the restriction until further notice and reviewing its decision again by 1943. When the Government file on ‘conservation of sea mullet’ was closed in 1946, a decision about whether to implement the conservation measures had still not been made by any of the States.778

Joint management failed because the States’ stance on fisheries management was driven by self-interest and consideration to local industry interests. Even when the NSW Fisheries Branch was motivated to restrict resource exploitation and could have implemented the restrictions regardless of what Queensland or Victoria decided, decisions were made based upon the lowest common denominator. The States’ inability to agree on uniformed fisheries legislation in territorial waters was a major obstacle to the implementation of more sustainable fisheries practices. A solution to overcome such obstacles was not found within the period covered by this thesis.

777 SRNSW: State Fisheries; Letter from Andersen Under Secretary to J.D.W. Dick, Chief Inspector of Fisheries, Department of Harbours and Marine, Queensland, 10 July 1941 [10/41717].
778 SRNSW: State Fisheries; Papers relating to the conservation of Sea Mullet, 1939–46 [10/41717].
Investigation of the trawl fishery on the south-east continental shelf

Despite the failure of State-organised sea mullet conservation, Blackburn from CSIR’s Fisheries Division, helped by Kesteven, in July 1941 began to investigate the steam trawl and Danish seine fishery to assess the fishery’s present condition, reasons for changes in the availability of resources, predict future changes and suggest methods of conservation. The investigation was considered a matter of some urgency, since the NSW’s Fisheries Branch inspector at the fish market in Sydney had recorded that in June 1941, 27 percent of all flathead sold at the market was undersized and in July, 44 percent, strongly suggesting that there was few mature fish in the fishing grounds. To investigate Blackburn and Kesteven needed access to catch statistics with information on species and location. A meeting was set up with the NSW Fisheries Branch to develop procedures for collecting this information from trawl and seine owners. They also later contributed landing records from the STI.

When the trend in undersized flathead continued a meeting between officers from the Division, NSW Fisheries Branch, the Chief Secretary’s Department, Red Funnel and Cam and Sons was held in November 1941. At the meeting the trawl owners were successful in moving the attention to the Danish seiners as the likely source of undersize landings because they used nets with smaller mesh sizes.

In December 1942 Red Funnel, Cam and Sons, A. A. Murrell, David Stead and various NSW government bodies were asked to contribute historical catch data. Red Funnel declined, on the basis that their records were confidential and their ship logbooks incomplete. However A. A. Murrell and Cam and Sons were more forthcoming and gave CSIR access to several of their logbooks. Cam and Sons also volunteered to provide more information if needed. The reason they so strongly supported the investigations was that they had not comprehended the aim of the investigation. Being development oriented they still considered the objective of fisheries research to be the location of new resources and the determination of the most efficient way of exploiting them. The idea that research was done to prevent industry expansion and conserve resources were alien to them. The Fisheries Division, which had

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779 LJPC: Memorandum to Dr. Thompson, Chief of Division from Maurice Blackburn, 4 July 1941.
780 LJPC: Letter to Dr. Thompson, Chief of Division from S. W. Anderson, Under Secretary, Chief Secretary’s Department, 22 December 1942.
781 LJPC: Letter to Dr. Thompson, Chief of Division from A. J. Cam, 3 December 1942.
become more conservation oriented during 1942, wanted to set a limit on how many trawlers and seiners could operate, to protect the fishing grounds from depletion.

Stead’s reply to the Division’s request was coloured by his old bitterness towards the Chief Secretary’s Department and the Fisheries Branch, who he blamed for the dismemberment and closure of STI after his removal. Over the existence of STI catch records, he referred to the Branch, but claimed that it had made a habit of locating ‘all sort of inconvenient things like records that needed investigation or some working up’\(^{782}\) at a store room in George Street, where most of it went into the incinerator; something that he claimed had happened to all his research material from when he was naturalist at the Branch from 1902 to 1914. His criticism was mostly unfounded, since the Branch was able to locate the relevant STI records, but only from the period after Stead had left.\(^{783}\)

After the Fisheries Division took control of the national fishing industry in June 1943, the trawl and seine investigation was deferred in favour of allocating manpower and increasing productivity and efficiency in the fishing industry. However, the matter was not forgotten and during a meeting at the Fisheries Industries Association in August 1943, Thompson told members that the Division intended to fix the number of vessels allowed to fish on the south-east continental shelf to a maximum of 12 steam trawlers and 36 Danish seiners.\(^{784}\)

The wartime control of the fishing industry had allowed CSIR’s Fisheries Division to accumulate more fisheries data and in mid 1945 trawling investigations were resumed. Wolfe S. Fairbridge was chosen to conduct an in-depth study of the fishery on the south-east continental shelf, under what was to be known as the Trawlfish Program. His study was the most comprehensive study of the history of the fishery, with particular attention paid to the situation of tiger flathead. It involved sampling of the fishing grounds as well as analysis of historic catch records. Based upon his findings Fairbridge published in 1948 a paper\(^{785}\) on changes in catch per effort in the fishery as a measure of stock abundance. He used the fact that there was a reduced fishing intensity during 1939-45 followed by intensive fishing and

\(^{782}\) LJPC: Letter to Dr. Thompson, Chief of Division from David G. Stead, 11 January 1943.

\(^{783}\) Stead also used the letter to profess his belief that total and permanent Commonwealth control over the fishing industry was imminent and forwarded some administrative forms he had designed while at the STI to help the future administration.

\(^{784}\) SRNSW: State Fisheries; Report on meeting of Fishing Industries Association by Roughley, Superintendent, 23 August 1943 [10/37196].

\(^{785}\) Fairbridge, W., 1948.
high catches, to establish if overfishing had taken place prior to 1939 and estimate a suitable level of fishing. Based upon historical catch data he proved that the rate of catch fell as the fishing effort increased in the 1920s and that there were signs of overfishing of flathead in 1929, but in general the south-east shelf was not overfished prior to 1939. As the rate of catch of flathead declined from about 1931, secondary commercial species, such as morwong, nannygai, gurnard and barracouta, were increasingly landed instead of being discarded at sea. Their proportion of catch was about 5-10 percent, but as these species became more marketable as a consequence of the food shortages during the war, Fairbridge concluded that as consumers became used to these species, the total optimal catch was likely to be higher after the war than before. His analysis of catch composition drew him to conclude that the reduced fishing effort during the war was sufficient enough for the stocks to recover. However, based upon the intensity of fishing and changes in catch rates, Fairbridge estimated that the annual optimum catch, under present market conditions, was 5,400 tonnes of fish which would equate to a fishing effort of 3,250- 3,500 trawler-tons, similar to the level of fishing in mid 1930s. As a Danish seiner had a fishing efficiency of 30 trawler-tons, and a steam trawler about 250 trawler-tons, it was calculated that the NSW shelf fishing fleet by 1947 was 4,525 trawler-tons and increasing. Fairbridge therefore recommended a reduction of the fleet regardless of type.

After having studied the fishery in general, Fairbridge concentrated his attention on tiger flathead; his findings were published posthumously in 1951 and 1952. The 1951 paper deals with the biology and the method of age determination used, and the 1952 paper with age composition, overfishing and methods of conservation. In regard to flathead, Fairbridge concluded that although the shelf-fishery in general had made a recovery during the war, flathead had failed to recover at a similar rate because of pre-war? overfishing. To allow the stocks to recover sufficiently, Fairbridge restated his recommendation that the fishing fleet be reduced to about 13 trawlers (or the equivalent of Danish seiners). He also recommended a total closure of the Botany fishing ground (the Home Ground) and that steam trawlers were to

786 Fairbridge, W., 1948, pp. 87-88.
787 Fairbridge, W., 1948, p. 91.
788 Fairbridge, W., 1948, pp. 94-95.
789 Fairbridge, W., 1951.
790 Fairbridge, W., 1952.
be preferred over Danish seiners since trawlers statistically landed larger and older flathead than the seiners.

Shortly before his death in May 1950 Fairbridge put forward a proposal for further research into the south-east trawl fishery, focusing on the three main commercial species: flathead; morwong and nannygai. He emphasised that such research would be imperative when restrictive measures were implemented in the fishery, to establish if imposed conservation measures were sufficient. His death temporarily put such plans on hold, but investigations were resumed in November 1952 when T. W. Houston, a graduate from University of Durham and newly employed by the Division, was assigned to the project. To collect more accurate data the two trawling companies were contacted with a suggestion that research officers be allowed on cruises to examine the individual hauls and make additional observations. Despite promises of compensation Red Funnel declined on the grounds that they needed to maximise their fishing effort in order to recover financially from wartime price control and the newly instituted State marketing scheme.

Having the advantage of being able to extend the study of post-war changes in tiger flathead age composition beyond 1946-47, Houston published in 1955 a paper showing that flathead stocks had deteriorated further since Fairbridge’s study, and were likely to continue to do so if the fishing intensity was not reduced. To improve the fishery in general, and especially that of tiger flathead, Houston supported Fairbridge’s suggestion about limiting the fishing effort, but also recommended that the nets’ cod-end mesh size be regulated to minimise the capture of undersized fish. Some of Fairbridge and Houston’s findings have since been proven to be faulty by Klair, who found that Fairbridge overestimated the proportion of flathead in total annual catches, and that stock declines were considerably larger than estimated in 1952 and 1955, particularly for the decline of flathead.

791 LJPC: Memorandum to Dr. Thompson on future research into the east Australian trawl fishery, from W. S. Fairbridge, 1 March 1950.
792 LJPC: Letter from R. F. Coles, manager Red Funnel Trawlers Pty. Ltd to Dr Thompson, Chief of Division of Fisheries, CSIRO, 20 February 1953.
793 Houston, T., 1955.
Reactions to CSIR’s recommendation of conservation

After CSIR had reported Fairbridge’s findings and recommendations to the NSW Fisheries Branch, where they were received well, things did not progress further. As the recommendations all related to reducing the fishing effort on the fishing grounds, NSW was powerless to implement them.

At Commonwealth level no steps were taken to discuss how conservation measures could be implemented until the Commonwealth Fisheries Act was passed in July 1952. Now having a legislative framework for fisheries management outside state territorial waters, the Commonwealth Fisheries Offices approached CSIRO’s Fisheries Division in August 1952 to have it prepare a statement about the present situation of the fishery at the south-east continental shelf. The statement would form the basis for a discussion over which conservation methods should be applied. The statement, with Thompson as the formal author, listed three types of conservation methods that would aid the recovery of the fishery: reduction of the fishing fleet, full or seasonal closure of vulnerable fishing grounds and restrictions on mesh-size.

In December 1952 the Commonwealth Fisheries Offices called an informal meeting with representatives from the steam trawling companies and marine scientists from CSIRO to discuss conservation of the trawl fishery on the south-east continental shelf. The NSW Fisheries Branch was not invited, emphasising the fact that the Commonwealth Fisheries Offices considered trawl conservation to be a strictly Commonwealth matter. Nor was anybody representing the Danish Seine fishery invited. At the meeting Red Funnel and Cam and Sons agreed with the biological assessment that the flathead stocks were depleted, although they contested some of the Division’s data and the degree of depletion. Both companies agreed not to increase their fleet further, but dismissed other restrictions. Rocco Cam, Governing Director of Cam and Sons was particularly against an increase in mesh-sizes and both representatives blamed the Danish Seiner for the depletion. During the debate, Thompson volunteered the opinion that although closure of vulnerable fishing grounds was an effective conservation method it was impossible to enforce. To that, Blackburn warned that a reduction of the fleet was not enough to enable the fishery to recover.\(^{795}\) It was

\(^{795}\) LJPC: Report on meeting with representative of steam trawling companies, 22 December 1952.
Blackburn’s view that CSIRO could only make recommendations based upon biology and that it was up to the administrators (State and Commonwealth) to decide the method of conservation, depending upon their will to protect resources.\textsuperscript{796}

In January 1953 Red Funnel’s manager E. S. Coles sent a statement on the proposed conservation to the Commonwealth Fisheries Office, acknowledging the veracity of Fairbridge’s research and that the post-war drop in protection was due to lack of protection of spawning grounds and reduced recruitment. He advocated that since the Seine fishery was the one fishing the shallow spawning and nursing grounds, the only logical course of action was to abolish all seine fishing on the continental shelf.\textsuperscript{797} Rocco Cam’s reply was similar, blaming Danish seiners for the decline. He also argued that any alterations in the way the industry operated should be sanctioned by the steam trawl owners.\textsuperscript{798}

With the steam trawl companies being unwilling to commit to voluntary regulation, negotiations stalled and were not resumed during the steam trawl industry’s existence.

**Post-war market management in NSW**

During the war the management of Australia’s fishing industries had been centralised, but aided by the state fisheries authorities. After the war the working relationship continued and post-war fisheries management in NSW was characterised by a high degree of collaboration and consultation with the Commonwealth fisheries authority in regard to the State’s marine fisheries. The Fisheries Branch cooperated with the federal authority’s program of industry reconstruction by developing new marine fisheries and organising fishermen in co-operatives, but focused much of their attention on reforming the State’s fish market.

After a conference between State and Commonwealth authorities in 1945 on how to improve the nation’s supply of fish, the NSW Government appointed a joint government and industry committee to recommend how the State could improve the conditions for the fishing industry. The committee recommended that the fishermen form co-operatives to share costs and improve fish marketing. To assist the formation of a co-operative system controlling

\textsuperscript{796} LJPC: Memorandum to Thompson from Blackburn, 3 February 1953.

\textsuperscript{797} LJPC: Comments on CSIRO tentative proposal for conservation, by E. S. Coles, manager Red Funnel Trawlers Pty. Ltd., January 1953.

\textsuperscript{798} LJPC: Letter from R. Cam Governing Director Can and Sons Pty. Ltd., 3 February 1953.
production and marketing, the committee recommended that the NSW Government take control of the Municipal Fish Market (subsequently known as the Sydney Fish Market). This happened in September 1945 when the Chief Secretary assumed control of the market and cancelled all current licences for fish agents. 799

This move was not well received by the fish agents and steam trawling companies who tried to obstruct the working of the market. In June 1945 both Red Funnel and Cam and Sons applied for a license to use their premises as a ‘Wholesale Fish Dealer’s Establishment’, which would permit them to sell their catch directly from their premises without going through the Sydney Fish Market. When their application was denied, they instead in September 1945 began landing, and illegally selling, their catch from Port Jackson. In October 1945 Red Funnel and Cam and Sons was prosecuted by the Chief Secretary’s Department for selling outside the market. In anticipation of the result of the prosecution several operators were holding back large quantities of fish hoping to obstruct the viability of the government’s fish marketing plan. As black marketing increased the buyers’ confidence in the Sydney Market was shaken, and the events seriously affected the administration of the Market as well as highlighting that the Government was unable to enforce its control. It was therefore a severe blow to the Government when Red Funnel and Cam and Sons successful advocated that the Governments market regulations were inconsistent with existing national (war-time) regulation about sale of fish, and the case was subsequently dismissed on 7 November 1945. The Commonwealth regulation was annulled on 20 November 1945, to close the loophole, but the NSW Government had to drop the case against the trawlers owners. 800

The next change in how fish was marketed in NSW came in December 1951. The wartime system of fixed prices on fish was lifted and a system of mandatory sale by auction was introduced. For steam trawling companies and larger co-operations, the retraction of price control was seen as an opportunity to increase revenues by using their market share to set higher prices. However, this effort was hampered by the regulation of compulsory marketing, whereby fish for wholesale could not be sold without passing through an authorised market

800 SRNSW: State Fisheries; Prosecution of Cam and Sons and Red Funnel Trawlers under section 40B of the Fisheries and Oyster Farms Act, 1945 [10/37120].

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where it was sold at public auction. In addition, the steam trawl companies were faced with having to pay the market authorities commission on sales of fish. Before the mandatory system of sale by auction, the steam trawling companies had sold their catch as ‘original owners of fish’, meaning that they did their own trading at the market without the use of an agent and only paid market fees for the use of the premises.

Cam and Sons and Red Funnel tried to be exempted from paying commission fees and pushed for a return to a system where they could act as their own agents. In their view the commissions were a tax imposed by the government to finance the operation of the Sydney Fish Market. As a consequence the trawling companies were against a Government organised market with transparent price formations, and instead preferred complete freedom of marketing where they could market their own products without any regulations on methods of sale. Cam and Sons went as far as to say that it was on a matter of principle that they opposed government interference in marketing. 801

In a situation where the two steam trawling companies were having trouble making a profit, the additional costs of a compulsory commission was hard felt. Both the steam trawl companies and the coastal fishing co-operative established after the war as part of the Commonwealth post-war reconstruction program, were charged a rate of 6.25% in sales commission (standard rate was 11.25%). The commission applied regardless of the landings that had been auctioned at the market or delivered directly to retailers. 802 As a significant part of the trawling companies’ catches was sold directly at the wharf to large customers, according to pre-existing contracts, without physically passing through the Sydney Fish Market, the companies were dissatisfied at having to pay what they considered an unjust commission.

In 1953, in response to complaints made by the trawling companies as well as by the Association of Fishermen’s Co-operation, a professional organisation of fishing co-operatives in NSW, the Government appointed an interdepartmental committee to inquire into fish marketing in NSW. The Market Investigation Committee was made up of high-ranking government officers, such as C. J. King, Chief of the Division of Marketing and Agricultural

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801 SRNSW: State Fisheries; Report of committee appointed to inquire into fish marketing, 2 September 1953 [10/41733].
802 SRNSW: State Fisheries; Memo from Under Secretary C. J. Buttsworth, 20 October 1953 [10/41733].
Economics, A. G. Kingsmill, Chief Clerk of the State Secretary’s Department and G. J. Boreham, Deputy Registrar of the registry of co-operative societies, but without any representatives from the fishing industry.

After reviewing existing legislation, production and market facilities, consulting with representatives from the NSW fishing industry and exploring comparisons with fish marketing in Victoria and Queensland, the 1953 Committee made a series of recommendations. They found that compulsory marketing served three purposes: to make sure that only fish fit for consumption was sold; that fish was equitably distributed and black-marketing hindered; and that no undersized fish was caught and sold. In their analysis the Market Investigation Committee found the main problem of the NSW fishing industry to be one of conservation and protection of fishing grounds. As long as the industry failed to comply with regulations and continued to land high proportions of undersized fish, the only way the Government could oversee and control that industry adherence to resource conservation measures was to exercise strict market control and prevent undersized fish from being sold.803

This subtle change in the objectives of government control over the market demonstrated a profound reorientation of the NSW Government’s position on the problems of the NSW fishing industries. Since the 1880s, dysfunctional marketing had been considered the main cause for low productivity and the solution offered by successive governments was intervention into the market, a policy that was intensified during the 1910s and 1920s. By naming ineffective resource management as the source of problems, the objective of the NSW Government’s will to manage had shifted from economy to ecology.

In regard to the two steam trawling companies, it was acknowledged that their dire economic situation had arisen from factors beyond their control, such as high operational and wage costs, the increased cost of maintenance and repair, the need to replace old vessels, as well as the depletion of high value fish species. The Market Investigation Committee also pointed out that steam trawling companies in other countries were having similar difficulties, which were unrelated to market conditions, but were due instead to the general high cost of fishing with

803SRNSW: State Fisheries: Report of committee appointed to inquire into fish marketing, 2 September 1953, pp. 24-25 [10/41733].
this technology. It was therefore the view of the Market Investigation Committee that it was
the responsibility of the companies to improve and develop their business and marketing but
that their effort should be encouraged and supported by the authorities.804

The Market Investigation Committee’s observation was correct insofar as the British near-
and middle-water fishery, where many of the fishing vessels were steam trawlers. After being
released from naval service British trawlers were experiencing high catches because the
stocks had enjoyed a respite from fishing during the war, but catches began to decline again
around 1946. At the time fish prices were high because of food shortages, but in November
1949 prices collapsed after the Government some months earlier had removed price controls.
Because of the combination of declining catches caused by long-term overfishing and low
post-war prices, the rate of vessel replacement was slow.805 By 1952, 78 percent of the British
near- and middle-water fleet were built before 1921 – the figure for the NSW steam trawling
industry was very similar: 77 percent.

The Market Investigation Committee concluded that fish marketing should continue to be the
responsibility of the Chief Secretary, mainly because a proposed system of total industry
control of fish marketing was impractical due to differing interests. Instead, as a short term
solution, it was proposed that an advisory committee comprising representatives from the
fishing industry be appointed. The advisory committee would have the power to confer with
the market authorities about day-to-day business and make recommendations to the Minister
about the operations of the Sydney Fish Market and its branches.

Later a statutory fish marketing authority should be created with six representatives from the
NSW fishing industry, with the chairman being appointed by the Minister. The statutory
marketing authority was to take over the responsibility for the Sydney Fish Market and
general development of fish marketing in NSW. This arrangement would detach the Chief
Secretary’s Department from the management and give the industry some influence on how
marketing was conducted, while still being held accountable to the Government. It was also
recommended that producers, such as the steam trawling companies, should be licensed to

804 SRNSW: State Fisheries; Report of committee appointed to inquire into fish marketing, 2 September 1953, p 29 [10/41733].
sell their catch directly from their own premises without having to go through the market authorities and pay commission.\textsuperscript{806}

Unsatisfied with the lack of financial compensation for what the trawling companies considered an imposed tax, E. S. Coles from Red Funnel met with Minister McGrath on 20 October 1953 to discuss problems with the system of compulsory marketing. Coles claimed that over a five year period Red Funnel had paid £45,886 in commissions, and that about a third of the amount was for fish retained at the wharf and sold directly to large customers. He warned that the company’s financial situation was untenable and that its shareholders had not received any dividend for the last five years, threatening that the company might not be able to carry on fishing. Coles appealed to the Government to “help restore the financial soundness of the Company and ensure its continuity”,\textsuperscript{807} proposing that the government offer financial assistance by paying a rebate of £ 31,510, based on commissions already paid compared to the actual cost of handling. In addition, Red Funnel wanted to be exempt from paying commission on all future sales of their own fish directly from their premises and a fixed low rate of 3\% on sales through the Sydney Fish Market. Coles also argued for a return to the agent-based system of sale, arguing that having free choice of who they wanted to market their product was better suited to the individualistic nature of fishermen. He claimed that most of the troubles and complaints under the agent-based system were confined to the war years when a special situation of control and reduced supply had existed.

Minister McGrath was in favour of continuing the present system of marketing but receptive to Coles’ plight. He recommended to the Premier that consideration be given to the trawling companies’ situation.\textsuperscript{808}

Similar to Red Funnels complaints about the unfairness of the market commissions and the financial strain they put on, complaints were made by Cam and Sons, who also declared that it would be impossible for them to continue if commissions were not reduced. The strategy of laying up vessels to force market compliance has been successfully employed by the

\textsuperscript{806} SRNSW: State Fisheries; Report of committee appointed to inquire into fish marketing, 2 September 1953, pp. 34-32 [10/41733].
\textsuperscript{807} SRNSW: State Fisheries; Deputation on the Question of Fish Marketing received by Mr. McGrath at Parliament House at 7 p.m. on Tuesday, 20 October, 1953. p. 3 [10/41733].
\textsuperscript{808} SRNSW: State Fisheries; Deputation on the Question of Fish Marketing received by Mr. McGrath at Parliament House at 7 p.m. on Tuesday, 20 October 1953 [10/41733].
companies since the 1920s. Although the two trawling companies no longer held the same monopoly over sea fish as they had during much of the 1920s and 1930s, they still provided about 40 percentage of the weight of all fish sold through the Sydney Fish Market and their threat to abolish fishing was not without impact.

In January 1954, following the recommendations of the inquiry committee, and to accommodate trawling company interests, Under Secretary C. J. Buttsworth wrote to Red Funnel and Cam and Sons, inviting them to join a new Advisory Committee on fish marketing.\(^\text{809}\) Also invited were two representatives from the Danish seine boat operators and four representatives from the Co-operative Societies. Both companies accepted and the Advisory Committee met for the first time on 3 March 1954.

At the inaugural meeting of the Advisory Committee, it was moved by Cam and seconded by Clayton to recommend that commission rates be reduced from a general rate of 11.25 percent to 9 percent and from a special rate of 6.25 percent to 4 percent.

The conflicting interests of the representatives quickly became apparent: the Advisory Committee constituted itself with Coles as chairman and he and Rocco Cam formed an uneasy alliance with the Danish seine representatives G. Puglisi and A. E. Clayton,\(^\text{810}\) against the representative from the Co-operative Societies who spoke for many of the small scale fishermen. Because there was confusion about the aim and powers of the Advisory Committee, Cole and Cam were able to use the Advisory Committee as a platform for criticising the findings of the Market Investigation Committee and produced an alternative proposal for marketing. The Advisory Committee had another meeting on 16 and 31 March, after which the members unanimously decided to resign. The steam trawl and seine representatives emphasised that it was because the Advisory Committee was powerless to improve conditions as long as the market remained under Government control\(^\text{811}\), while the Co-operative representatives sanctioned the decision to resign because they were: “reaching

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\(^{809}\) SRNSW: State Fisheries: Letter from Under Secretary C. J. Buttsworth to E. S. Coles, Red Funnel Trawlers, 15 January 1954 [10/41733].

\(^{810}\) It is possible that G. Puglisi and A. E. Clayton were not seine fishermen themselves, but sold fish caught by Danish seiners at the Sydney Fish Market, and it was in that capacity they represented the Danish seiners’ interests.

\(^{811}\) SRNSW: State Fisheries: Report of representatives of the steam trawlers and seine trawlers as members of the Advisory Committee on Fish Marketing, 31 March, 1954 [10/41743].
the limit of compromise with the conflicting interests of steam and seine trawlers”. 812 The Co-operative was in favour of government control because it secured the small-scale fishermen independent and impartial marketing while the steam trawl and seine industries preferred a system of unrestricted marketing where they could use their domination over the market.

After the meeting the steam trawl representatives and the Danish seine representatives produced a report wherein they advocated a system of independent marketing organised and controlled by the industry. 813 While the government was sympathetic toward producer control over the Sydney Fish Market, they were not willing to accept a return to the agent-based system of sale. After that, the relationship between the two steam trawling companies and the Fisheries Branch deteriorated further.

As a last resort the steam trawl companies tried complaining to the Public Service Board that the Sydney Fish Market was accumulating cash at the expense of the companies. In May 1954 the Public Service Board recommended that the commissions be reduced in the future to lessen the financial stress on the companies, while Butts worth heeded caution and in his reply assessed that “Even if the maximum possible reduction in commission were granted immediately it is very doubtful whether this would solve the problems of Cam and Sons Pty. Ltd., and Red Funnel Trawlers.”814

Buttsworth assessment proved to be right. On 3 August 1954, a letter from solicitor Matthew McFadden and Co informed the Chief Secretary that the Cam family was closing down their fishing business. They blamed the Department for the closure, since they had adhered to the market reforms knowing that they were causing the industry harm. The tone of the letter was resentful and ended with: “May you and your Government reap the consequences which it justly deserves.”815 In the reply Buttsworth acknowledged Cam’s letter but obviously found it of little use and frostily remarked that: “it is a matter for regret that you should have found it

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812 SRNSW: State Fisheries; Proposal by NSW Fishermen’s Co-operative Union Ltd., 22 May 1959 [10/41743].
813 SRNSW: State Fisheries; Report of representatives of the steam trawlers and seine trawlers as members of the Advisory Committee on Fish Marketing, 31 March 1954 [10/41743].
814 SRNSW: State Fisheries; Letter from Buttsworth to Public Service Board, 24 May 1954 [10/41743].
815 SRNSW: State Fisheries; Letter from Matthew McFadden and Co to the Chief Secretary, 3 August 1954 [10/41743].
necessary to couch your communication in the terms which you have”. The exchange marked the total breakdown of communication between the Government and the steam trawling industry. There were no attempts from the government to reconcile with the industry and few letters were exchanged after that.

As the sole steam trawl operator left in NSW, and hard-pressed financially, Red Funnel wrote to the Under Secretary in December 1954 pleading with the government to follow the Advisory Committee recommendations to reintroduce the agent-based system of sale. They argued that their revenue had suffered from uneconomic prices in the latter years of price control and excessive marketing charges, and because of that they were operating on a substantial bank overdraft and were unable to attract the additional capital necessary to replace lost or obsolete vessels. They warned that within months they would need to begin a reduction of their fleet and/or drastically reduce expenses, stating that “Government policy on fish marketing and commission charges will be the deciding factor”817 Despite pressure from Red Funnel it was not before 7 July 1955 that the Chief Secretary decided to reduce the commissions by 1.25 percent.818 This, however, made little difference to Red Funnel which in the following years gradually retracted from the fishery. The steam trawl companies would not take responsibility for the economic situation, caused by unrestricted exploitation and instead blamed the NSW Governments market policy for their situation.

After steam trawling had ended, the Government, in 1963, established the producer dominated New South Wales Fish Authority to administrate the Sydney Fish Market. It had been the wish of the 1953 Market Investigation Committee that the Market became producer controlled, but at the time internal conflicts had made such an arrangement impossible.

**Epilogue: End of the Great Australian Fisheries Dream or a new beginning?**

In September 1952 Roughley retired as NSW Superintendent of Fisheries, disillusioned with the internal politics of the Branch and disappointed in successive governments’ lack of will to provide effective and progressive fisheries management.

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816 SRNSW: State Fisheries; Letter from Under Secretary to Cam and Sons, 11 August 1954 [10/41743].
817 SRNSW: State Fisheries; Letter from Red Funnel Trawlers to Under Secretary, 8 December 1954 [10/41743].
Since their first meeting during the national Fisheries Conference in 1926 and 1929, Stanley Fowler from CSIR and Roughley had developed a friendship and maintained a personal correspondence calling each other by their first name, freely discussing fisheries issues and their mutual disappointment in their respective organisations. In December 1953, reflecting on his more than 40 years’ work in the public service with NSW fisheries, Roughley wrote to Stanley: “You and I were both handicapped because we had very definite opinions and principles, which we were prepared to maintain and fight for irrespective of the opinions held be those in high places. It did not pay us in many ways, but we left with clean conscience. ... What a relief it is to be at last free!” 819

One of his last acts while working for the NSW Fisheries Branch was to write and publish a book on Australia’s fisheries, which was an enlarged and updated version of his Fish and Fisheries of Australia and Their Technology from 1916, describing fish species and presenting the history and present stages of Australia’s main commercial and recreational fisheries. The book, Fish and Fisheries in Australia820, was published in 1951 and became so popular that it was reprinted four times, each version slightly revised, until Roughley’s death in 1961.

Having documented the beginning of steam trawling in NSW821, and witnessed the industry’s development over the years, combined with the biological knowledge that had emerged in the 1930s and 1940s, Roughley’s account of the steam trawl fishery in NSW was a history of overfishing and lack of management. In Fish and Fisheries in Australia he started his description of the nation’s sea fisheries by putting to rest once and for all the old argument about Australia’s large and underutilised marine resources by laconically stating that: “The southern hemisphere lacks the vast concentrations of fish characteristic of northern hemisphere waters, and there is nothing we can do about it.”822 He went on to describe how marine resources could be protected and urgently made a plea to reduce the trawling fleet so that at least a partial recovery of the trawling grounds could take place.823 In 1951 when Roughley was writing the first edition of the book, about twelve NSW steam trawlers were

819 NAA; Stanley Fowlers – Correspondence; Letter to Stanley Fowler from Theodor Roughley, December 26 1953 [P2783/1(2)]
820 Roughley, T., 1951.
821 Roughley, T., 1916.
822 Roughley, T., 1951, p. 163.
823 Roughley, T., 1951, p. 175.
fishing the south-east continental shelf and 40 to 50 Danish seiners. By the fifth edition of the book (published in 1961) Red Funnel, the only remaining steam trawling company, whose fleet had been laid up since 1958, had just resumed the fishery with one trawler and the seining industry was significantly reduced. Later that year Red Funnel gave up and steam trawling ceased. In his account, Roughley regretted the course of events that had lead to the closure of the industry and concluded:

“The calamitous ending if the once prosperous New South Wales trawling industry could have been avoided if the companies concerned had heeded the many warnings that they were heading to their own destruction by overfishing the limited grounds available to them.”

Rightfully, Roughley should have added various NSW and Commonwealth governments to the ones who had ignored the many warnings and displayed a lack of will to govern the marine resources in a sustainable manner.

Coincidentally, by the end of the 1950s the last of the key figures that had influenced the direction of fisheries policies in the first half of the twentieth century had disappeared. William John Dakin had retired from his professorship at Sydney University in 1948, but continued his affiliation with CSIRO as a councillor until he died on 2 April 1950. Harold Thompson died on 29 May 1957, while David George Stead, whose last work on marine biology was published posthumously, passed away on 2 August 1957. Stanley Fowler, who had retired from CSIRO in 1948, passed away on 23 January 1961, shortly after his friend Theodore Cleveland Roughley had died on 14 January 1961.

They had all worked in fisheries research with various degrees of schooling. Their approaches to fisheries management were very different, often in opposition to each other, but they all had envisioned a thriving Australian fishing industry, developed and advanced through scientific means. They were succeeded by people who accepted a more protection-oriented approach to marine resources and were ready to let scientific recommendations direct management policy.

824 Roughley, T., 1961, p 179.
In the NSW Fisheries Branch Roughley was succeeded as Superintendent of Fisheries in September 1952 by N. V. Harris, who, as the Fisheries Newsletter put it, had “spent all his Public Service career in the conservation of natural resources”.

Kesteven returned in 1960 to CSIRO’s Division of Fisheries and Oceanography as Assistant Chief. He came from a position as Chief of the Fisheries Biological Branch of FAO in Rome, Italy where, in the 1950s, he had witnessed the development of mathematically models to explain the dynamics of fish populations.

The Commonwealth Fisheries Act of 1952 had been created without a clear management objective in mind, but the new quantitative methods meant that fisheries scientists could provide new, substantial and measurable objectives for fisheries management based upon stock assessment. The new scientific based objectives for fisheries management were accepted by the State fisheries authorities. In NSW, at the Fisheries Branch’s Conference of Inspectors on June 1960 the inspectors were given a presentation about the principles behind scientific based fisheries management by N. E. Milward from CSIRO’s Division of Fisheries and Oceanography.

In May 1961 at the annual conference of State and Commonwealth fisheries officers, it was agreed that stock assessment should be a prerequisite of all fisheries management in Australia. While the objectives of fisheries management continued to be maximising returns, it was decided that it had to be on a basis consistent with maintaining Maximum Sustainable Yield (MSY).

The decision to put scientists in charges of formulating management policies was a turning point in the history of marine resource policy and the beginning of modern fisheries management practices in Australia. It was a testimony to the self-assurance of the State and Commonwealth officers that the agreement was made without consulting the relevant Ministers, who seem to have been unaware of the implications for future fisheries policy.

In reality the implementation of such management practice lay many years in the future because at the time very little data existed that could be used for stock assessment purposes.

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826 Fisheries Newsletter: N.V. Harris succeeds Roughley, October 1952, vol 11 no 10, p. 17.
827 SRNSW: State Fisheries; Conference of Inspectors, 7-8 June 1960 [10/41746].
and much of the basic biology of the species remained unknown. But the first important step towards more sustainable management practices had been taken.

**Conclusion**

The change in the Fisheries Branch’s will to govern the trawls fishery came about gradually, from the 1920s focus on productivity and protection of existing inshore fisheries to an increasing awareness of the need to conserve marine resources in the 1930s. A will to enforce resource protection was partly behind the NSW Governments post-war control of the Sydney Fish Market.

Unable to directly govern the steam trawl industry, market reforms played a large role in the Fisheries Branch’s management strategy. Mandatory licencing of agents in 1922 was motivated by bring an end to the agents profiteering of inshore fishermen. As the trawling industry became more successful the Branch became concerned that the trawling industry would outmatch the inshore industry.

Wanting to bring the steam trawl industry under the NSW fisheries legislation, the Branch proposed a new fisheries bill, but legislation was slow due to a lack of political interest. It was not before 1935 that a new Fisheries Act was passed. A legal case in 1937 proved that part of the 1935 Fisheries Act did apply to the steam trawl industry, even if their fishing activities took place in extra-territorial waters.

The Fisheries Branch increasingly sought scientific based management recommendations, but was hampered in implementing them because of complex multi-government interests.

The NSW Governments takeover of the Sydney Fish Market in 1945 was to improve fish marketing, but also ensured that the fishing industry complied with conservation regulation regarding minimum sizes of fish. The steam trawling companies blamed the market reforms their economical situation, not unsustainable fishing practices.

The 1948-52 scientific recommendation to reduce fishing on the south-east continental shelf, were not implemented, because, while NSW did have the will to regulate the fishery, they did not have the legislative power, and the trawling industry was not inclined to self-regulate. It
was not until the Commonwealth Fisheries Act of 1952 was passed, that tentative negotiations with the industry to reduce fishing effort began. But it was not before stock assessment became the basis for all fisheries management in Australia in 1961, that State and Commonwealth Governments took the first step towards more sustainable management practices.
Chapter 8
Conclusion

This work was founded on a premise that the history of the emergence and demise of steam trawling on the southeast coastal shelf of Australia from the mid 1860s to the early 1960s would illustrate the power of government initiatives and policies in establishing long-term patterns for marine exploitation and, additionally, would reveal how such systems are resilient to change. Moreover, it was based on the assumption that the analysis of historical documents from diverse sources on the subject would address a significant gap in Australian environmental history which, as a discipline, has largely overlooked the sea and the life within it. Finally, the research was initiated to explore a particular set of questions about how a public will to govern the fisheries evolved under the influence of statist developmentalism, and was based on a broad public call for governments to get involved in development projects in ways deemed entrepreneurial.

An exhaustive study of the NSW steam trawl fishery has provided valuable insight about why the fishery was maintained for nearly five decades, despite being both ecologically unsustainable and uneconomical, and in spite of a failure by State and Commonwealth governments to protect the shelf’s previously untapped marine resources. Furthermore, the NSW Steam trawl fishery, while modest by international standards, has provided an object lesson in problems facing marine resource management – a lesson whose insights are still relevant and could profitably inform policy, scholarship and science in the marine environment.

The project has also made substantive contributions to knowledge about the past and about people’s relationships with the sea. Earlier I made the point that internationally the history of the NSW steam trawl industry fits into a larger and mutually constitutive history of oceans and human culture. Marine history, and the history of fishing more generally, has received scant attention in scholarly writing. Environmental history – in Australia at least – is overwhelmingly land-based and this history of the NSW steam trawl fishery fills a gap in Australian scholarship on marine history and has opened up a whole new branch of marine environmental history.
To summarise the key findings:

Between 1865 and 1961 the public perception of marine resources found on the south-east continental shelf changed from being entirely development oriented to (sometimes reluctant) protectiveness. The catalyst for this change of perspective was the decline of the steam trawl fishery and the emergence of a critical body of fisheries scientists that could offer a biological basis for fisheries management.

As a reaction to a decline in landings from the fishing grounds near Sydney, Parliament passed NSW’s first fisheries act in 1865. In 1881 a NSW Fisheries Branch was created to manage the State fisheries. From around 1880 a public and political demand for fisheries development was repeatedly voiced in newspapers and the NSW Parliament, but private entrepreneurs did not show interest in investing in new fisheries. To open up new fisheries it was suggested by several Government investigations between 1880 and 1912 that the State provide support to the industry by funding exploration trawling, skilled immigration, hatching programs and building cooling facilities. It was believed that the sea outside the Colony contained large and inexhaustible fish resources; this belief was largely (scientifically) unsupported, and was based on English experiences from the North Sea and North Atlantic Ocean.

After Federation in 1901 it became the responsibility of the Fisheries Branch policy to support the development of existing coastal and estuary fisheries. Despite the preference by some members for a sea-fishery, Harald Dannevig was appointed in 1902 to operate a marine hatchery at Cronulla – similar to ones in the United States, Norway and Scotland. When experiments with restocking estuaries and introducing new marine species failed the hatchery was closed, and in 1908 Dannevig moved to Melbourne and became the first Commonwealth Director of Fisheries. In 1911 the Fisheries Branch’s board of honorary commissioners was replaced by public servants, and the Branch became less progressive and more focused on maintaining industry production and administrating the Fisheries Act.

The beginning of steam trawling in NSW

After Dannevig left, the Branch’s naturalist David G. Stead tried to redirect the Branch’s development policy towards marine research and sea fisheries development. Unsuccessful in
achieving changes in policy direction, in 1914 he convinced the Labor Government of the
day to establish a government owned, but commercially operated, trawling industry to
provide cheap fish for consumers. In 1915 the State Trawling Industry was established and
three new British-built steam trawlers were sourced from the UK. Later a further six ships
were built at the State Shipyard. Due to lack of ship building expertise and Australia’s
engagement in the First World War completion of the manufacture of the locally produced
vessels was very delayed, and they proved extraordinarily expensive and generally of a
quality inferior to the British vessels. To address the existing problems with costly fees to
fish-agents and the ambiguity of transactions at the fish market, the STI operated with an
unbroken link between resource extraction and the consumer. By building and running
facilities for catching, transporting, cooling and cleaning, and by selling fish directly to
consumers through State owned fish-shops, the STI was able to provide consumers with fish
more cheaply than they could source from private agents.

In an attempt to boost the supply of fish and support local coastal fisheries the STI
constructed cooling depots in the main fishing centres of NSW and bought local catches for
sale at its own shops. However plans for rapid business expansions put forward by David
Stead were not financed and with a political commitment to provide cheap fish to the public it
was impossible for the STI to finance its costs. By 1921 the NSW Government had lost
confidence in the STI and in 1923 it was closed with an accumulated loss of £309,522
pounds.

Growth and decline

The pioneering effort of the STI provided a starting point for private steam trawling
companies which, after purchasing STI’s assets cheaply, continued the fishery. Several
private steam trawling companies were establish in NSW after 1923 but many of them were
short-lived. By the end of the 1920s only Cam and Sons, A. A. Murrell and Red Funnel
Fisheries Pty. Ltd. remained. During the 1920s the industry expanded its operations by
increasing the number of trawlers. In 1929 fishing effort peaked with 18 trawlers operating.

The companies all followed the same business model of investing in second-hand trawlers
and conducting their own sales. By 1929 the three companies were landing between 6,600
and 6,800 tons of fish per annum from the south-east trawling grounds, or about half of the
total amount of fresh fish sold in NSW. Working closely together, there is some evidence that at times the companies acted as a cartel to increase profit.

The first sign of the industry’s decline came in 1928 when the flathead fishery on the ‘Home Ground’ collapsed, and total landings peaked the year after, signalling an overall decline and change in species composition throughout all the known trawling grounds. As the low catch rates continued throughout the 1930s, the trawling companies found it increasingly difficult to make a profit. The problems were aggravated by an ageing fleet that needed maintenance or replacement. In order to maintain landings the two largest companies, Red Funnel and Cam and Sons, began fishing at grounds off New Zealand, while Murrell succumbed to economic pressure and ceased its trawling operations. The outbreak of World War Two provided the companies with economic relief because the Australian Navy leased or bought most of the trawlers for minesweeping and kept them in repair.

How fisheries science failed to change the direction of policy

From 1914 to 1937, the NSW Fisheries Branch did not have a scientific officer and research was undertaken on an ad hoc basis, focussing on solving the acute problems facing coastal and inland fisheries. Since trawling took place on fishing grounds located outside State territorial limits, the NSW Government was reluctant to initiate their own marine fisheries research program, but supported a joint research program with the Commonwealth. In 1935 CSIR established a marine research division. With two aims to create new marine resources and undertake studies of marine biology, the Fisheries Division was split between its industry-development agenda and its scientific program.

In 1943, concern about the development-oriented approach to fisheries management, and about the steam trawl fishery in general, resulted in CSIR’s senior marine scientists putting forward a policy of scientifically-based management and fisheries control. After the War the Fisheries Division proposed a new national fisheries management authority directed by fisheries scientists. However, its program of biologically-based management and restricted resource exploitation was not politically acceptable in post-war Australia where there was a renewed interest in industry development. Consequently, when the Commonwealth Fisheries Offices was formed in 1946, its management strategy was directed by economic growth not by wise exploitation practices.
Disappointed by the policy direction, several of the Fisheries Division’s senior scientists left Australia to pursue international careers; some returned in the early 1960s bringing with them new ideas of population dynamics and measurable objectives for fisheries management.

**Consequence of market management by NSW Fisheries Branch**

The wartime period had been so lucrative for trawling companies that immediately after the war Red Funnel and A. A. Murrell invested in new steam trawlers. The post-war boom in steam trawl fishing was aided by high fixed prices for fish until 1952, but the financial injection and lucrative market could not compensate for the decline in flathead landings caused by overfishing. As a result, by 1949 earnings per vessel were lower than they were before the War. By 1950 only Cam and Sons and Red Funnel Trawlers remained in business, but were running at a loss.

During World War Two a system of fixed prices on fish controlled by the NSW Government had been put in place. In 1945 the Government further strengthened its control by taking over the operation of the Sydney Fish Market; this was achieved by cancelling all fish agents’ licences and making fish sales by the Government agent’s mandatory, thereby effectively reducing the large companies’ influence over the market. It was planned to establish a producer-controlled Fish Market Authority; however, because of internal conflict within the fishing industry, the Authority was not formed until 1963. The combination of loss of market dominance, compulsory agent fees and decline in landings of flathead finally broke the steam trawling industry in NSW. Between 1954 and 1961 the two remaining steam trawl companies brought their operations to a close.

**How a framework for fisheries management was created**

It was not until 1952 that a legal framework for implementing restrictive fishery policies was finally created by the Commonwealth. According to the Australian Constitution, all waters beyond three nautical miles off the coast, where most of the trawling grounds were located, were the responsibility of the Commonwealth. There had been no political interest in creating a national fisheries act until in 1951 when the Australian Parliament was faced with the threat of unrestricted Japanese fishing in Australian waters. Subsequently the first Commonwealth Fisheries Act was passed in 1952. The Act was created without a clear
management objective in mind, but CSIR fisheries scientists were instrumental in bringing new ideas of population dynamics and measurable objectives for fisheries management to the authorities’ attention. Consequently, in 1961, at the annual meeting of State and Commonwealth Fisheries Officers, a decision was made to make stock assessment (MSY) the basis for all fisheries management in Australia. The result was that long-standing policies of development-oriented management were changed towards more sustainable practices.

**How did a ‘will to govern’ marine resources evolve?**

The first institution to show a will to manage marine resources was the NSW Parliament, which in 1865 passed the Colony’s first fisheries legislation. Originally the motivation for the Act was to secure productivity by protecting resources; however, from the 1880s until the reorganisation of the Fisheries Branch in 1911, the will to govern resources was almost entirely oriented toward a will to develop. In NSW the culmination of this development-oriented policy was Stead’s proposal for a State Trawling Industry. However the intention behind the STI was not only industry development but also an expression of the Labor Government’s social policy. As such the STI represented both a specific political ideology and longer term development policies.

The first to show a will to govern that challenged the prevailing development-oriented approach were marine scientists at the CSIR’s Division of Fisheries. Through their studies they had become convinced that the biological basis for continued fisheries growth and unrestricted fishery was not supported. They were also convinced that they alone had the expertise to formulate sound management policies. Consequently, senior scientific personnel sought to influence the will to govern by gaining control over all fisheries management during the period 1943-46, through the Controller of Fisheries Office. After the War they unsuccessfully tried to change the general direction of fisheries management by recommending the establishment of a new Commonwealth fisheries authority, but because of a political preference for economic development the authority became focused on industry growth instead of sustainable fisheries practices.

Successive Commonwealth governments made no attempts to govern Australia’s marine resources; it was only when these resources became in risk of being exploited by other nations in 1951 that the Commonwealth showed a determination to govern and a legislative
framework for fisheries management in extra-territorial waters was created. Although legislation focused on restricting access and conservation of resources, management was not motivated by ecological concerns but rather by (national) self-interest, and the underlying impulse remained development-oriented.

Among members of the NSW Fisheries Branch the inclination to govern the activities of the steam trawl industry was evident from the mid 1920s but was motivated by market concerns, not ecological concerns. It was not until the Branch appointed a scientific officer in 1937 and it began supporting CSIR research that its members showed an emerging awareness of the need to govern marine resources. However, the impulse was not followed through with persistence when obstacles to new management initiatives arose. It was only when faced with tangible scientific proof in 1948 of the negative impact of trawling on stocks that the Fisheries Branch developed a will to govern the State’s steam trawling industry to conserve marine resources. The difficulties in negotiating responsible resource management in a multi-governmental system of overlapping authority and the slow development of robust Commonwealth legislative structures, forced the Fisheries Branch to use its control over fish marketing to ensure that the industry adhered to conservation regimes by enforcing regulations on landings of undersized fish.

The trawling companies did not show any will to govern their fishing activities, and generally opposed regulation (unless it was aimed at the competing seine industry) – with one notable exception: in 1928, when the flathead fishery on the Botany Ground collapsed, the trawling companies represented by Red Funnel, requested that the NSW Government provide scientific investigation into the flathead decline and used the information to devise a program of government management of trawling grounds. A key moment in the will to govern marine resources and push towards an ecological refocus of fisheries management was lost when the Fisheries Branch refused to acknowledge a depletion of resources and instead interpreted the situation as the companies trying to increase prices. The trawling companies made the request based upon an understanding of shared interests between the private and public sector; effectively a twentieth century version of ‘Colonial Socialism’. As the public-private relationship changed in the 1930s, the trawling companies stopped looking to the NSW Government for guidance.
In addition to the original research questions which I posed in the introduction to this thesis, two points of special interest have emerged: the resilience of the private trawling companies and the influence of bureaucrats in the formulation of management policies.

**The resilience of the private companies**

The private steam trawling companies showed a remarkable resistance to change, using the same technology and *modus operandi* in their fishing operations from 1923 to 1961. Lack of venture capital and strained finances can partly explain why the companies did not explore alternative methods of fishing in the 1930s (although they tried to explore alternative fishing grounds in New Zealand) but fails to explain why the companies chose to re-invest in steam trawlers after World War Two. Some of this reluctance might be attributed to a certain degree of conservatism among the owners, something that was particularly evident in Cam and Sons, where most of the family for two generations were involved in the company.

What has previously been overlooked is the extent to which the companies received support from government. While direct economic assistance did not happen, the companies received indirect support in the form of the STI, which had pioneered the fishery and developed a market for trawled fish. Also, about two-thirds of the companies trawlers were originally built as naval vessels or by the STI, and were often sold cheaply to the companies. During World War Two vessel contracts with the Navy provided income and reconditioning of the ageing fleet. After the War the retaining of fixed prices for fish secured a consistent level of high prices until the system was lifted in 1952.

One can speculate whether the development of sea fishing in NSW would have happened differently had it not been for the activities of STI in 1915-23, or if the private trawling companies would have been forced to close decades earlier if they had not received a capital injection during World War Two and the post-war period.

**The power of bureaucracy and bureaucrats**

In fisheries management bureaucrats were often the ones pushing for changes in policy. Once established, most management initiatives originated from within the NSW Fisheries Branch;
Ministers and politicians in general showed little interest in fisheries management and sometimes even postponed decisions against the recommendations of the Branch.

The different State and Commonwealth fisheries authorities’ policy decisions were often influenced by personal viewpoint and antipathies. While the different viewpoints within an authority could be conflicting and ambiguous they nevertheless coalesced sufficiently to shape public policy.

In the NSW Fisheries Branch, Frank Farnell’s insistence on the economic potential of deep-sea fishing and David Stead’s single-minded pursuit of a government-owned steam trawl industry forced industry development into a direction independent of private interests. At the same time a conservative core of senior officers’ focus on production and protection of inshore industries directed the Branch management policy for decades, independent of any political influences.

Within the Commonwealth, CSIR senior scientists were ultimately successful in challenging the prevailing policy of development by introducing measurable objectives for ecologically based management directly to the fisheries authorities. The self-assuredness of the bureaucracies is telling: when it was agreed that stock assessment should be the basis for all future fisheries management in Australia it happened without any Ministers present.

As many of the world’s fisheries stocks are fully or over-exploited there is an urgent need for governments to provide robust fisheries management. But experience shows that governments are often slow to implement management that will lead to changes in established fisheries practices. The study of the management of the NSW STI has offered key insights into why authorities were slow to implement a system of sustainable resource exploitation and how the perception of management was gradually changed. This study has shown that political dogma played a significant role in shaping public resource policy and that scientific recommendations alone cannot change such preconceived political agendas. However, as with all research, this work leaves unanswered questions, and two of particular interest are noted here.
First, further study into the history of the management of the fisheries on the south-east continental shelf of Australia from 1961 to the present may reveal how ideas about explicitly ecological and sustainable practices emerged were implemented within the fisheries. Since the second half of the twentieth century saw a rapid development of fisheries for new species, new technologies and a globalisation of the fresh fish market it will be important to investigate how well public institutions reacted to these changes with appropriate policies and consider to what degree they were unable or unwilling to change their management objectives accordingly.

Second, the history of the NSW STI has also demonstrated the potential of marine environmental history to provide powerful stories about human relationships with nature – stories that, in Australia at least, are just starting to be documented in relation to other-than terrestrial environments. The emerging understanding that marine resources on the continental shelf were not as abundant as previously believed was the beginning of a reorientation of Australia’s relationship with the sea. That reorientation is long overdue and will offer a fuller account of human interaction with Australia’s unique natural environments and species. Our knowledge about the history of Australians fisheries is still limited, and more research into the history of specific fisheries is needed if we want to fully explore how we have changed our marine environment and how – in turn – our own values, policies, science, commerce and practices have changed.
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<table>
<thead>
<tr>
<th>Asset</th>
<th>Construction began</th>
<th>Completed/delivered</th>
<th>Closed/sold</th>
<th>Estimated cost when completed</th>
<th>Actual cost when completed</th>
<th>Sold for or Value in 1922</th>
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<tbody>
<tr>
<td>Head Office &amp; Central Depot, Woolloomooloo Wharf</td>
<td>November 1913</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>First Newcastle State Fisheries Depot, Newcastle</td>
<td>November 1915</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Second Newcastle Retail Depot, Hunter Street, Newcastle</td>
<td>March 1919</td>
<td>February 1921</td>
<td></td>
<td></td>
<td></td>
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<td>Fish Shops:</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td>No. 1 Retail Depot Sydney, 98 Oxford Street</td>
<td>17 August 1915</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>No. 2 (First) Retail Depot Sydney, 31 Pitt Street</td>
<td>21 September 1915</td>
<td>November 1920</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>No. 3 (Second) Retail Depot Sydney 7 Pitt Street</td>
<td>November 1920</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>No. 4 Retail Depot Sydney, Corner of Hay and Castlereagh Street</td>
<td>5 January 1915</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>No. 5 Retail Depot Glebe, 75 Glebe Road</td>
<td>30 June 1916</td>
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<td></td>
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<td>July 1920</td>
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<td>26 March 1918</td>
<td>July 1920</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>No. 8 Retail Depot Balmain, 389 Darling Street</td>
<td>26 March 1918</td>
<td></td>
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<td></td>
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<tr>
<td>No. 9 Retail Depot Roseville, corner of Watson Road and Hancock Street</td>
<td>8 November 1918</td>
<td></td>
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<td></td>
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<td>No. 10 Retail Depot Marrickville, corner of Manning Road and Illawarra Road</td>
<td>8 August 1919</td>
<td></td>
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<td></td>
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<td>No. 11 Retail Depot Redfern, 141 Redfern Street</td>
<td>13 September 1919</td>
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<td>No. 12 Retail Depot Newcastle, Market Wharf (part of the Fish Depot)</td>
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<td></td>
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<td></td>
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<td>No. 13 Retail Depot Newcastle, Hunter Street West</td>
<td>8 December 1919</td>
<td>July 1920</td>
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<tr>
<td>No. 14 Retail Depot Maitland West, High Street</td>
<td>9 October 1919</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>No. 15 Retail Depot Lithgow, Main Street</td>
<td>12 October 1919</td>
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<td>No. 16 Retail Depot Orange, 53 Presley Street</td>
<td>1 October 1919</td>
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<td>No. 17 Retail Depot Goulburn, Aubum Street</td>
<td>14 October 1919</td>
<td></td>
<td></td>
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<td>No. 18 Retail Depot Parramatta, Church Street</td>
<td>7 November 1919</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>No. 19 Retail Depot Sydney, Central Railway Station corner of Eddy Av. and Pitt St.</td>
<td></td>
<td></td>
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<tr>
<td>No. 20 Retail Depot Katoomba, Main Street</td>
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<td>No. 21 Retail Depot Sydney, No 5 Wharf, Wolloomooloo (part of the Fish Depot)</td>
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<td></td>
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<td>No. 22 Retail Depot Bondi Junction, 13 Oxford Street</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>No. 23 Retail Depot Darlinghurst, 102 William Street</td>
<td></td>
<td></td>
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<td>No. 24 Retail Depot Newtown, 319 King Street</td>
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<td>Coastal Receiving Stations:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Maclean (Illawall) Fish Depot - Clarence River</td>
<td>1917</td>
<td>February 1918</td>
<td>June 1920</td>
<td>£ 11,045</td>
<td>£ 5,258</td>
<td></td>
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<tr>
<td>Port Stephens (Pindimar) Fish Depot</td>
<td>1916 or 1917</td>
<td>October 1917</td>
<td>August 1924</td>
<td>£ 12,529</td>
<td></td>
<td></td>
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<tr>
<td>Eden Fish Depot - Twofold Bay</td>
<td>July 1916</td>
<td>April 1920</td>
<td>July 1921/February 1922</td>
<td>£ 4,384</td>
<td></td>
<td></td>
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<tr>
<td>Wanda Indian Fish Depot - St. George's Basin</td>
<td>August 1919</td>
<td></td>
<td></td>
<td>£ 1,785</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ballina - Richmond River</td>
<td>never erected</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Bateman's Bay</td>
<td>never erected</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Port Macquarie Fish Depot - Macleay River</td>
<td>never erected</td>
<td></td>
<td></td>
<td></td>
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<td>Fishing and Transport Vessels:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>SSS Collibbo, Fish carrying vessel</td>
<td>September 17 1915</td>
<td>24 January 1919</td>
<td>23 January 1921</td>
<td>£ 15,730</td>
<td>£ 20,625</td>
<td>£ 10,000</td>
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<tr>
<td>SSSRor-ep-Mul, Investigation and net fishing vessel</td>
<td>November 1916</td>
<td>April 1915</td>
<td>Sold on completion to QLD Govt.</td>
<td>£ 26,227</td>
<td>£ 32,000</td>
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<td>SSSBrookerie, (trawler)</td>
<td>11 November 1915</td>
<td>5 May 1919</td>
<td>August 1923</td>
<td>£ 12,500</td>
<td>£ 23,725</td>
<td></td>
</tr>
<tr>
<td>SSSDunmore, (trawler)</td>
<td>12 November 1915</td>
<td>24 July 1919</td>
<td>October 1923</td>
<td>£ 12,500</td>
<td>£ 23,725</td>
<td></td>
</tr>
<tr>
<td>SSSDurnerbee, (trawler)</td>
<td>13 November 1915</td>
<td>13 September 1919</td>
<td>November 1923</td>
<td>£ 12,500</td>
<td>£ 23,725</td>
<td></td>
</tr>
<tr>
<td>SSSDibbiu, (trawler)</td>
<td>14 November 1915</td>
<td>19 August 1919</td>
<td>£ 12,500</td>
<td>£ 23,725</td>
<td></td>
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<tr>
<td>SSSBroogle, (trawler)</td>
<td>April 1915</td>
<td></td>
<td></td>
<td>£ 13,190</td>
<td></td>
<td></td>
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<tr>
<td>SSSKora baja, (trawler)</td>
<td>April 1915</td>
<td></td>
<td></td>
<td>£ 13,190</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SSSGurudaal, (trawler)</td>
<td>May 1915</td>
<td></td>
<td></td>
<td>£ 13,190</td>
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<td></td>
</tr>
</tbody>
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Appendix 1: Assets of the Steam Trawl Industry
Appendix 2: Steam trawlers working from NSW

SS Albert San (former Brolga), 1915-1926

**Technical**

<table>
<thead>
<tr>
<th>Official number:</th>
<th>N/A</th>
</tr>
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<tbody>
<tr>
<td>Launched:</td>
<td>N/A</td>
</tr>
<tr>
<td>Gross Tonnage:</td>
<td>220</td>
</tr>
<tr>
<td>Net Tonnage:</td>
<td>N/A</td>
</tr>
<tr>
<td>Length:</td>
<td>115 ft</td>
</tr>
<tr>
<td>Breath:</td>
<td>22 ft</td>
</tr>
<tr>
<td>Draught:</td>
<td>12 ft</td>
</tr>
<tr>
<td>Engine:</td>
<td>Triple expansion compound steam engine</td>
</tr>
<tr>
<td>Maximum speed:</td>
<td>8-10 knots</td>
</tr>
<tr>
<td>Built:</td>
<td>Smith’s Dock Middleborough-on-Tees, United Kingdom, 1915</td>
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</tbody>
</table>

**Fishing activity in NSW**
From 1915 to 1923 and 1926

**History**
Built to NSW State Trawling Industry, cost about £7,500
April 1915: Arrived in Port Jackson
October 1917 to February 1918: Commissioned by Royal Australian Navy for mine sweeping around the NSW coast and Gabo Island
May 1923: Sold for £4,400 cash to Sanford Ltd, Auckland, New Zealand and renamed SS Albert San
From December 1924: Fishing for Sandford Ltd, out of Sydney
Late 1925: Sold to Coastal Trading Company Ltd as a transport vessel
August 1926: Ran ashore on Beware Reef off the East Gippsland coast, Victoria

SS Alfie Cam (former Asama), 1920-?

**Technical**

<table>
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<tr>
<th>Official number:</th>
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<tbody>
<tr>
<td>Launched:</td>
<td>N/A</td>
</tr>
<tr>
<td>Gross Tonnage:</td>
<td>282</td>
</tr>
<tr>
<td>Net Tonnage:</td>
<td>N/A</td>
</tr>
<tr>
<td>Length:</td>
<td>128 ft</td>
</tr>
<tr>
<td>Breath:</td>
<td>23.5 ft</td>
</tr>
<tr>
<td>Draught:</td>
<td>12.6 ft</td>
</tr>
<tr>
<td>Engine:</td>
<td>N/A</td>
</tr>
<tr>
<td>Maximum speed:</td>
<td>N/A</td>
</tr>
<tr>
<td>Built:</td>
<td>WA, Australia, 1920</td>
</tr>
</tbody>
</table>

**Fishing activity in NSW**
From 1928? to 1948?
Monthly landing records exists for 1929 until June 1940 and for 1946 to 1947
History
1928 or 1929: Bought by Cam and Sons
1934: Incorporated into Cam and Sons Ltd, valued at about £2,500
June 1940: Requisitioned by Royal Australian Navy for minesweeping off Freemantle
June 1943: Bought by Royal Australian Navy, price £10,830
October 1944: Sold back to Cam and Sons, price unknown

SS *Awatere* (former HMNZS *Awatere*), 1942-?

Technical

<table>
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<tr>
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<tr>
<td>Launched:</td>
<td>1942</td>
</tr>
<tr>
<td>Gross Tonnage:</td>
<td>540</td>
</tr>
<tr>
<td>Net Tonnage:</td>
<td>N/A</td>
</tr>
<tr>
<td>Length:</td>
<td>135 ft</td>
</tr>
<tr>
<td>Breath:</td>
<td>N/A</td>
</tr>
<tr>
<td>Draught:</td>
<td>N/A</td>
</tr>
<tr>
<td>Engine:</td>
<td>N/A</td>
</tr>
<tr>
<td>Maximum speed:</td>
<td>10 knots</td>
</tr>
<tr>
<td>Built:</td>
<td>Stevenson &amp; Cook, Port Chalmers, Otago, New Zealand, 1942</td>
</tr>
</tbody>
</table>

Fishing activity in NSW
Probably from November 1946 to 1948?
Total landing records exists for 1946/47

History
Delivered to the Royal New Zealand Navy as a Castle Class minesweeper, average cost on delivery £73,230 (NZ)
1946: mercantile and bought by A. A. Murrell for about £15,250 (NZ)

SS *Bar-ea-mul*, 1919-1950

Technical

<table>
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<th>Official number:</th>
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<tbody>
<tr>
<td>Launched:</td>
<td>April 1919</td>
</tr>
<tr>
<td>Gross Tonnage:</td>
<td>237 (?)</td>
</tr>
<tr>
<td>Net Tonnage:</td>
<td>N/A</td>
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<tr>
<td>Length:</td>
<td>N/A</td>
</tr>
<tr>
<td>Breath:</td>
<td>N/A</td>
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<tr>
<td>Draught:</td>
<td>N/A</td>
</tr>
<tr>
<td>Engine:</td>
<td>N/A</td>
</tr>
<tr>
<td>Maximum speed:</td>
<td>N/A</td>
</tr>
<tr>
<td>Built:</td>
<td>T.F. Morrison &amp; Sinclair, Balmain, NSW (hull and fitting), Government Dockyard, Walsh Island, Newcastle, NSW (machinery) Building commenced November 1916, delivered in 4 April 1919</td>
</tr>
</tbody>
</table>

Fishing Activity in NSW
1925 to 1950
The only trawler which fished through the entire war (except from January to March 1944)
Monthly landing records exists for 1929 until June 1946, catch records until 1948

**History**
Built to NSW State Trawling Industry as a Fishing and Investigation vessel
April 1919: Sold to Queensland Government (prior to completion) at a price of £32,000 (construction price was £26,227) as the QLD Government, inspired by NSW, wanted to establish a deep sea fishing industry.
December 1920 to December 1922: Laid up on Brisbane River
December 1922: Sold to coal merchant Robert William Miller (R.W. Miller and Company, Pitt Street, Sydney, NSW) for £4,500
1924: Sold to ‘Our Boys Fisheries’ for £8,000 and probably renamed *Thistle*
October 1925: sold to Douglas Paul Hann, Castlereagh Street, Sydney, NSW) for £4,250 in quarterly installments at an annual interest rate of 7 percent
December 1925: Amalgamated into Red Funnel Fisheries Ltd (value of vessel approximately £13,900 with an outstanding debt of £2,823)
Transferred to Red Funnel Trawlers Pty Ltd
January 1940: Royal Australian Navy rejected use of the vessel due to the poor condition of the hull
December 1950: Scuttled off Sydney, NSW

**SS Beryl II, 1914 - ?**

**Technical**

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<tr>
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<tr>
<td>Length:</td>
<td>121 ft 9”</td>
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<td>Breath:</td>
<td>22 ft 1”</td>
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<td>Draught:</td>
<td>12 ft 2”</td>
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<tr>
<td>Engine:</td>
<td>N/A</td>
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<tr>
<td>Maximum speed:</td>
<td>9 knots</td>
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<tr>
<td>Built:</td>
<td>Selby, United Kingdom, 1913 or 1914</td>
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**Fishing Activity in NSW**
1926 to 194?
Monthly landing records exists for 1929 until September 1939 and total landing records for 1946/47

**History**
Pre-1926: Owned by Kingston Trawling Co., Hull, United Kingdom
1926: Bought by Cam and Sons
1938: Tried sold to Commonwealth Develop and Immigration Commission as investigation trawler for £12,000
1934: Incorporated into Cam and Sons Ltd in, valued at about £2,500
September 1939: Requisitioned by Royal Australian Navy for minesweeping off Brisbane and Townsville (estimated value based on earnings by Cam and Sons Pty. Ltd. £20,000)
June 1943: Bought by Royal Australian Navy for ca. £10,830
May or July 1946: Returned/Sold back to Cam and Sons

**SS Camro (former Jane Wright, former Expanse, late Dawn) 1918 - 1939**

### Technical

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<th>Details</th>
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<td>Built:</td>
<td>1918, John Duthie Torre Shipbuilding Company, Aberdeen, Scotland, United Kingdom. Yard no. 444. Steel construction. Type of vessel: Ketch (Drifter, according to the Australian National Shipwrecks database)</td>
</tr>
</tbody>
</table>

### Fishing activity in NSW

1927 – 1933
Last monthly landing records existing is for December 1930

### History

Owned by Ministry of Agriculture and Fisheries, Lowestoft as *Expanse*
1923: Renamed *Jane Wright* PL97 and owned by Dixon & Shipper, Peel, Isle of Man
1927: Left Fleetwood for Melbourne
Sold to Victorian Fisheries Pty Ltd, Melbourne, price £6,000
1927: Bought by Cam and Sons, price £7,000. Renamed *Camro*
November 1928: Offered for sale to Australian Fisheries Conference for £7,000, all gear inclusive
1933: Out of service
1938: Sold (according to Cam and Sons’ history)
March 1939: Scuttled on Sydney disposal area by Cam and Sons
SS Charlie Cam (former Dibbiu) 1919-1932

Technical

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<tr>
<td>Net Tonnage:</td>
<td>77</td>
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<tr>
<td>Length:</td>
<td>35.66 meters</td>
</tr>
<tr>
<td>Breath:</td>
<td>6.7 meters</td>
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<tr>
<td>Draught:</td>
<td>3.57 meters</td>
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<tr>
<td>Engine:</td>
<td>Triple expansion steam engine</td>
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<tr>
<td>Maximum speed:</td>
<td>N/A</td>
</tr>
<tr>
<td>Built:</td>
<td>Government Dockyard, Walsh Island, Newcastle, NSW. Ordered 11 November 1915, keel laid 13 November 1916, completed 19th August 1919 (Sister ship to Dur-een-bee),</td>
</tr>
</tbody>
</table>

Fishing Activity in NSW

From 1919 to 1932

History

Build to NSW State Trawling Industry, end cost about £23,725 (including outfitting), original price estimate from Government Dockyard was £12,500
After May 1923: Sold to NSW Department of Public Works, NSW for £ 3,500 cash to be used as tugboat
1925: Bought by Cam and Sons
1926: Registered in Sydney 20/1926
November 1928: Tried sold to Commonwealth Develop and Immigration Commission as investigation trawler for £12.000
June 1932: Wrecked at Bunga Head, NSW

SS David Blake 1918-1934

Technical

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<td>Net Tonnage:</td>
<td>78</td>
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<td>Length:</td>
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<tr>
<td>Draught:</td>
<td>3.69 meters</td>
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<tr>
<td>Engine:</td>
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<tr>
<td>Maximum speed:</td>
<td>N/A</td>
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<tr>
<td>Built:</td>
<td>Hall, Russell &amp; Co, Aberdeen, Scotland, United Kingdom (Yard number 633), 1918</td>
</tr>
</tbody>
</table>

Fishing Activity in NSW

From 1927 to 1934

Monthly landing records exists for 1929 to March 1934
**History**
Build to the British Admiralty
1921: Sold by the British Admiralty to J. M. Davidson, Aberdeen, Scotland
1926: Owned by G. K. Grimmer & Co.
1926: Bought by A. A. Murrell, price and cost of delivery in Sydney approximately £10.000.
1926: Registered in Sydney 23/1926
March 1934: Wrecked on Mimosa Bay, Araganui Beach (Sapphire Coast), NSW

**SS Durraween* (former Seville), 1919 - 56**
*Sometimes spelled “Daraween”*

<table>
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<tr>
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<tr>
<td>Launched:</td>
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<td>271</td>
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<tr>
<td>Net Tonnage:</td>
<td>N/A</td>
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<tr>
<td>Length:</td>
<td>125.7 ft</td>
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<tr>
<td>Breath:</td>
<td>23.5 ft</td>
</tr>
<tr>
<td>Draught:</td>
<td>12.7 ft</td>
</tr>
<tr>
<td>Engine:</td>
<td>Triple expansion steam engine by National Shipbuilding Co Ltd, Goderich, Ontario, Canada</td>
</tr>
<tr>
<td>Maximum speed:</td>
<td>N/A</td>
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</table>

**Fishing Activity in NSW**
From 192? To 1951?
Monthly landing records exists for 1929 to June 1940, catch records 1938 to 1940 and 1946 to 1951

**History**
January 1917: Ordered by Admiralty
August 1918: Commissioned in the Royal Canadian Navy
January 1919: Laid up
1920: Accepted offer of Rose Street Foundry & Engineering Co Ltd, Inverness (Captain D. J. Munro) for reconditioning and lay-up prior to sale. Brought over at the British Admiralty’s expense
August 1926: Sold to Boston Deep Sea Fishing and Ice Ltd, Grimsby
September 1926: Renamed *Seville*
1928: Sold to Red Funnel Fisheries
August 1928: Renamed *Durraween* sailed to Sydney with *Googwai*
1930: registered in Sydney, NSW
December 1937: Collided with SS *Wanganella* near Montagne Island, sustained damage to bow
June 1940: Commissioned by Royal Australian Navy. Valued by Red Funnel Trawlers for takeover by Royal Australian Navy: £25,000, Lloyds Surveyor estimated the value of the ship at requisition to be £8,000
October 1946: Returned to Red Funnel Trawlers (Estimated cost of reconversion was £9,500 in October 1945 but in May 1946 increased to £22,000 due to renewal in decking and superstructures. Paid by Royal Australian Navy.
Probably 1956: Stripped at Mchons Point, probably scuttled by Red Funnel Trawlers

**SS Dur-een-bee*, 1919-42**
* sometimes spelled Dureenbee

**Technical**

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<tr>
<td>Gross Tonnage:</td>
<td>220</td>
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<tr>
<td>Net Tonnage:</td>
<td>N/A</td>
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<tr>
<td>Length:</td>
<td>35.66 meters</td>
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<tr>
<td>Breath:</td>
<td>6.7 meters</td>
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<tr>
<td>Draught:</td>
<td>3.57 meters</td>
</tr>
<tr>
<td>Engine:</td>
<td>Triple expansion steam engine</td>
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<tr>
<td>Maximum speed:</td>
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</table>

**Fishing Activity in NSW**

From 1919 to 1942
Monthly landing records exists for 1929 until August 1942

**History**

Build to NSW State Trawling Industry, end cost about £23,725 (including outfitting). Original price estimate from Government Dockyard was £12,500
November 1923: Sold to Douglas Paul Hann, Castlereagh Street, Sydney, NSW for £6,500 incl. coal stores. £2,000 upfront and the rest in 12 quarterly installments
December 1925: Amalgamated into Red Funnel Fisheries Ltd (value of vessel approximately £13,900 with an outstanding debt of £1500
Between 1933 and 1935: Sold to Cam and Sons (Probably as part of the liquidation of Red Funnel Fisheries Ltd 1933-1935)
August 1942: Attacked by Japanese submarine and wrecked North of Batemans Bay, NSW. 3 killed, extensive damage over waterline with funnel shot away and all superstructure smashed and burned
SS Gibbsland 1908 - ?

Technical

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<td>Length:</td>
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<td>Draught:</td>
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<td>Engine:</td>
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<tr>
<td>Maximum speed:</td>
<td>N/A</td>
</tr>
<tr>
<td>Built:</td>
<td>1908 as a tourist passenger carrier, converted to fish transport vessel and trawler</td>
</tr>
</tbody>
</table>

Fishing Activity in NSW

1941
Only monthly landing records existing is from February to October 1941, catch record for 1941

History

1940: Bought by Red Funnel Trawlers Pty Ltd
November 1940: Licensed
June 1942: Commissioned by RAN, worked as a navigational training ship, minefield tender and boom defense vessel
June 1943: Purchased by RAN, price £10,462
May 1944: Released to Red Funnel Trawlers Pty Ltd

SS Goolgwai, (former Almeria) 1918-1955

Technical

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<table>
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<td>121</td>
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<tr>
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<td>23.5 ft</td>
</tr>
<tr>
<td>Draught:</td>
<td>12.7 ft</td>
</tr>
<tr>
<td>Engine:</td>
<td>Triple expansion steam engine built by National Shipbuilding Company Ltd. Goderich, Ontario, Canada</td>
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<tr>
<td>Maximum speed:</td>
<td>N/A</td>
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</table>

Fishing Activity in NSW

From 1928 to 1955
Monthly landing records exists for 1929 until August 1939, catch records 1938-1939 and 1947-1955
History
January 1917: Ordered by British Admiralty
1918: Commissioned in Royal Canadian Navy
January 1919: Laid up
1920: Accepted offer of Rose Street Foundry & Engineering Co Ltd, Inverness (Captain D. J. Munro) for reconditioning and lay-up prior to sale. Brought over at the British Admiralty’s expense
August 1926: Sold to Boston Deep Sea Fishing & Ice Co Ltd, Fleetwod (Basil A. Parkes, Manager)
September 1926: Renamed Almeria (FD117)
1928: Sold to Red Funnel Trawlers Pty Ltd
September 1928: Renamed Goolgawai and sailed for Sydney with Durraween
December 1928: Registered in Sydney
September 1939: Requisitioned by Royal Australian Navy for minesweeping. Valued by Red Funnel Trawlers for takeover by Royal Australian Navy: £25,000, Lloyds Surveyor estimated the value of the ship at requisition to be £9,000
June 1947: Returned to Red Funnel Trawlers Pty Ltd (Estimated cost of reconversion was £9,500 in October 1945 and £22,000 in May 1946 due to renewal in decking and superstructures. Paid by Royal Australian Navy)
May 1955: Wrecked at Long Bay, Malabar north side, Sydney, NSW, Estimated value of the ship was £ 10,000

SS Goonambee*, 1917-1956
*Sometimes spelled Goonambie

Technical

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<tr>
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<tr>
<td>Net Tonnage</td>
<td>N/A</td>
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<tr>
<td>Length</td>
<td>117 ft</td>
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<tr>
<td>Breath</td>
<td>22.1 ft</td>
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<tr>
<td>Draught</td>
<td>13.8 ft</td>
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<tr>
<td>Engine</td>
<td>N/A</td>
</tr>
<tr>
<td>Maximum speed</td>
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</tr>
</tbody>
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Fishing Activity in NSW
From 1917 to 1955
Monthly landing records exists for December 1944

History
Build to NSW Steam Trawl Industry, End cost about £23,725 (including outfitting), original price estimate from Government Dockyard was £12,500
After May 1923: Sold to Turcabia Fisheries Ltd for £3,500 (terms twelve months).
1924: Sold to Carlyon Ltd, Newcastle for £8,000. According to Red Fisheries Ltd, Carlyon Ltd paid £15,000 for the trawler incl. gear, machinery plants and stock-in hand.
January 1926: Sold to Red Funnel Fisheries Ltd. on, cost £12,000
After 1934: Sold to Cam and Sons (Probably as part of the liquidation of Red Funnel Fisheries Ltd 1933-1935)
June 1940: Requisitioned by Royal Australian Navy for minesweeping off Hobart
June 1943: Bought by Royal Australian Navy for £10.830
Probably May 1944: Sold back to Cam and Sons Ltd
1954: Sold to J. Reid, after liquidation of Cam and Sons Ltd
1956: Sold for scrap

SS Goorangai, 1917-1940

Technical
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<tr>
<td>Length:</td>
<td>117 ft</td>
</tr>
<tr>
<td>Breath:</td>
<td>22.1 ft</td>
</tr>
<tr>
<td>Draught:</td>
<td>13.8 ft</td>
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<tr>
<td>Engine:</td>
<td>N/A</td>
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<tr>
<td>Maximum speed:</td>
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Fishing Activity in NSW
From 1917 to 1940
Monthly landing records exists for 1929 until September 1939

History
Build to NSW State Trawling Industry, end cost about £23,725 (including outfitting), original price estimate from Government Dockyard was £12,500
1923: Sold to Charles Caminiti (Cam and Sons, Sydney) for £3,500 (terms five years with quarterly installments)
August 1934: Taken over by Cam and Sons Ltd, value of about £2,500
April 1939: Insured by Cam for £7,000
September 1939: Requisitioned by Royal Australian Navy. Estimated value based on earnings by Cam and Sons Pty. Ltd. £20,000. Lloyds Register of Shipping, 2 November 1939, recorded a market value of £3,500
November 1940: Collided with HMAS Duntroon outside Port Phillip Heads, Victoria and sank.
1942: Cam and Sons Ltd was compensated £9,500 for the value of the vessel
SS Guundaal* (former Gilbert San, former Guundaal), 1915-1929

*sometimes spelled Gunundaal

Technical

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<td>83</td>
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<td>Breath:</td>
<td>6.7 meters</td>
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<td>Draught:</td>
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<tr>
<td>Engine:</td>
<td>Triple expansion steam engine</td>
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<tr>
<td>Maximum speed:</td>
<td>N/A</td>
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<tr>
<td>Built:</td>
<td>1915, Smith’s Dock Middleborough-on-Tees, United Kingdom (launched: 03/12/1914, completed: 01/1915). Sister ship to Koraaga. Steel construction. Yard number: 595</td>
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Fishing Activity in NSW
From 1915 - 1923 and 1925-1929

History
Build to NSW State Trawling Industry, arrived in Port Jackson on 14 May 1915, Cost about £7,500
October 1917 to February 1918: Requisitioned by Royal Australian Naval Brigade for minesweeping duties off Gabo Island, Victoria
Between May and November 1923: Sold for £3,400 (cash) to Stanford Ltd, Auckland, New Zealand and renamed Gilbert San
1925: Fished for Stanford Ltd out of Sydney
1925: Sold to Costal Trawling Co. Ltd., Sydney, NSW and renamed Gunundaal. Price £9,000 over 12 months
October 1926: Sold to Red Funnel Fisheries Ltd. for £14,500.
November 1929: Ran ashore and sank on Cape Howe, Sapphire Coast, NSW

SS Koraaga, 1915-1931

Technical

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<td>Breath:</td>
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<td>Draught:</td>
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<td>Engine:</td>
<td>Triple expansion steam engine</td>
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<tr>
<td>Maximum speed:</td>
<td>N/A</td>
</tr>
<tr>
<td>Built:</td>
<td>1915, Smith’s Dock Middleborough-on-Tees, United Kingdom</td>
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Fishing Activity in NSW
From 1915 to 1931
Monthly landing records exists for 1929 until April 1931

**History**
Build to NSW State Trawling Industry, arrived in Port Jackson on 29 April 1915, Cost: about £7,500
1917: Requisitioned by Royal Australian Naval Brigade for minesweeping duties
After May 1923: Sold to Costal Trawling Co Ltd for £8,000, paid £1,000 deposit rest in five year term
1923: Registered in Sydney, 26/1923
October 1926: Sold to Red Funnel Fisheries Ltd for £14,500
September 1931: Struck reef and wrecked on Gerringong, Black Head, NSW (Captain James Reid)

**SS Korowa, (former St. Lolan, former Cape St. Vincent , former Edward McGuire) 1919-1955**

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<td>148</td>
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<td>Length:</td>
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<td>Breath:</td>
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<td>Draught:</td>
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<td>Engine:</td>
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<td>Maximum speed:</td>
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<tr>
<td>Built:</td>
<td>Cochrane &amp; Sons Ltd, Selby, 1919</td>
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**Fishing Activity in NSW**
From 1937 to 1955
Catch records exists for 1938-39 and 1946-1955

**History**
May 1919: Launched by Cochrane & Sons Ltd, Selby (Yd.No.894) (“Mersey” class) for The British Admiralty as Edward McGuire
December 1919: Sold to West Riding Steam Trawling Co Ltd, Hull (Thomas Hudson, manager) as fishing vessel.
January 1920: Renamed Cape St. Vincent (H139)
October 1928: Sold to H. Croft Baker & Sons Ltd, Grimsby and renamed St. Lolan
April 1934: Sold to Boston Deep Sea Fishing & Ice Co Ltd, Fleetwood (Basil A. Parkes, manager)
May 1937: Sold to Red Funnel Trawlers Pty Ltd
July 1937: Renamed Korowa
14.9.1939: Requisitioned for war service (Royal Australian Navy) and fitted out for minesweeping duties
September 1939: Requisitioned by Royal Australian Navy for minesweeping off Melbourne. Valued by Red Funnel Trawlers for takeover by Royal Australian Navy: £30,000 Lloyds Surveyor estimated the value of the ship at requisition to be £9,000
February 1946: Retuned to Red Funnel Trawlers. Cost of reconversion about £12,000, supervised by Red Funnel Trawlers, paid by Royal Australian Navy
1955: Sold for demolition.

**SS Maldanna (Former HMNZS Aroha), 1942 - ?**

**Technical**

<table>
<thead>
<tr>
<th>Official number:</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Launched:</td>
<td>N/A</td>
</tr>
<tr>
<td>Gross Tonnage:</td>
<td>540 tons</td>
</tr>
<tr>
<td>Net Tonnage:</td>
<td>N/A</td>
</tr>
<tr>
<td>Length:</td>
<td>135 ft</td>
</tr>
<tr>
<td>Breath:</td>
<td>N/A</td>
</tr>
<tr>
<td>Draught:</td>
<td>N/A</td>
</tr>
<tr>
<td>Engine:</td>
<td>N/A</td>
</tr>
<tr>
<td>Maximum speed:</td>
<td>10 knots</td>
</tr>
<tr>
<td>Built:</td>
<td>8 September 1942, Stevenson &amp; Cook, Port Chalmers, Otago, New Zealand. Castle Class</td>
</tr>
</tbody>
</table>

**Fishing Activity in NSW**

From 1946 to 1958
Total landing records exists for 1946 until 1958

**History**
Delivered to the Royal New Zealand Navy as minesweeper, approximate cost on delivery £73,230 (NZ)
1946: Mercantile and bought by Red Funnel Trawlers, cost about £16,700 (NZ)

**SS Mary Cam (former Joule), 1918-1956**

**Technical**

<table>
<thead>
<tr>
<th>Official number:</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Launched:</td>
<td>N/A</td>
</tr>
<tr>
<td>Gross Tonnage:</td>
<td>209 or 202</td>
</tr>
<tr>
<td>Net Tonnage:</td>
<td>N/A</td>
</tr>
<tr>
<td>Length:</td>
<td>115.8 ft</td>
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<tr>
<td>Breath:</td>
<td>22.2 ft</td>
</tr>
<tr>
<td>Draught:</td>
<td>12.1 ft</td>
</tr>
<tr>
<td>Engine:</td>
<td>N/A</td>
</tr>
<tr>
<td>Maximum speed:</td>
<td>N/A</td>
</tr>
<tr>
<td>Built:</td>
<td>1918 by Fisher’s in Glasgow, Scotland, United Kingdom.</td>
</tr>
</tbody>
</table>

**Fishing Activity in NSW**

From 1929 To 1956

**History**
About 1929: Bought by Cam and Sons
1934: Incorporated into Cam and Sons Ltd, value of about £2,500
May 1942: Requisitioned by Royal Australian Navy for minesweeping off Adelaide
June 1943: Bought by Royal Australian Navy for about £10,830
July 1946: Sold back to Cam and Sons, began operating as fishing vessel soon after
1954: Sold to Alfie Cam, Pyrmont, after the liquidation of Cam and Sons
1956: Sold for scrap

SS Matong, (former HMNZS Waiho), 1944 - ?

Technical
<table>
<thead>
<tr>
<th>Official number:</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Launched:</td>
<td>N/A</td>
</tr>
<tr>
<td>Gross Tonnage:</td>
<td>540</td>
</tr>
<tr>
<td>Net Tonnage:</td>
<td>N/A</td>
</tr>
<tr>
<td>Length:</td>
<td>135</td>
</tr>
<tr>
<td>Breath:</td>
<td>N/A</td>
</tr>
<tr>
<td>Draught:</td>
<td>N/A</td>
</tr>
<tr>
<td>Engine:</td>
<td>N/A</td>
</tr>
<tr>
<td>Maximum speed:</td>
<td>10 knots</td>
</tr>
<tr>
<td>Built:</td>
<td>19 February 1944 by Stevenson &amp; Cook, Port Chalmers, Otago, New Zealand. Castle Class</td>
</tr>
</tbody>
</table>

Fishing Activity in NSW
From 1946 to 1958
Catch records from 1947 until 1958.

History
Delivered to the Royal New Zealand Navy as minesweeper, average cost on delivery £73,230 (NZ)
1946: Mercantile and bought by Red Funnel Trawlers Ltp, cost about £ 16,700 (NZ), it probably started fishing November or December 1946

SS Millimumul (former Gunner), 1918-1941

Technical
<table>
<thead>
<tr>
<th>Official number:</th>
<th>132765</th>
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<tbody>
<tr>
<td>Launched:</td>
<td>N/A</td>
</tr>
<tr>
<td>Gross Tonnage:</td>
<td>287</td>
</tr>
<tr>
<td>Net Tonnage:</td>
<td>113</td>
</tr>
<tr>
<td>Length:</td>
<td>39.6 meters</td>
</tr>
<tr>
<td>Breath:</td>
<td>7.16 meters</td>
</tr>
<tr>
<td>Draught:</td>
<td>3.9 meters</td>
</tr>
<tr>
<td>Engine:</td>
<td>N/A</td>
</tr>
<tr>
<td>Maximum speed:</td>
<td>N/A</td>
</tr>
<tr>
<td>Built:</td>
<td>Smith Dock Co. South Bank-on-Tees, United Kingdom, 1918. Steel construction</td>
</tr>
</tbody>
</table>

Fishing Activity in NSW
From 1926 to 1941
Catch records exists for 1938 until 1941
History
Delivered to British Admiralty for mine sweeping
Unknown: Possible sold to Tahiti and sailed as rum runner to America
June 1926: Bought by Red Funnel Fisheries Ltd
Later transferred to Red Funnel Trawlers Pty Ltd
March 1941: Sunk by a mine off Barren Joey, 7 lives lost.

SS Moona, (former HMNZS Waima), 1943 - ?

Technical

<table>
<thead>
<tr>
<th>Official number</th>
<th>N/A</th>
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</thead>
<tbody>
<tr>
<td>Launched</td>
<td>N/A</td>
</tr>
<tr>
<td>Gross Tonnage</td>
<td>540</td>
</tr>
<tr>
<td>Net Tonnage</td>
<td>N/A</td>
</tr>
<tr>
<td>Length</td>
<td>135 ft</td>
</tr>
<tr>
<td>Breath</td>
<td>N/A</td>
</tr>
<tr>
<td>Draught</td>
<td>N/A</td>
</tr>
<tr>
<td>Engine</td>
<td>N/A</td>
</tr>
<tr>
<td>Maximum speed</td>
<td>10 knots</td>
</tr>
<tr>
<td>Built</td>
<td>11 December 1943 by Stevenson &amp; Cook, Port Chalmers, Otago, New Zealand, Castle Class</td>
</tr>
</tbody>
</table>

Fishing Activity in NSW
From 1946 to 1961
Catch records exists for 1947 until 1961

History
Delivered to the Royal New Zealand Navy as minesweeper, average cost on delivery £73,230 (NZ)
1946: Mercantile and bought by Red Funnel Fisheries Ltd for about £16,700 (NZ). Start fishing from August or September 1946.

SS Mulloka, ?

Technical

<table>
<thead>
<tr>
<th>Official number</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Launched</td>
<td>N/A</td>
</tr>
<tr>
<td>Gross Tonnage</td>
<td>N/A</td>
</tr>
<tr>
<td>Net Tonnage</td>
<td>N/A</td>
</tr>
<tr>
<td>Length</td>
<td>N/A</td>
</tr>
<tr>
<td>Breath</td>
<td>N/A</td>
</tr>
<tr>
<td>Draught</td>
<td>N/A</td>
</tr>
<tr>
<td>Engine</td>
<td>N/A</td>
</tr>
<tr>
<td>Maximum speed</td>
<td>N/A</td>
</tr>
<tr>
<td>Built</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Fishing Activity in NSW
From 1955 to 1958
Catch records exists for 1955 until 1958
History
Owned by Red Funnel Trawlers

SS Olive Cam (former Noduzu), 1920-1954

Technical

<table>
<thead>
<tr>
<th>Official number:</th>
<th>143528</th>
</tr>
</thead>
<tbody>
<tr>
<td>Launched:</td>
<td>N/A</td>
</tr>
<tr>
<td>Gross Tonnage:</td>
<td>281</td>
</tr>
<tr>
<td>Net Tonnage:</td>
<td>113</td>
</tr>
<tr>
<td>Length:</td>
<td>39.16 meters</td>
</tr>
<tr>
<td>Breath:</td>
<td>7.16 meters</td>
</tr>
<tr>
<td>Draught:</td>
<td>3.86 meters</td>
</tr>
<tr>
<td>Engine:</td>
<td>Triple expansion steam engine fitted by C.D. Holmes, Hull, United Kingdom</td>
</tr>
<tr>
<td>Maximum speed:</td>
<td>9.5 knots</td>
</tr>
<tr>
<td>Built:</td>
<td>1920 by Cook, Welton and Gemmell Ltd, Beverley, United Kingdom. Wooden carvel. Castle Class.</td>
</tr>
</tbody>
</table>

Fishing Activity in NSW
From 1928 to 1954

History
1920: Delivered to Neale & West, Cardiff, Wales
Later probably owned by Dalby Steam Fishing Co Ltd of Fleetwood, Lancashire, UK
1928: Sold to Cam and Sons
1934: Incorporated into Cam and Sons Ltd, valued at about £2,500
1935: Chartered by Royal Australian Navy for three months
September 1939: Requisitioned by Royal Australian Navy for minesweeping off Freemantle.
Estimated value based on 1939-earnings by Cam and Sons Pty. Ltd. £22,000, Lloyds
Surveyor estimated the value of the ship at requisition to be £5,000
June 1943: Bought by Royal Australian Navy for about £10.830
July 1946: Sold back to Cam and Sons for £3,000, probably began trawling in 1947
November 1954: Wrecked at Twofold Bay, Eden, NSW

SS Pahau, (former HMNZS Pahau), 1943-?

Technical

<table>
<thead>
<tr>
<th>Official number:</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Launched:</td>
<td>N/A</td>
</tr>
<tr>
<td>Gross Tonnage:</td>
<td>540</td>
</tr>
<tr>
<td>Net Tonnage:</td>
<td>N/A</td>
</tr>
<tr>
<td>Length:</td>
<td>135 ft</td>
</tr>
<tr>
<td>Breath:</td>
<td>N/A</td>
</tr>
<tr>
<td>Draught:</td>
<td>N/A</td>
</tr>
<tr>
<td>Engine:</td>
<td>N/A</td>
</tr>
<tr>
<td>Maximum speed:</td>
<td>10 knots</td>
</tr>
<tr>
<td>Built:</td>
<td>3 April 1943 by Stevenson &amp; Cook, Port Chalmers, Ogato, New Zealand. Castle Class</td>
</tr>
</tbody>
</table>
Fishing Activity in NSW  
From 1946 to ?  
Total landing records exists for 1946/47

History  
Delivered to the Royal New Zealand Navy as minesweeper, average cost on delivery £73,230 (NZ)  
1946: Mercantile and bought by AA Murrell for about £15,250 (NZ). Probably started fishing November or December 1946

SS Samuel Benbow, 1918 - ?

Technical  
<table>
<thead>
<tr>
<th>Official number:</th>
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<tbody>
<tr>
<td>Launched:</td>
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</tr>
<tr>
<td>Gross Tonnage:</td>
<td>203</td>
</tr>
<tr>
<td>Net Tonnage:</td>
<td>N/A</td>
</tr>
<tr>
<td>Length:</td>
<td>115 3/12 ft</td>
</tr>
<tr>
<td>Breath:</td>
<td>22 1/12 ft</td>
</tr>
<tr>
<td>Draught:</td>
<td>13 ft</td>
</tr>
<tr>
<td>Engine:</td>
<td>N/A</td>
</tr>
<tr>
<td>Maximum speed:</td>
<td>N/A</td>
</tr>
<tr>
<td>Built:</td>
<td>Aberdeen, Scotland by Hall Russell, 1918, yard number 635</td>
</tr>
</tbody>
</table>

Fishing Activity in NSW  
From 1929 to ?  
Total landing records exists for 1946/47. Logbooks from November 1935 to November 1939 at National Archive of Australia

History  
Built for the Admiralty  
1923: Owned by A. A. Davidson, Aberdeen  
1929: Bought by A. A. Murrell, Sydney, NSW  
January 1929: arrived in Sydney  
November 1939: Sold to Cam and Sons for £9,400 (cash) – forced sale with a £3,000 time payment on delivery. When Cam and Sons initially failed to pay the second installment Murrell offered the vessel to Red Funnel Trawlers for £7,000. Cam and Sons eventually paid some on the installment money  
July 1940: Requisitioned by Royal Australian Navy for minesweeping off Sydney. Royal Australian Navy spent £6,000 to make the vessel seaworthy. Lloyds Surveyor estimated the value of the ship at requisition to be £3,000  
June 1943: Bought by Royal Australian Navy for about £10,830  
May or June 1946: Sold back to Can & Sons
SS *Tongkol* 1925 - ?

**Technical**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Official number:</td>
<td>N/A</td>
</tr>
<tr>
<td>Launched:</td>
<td>N/A</td>
</tr>
<tr>
<td>Gross Tonnage:</td>
<td>292</td>
</tr>
<tr>
<td>Net Tonnage:</td>
<td>N/A</td>
</tr>
<tr>
<td>Length:</td>
<td>125 ft</td>
</tr>
<tr>
<td>Breath:</td>
<td>24 ft</td>
</tr>
<tr>
<td>Draught:</td>
<td>13.7 ft</td>
</tr>
<tr>
<td>Engine:</td>
<td>N/A</td>
</tr>
<tr>
<td>Maximum speed:</td>
<td>10 knots</td>
</tr>
<tr>
<td>Built:</td>
<td>1925-26, Smith’s Dock &amp; Co, Middleborough-on-Tee, United Kingdom. Castle class. Ammonia refrigeration engine by Hall &amp; Co.</td>
</tr>
</tbody>
</table>

**Fishing Activity in NSW**
From 1929 to ?
Total landing records exists for 1946/47
Logbooks from January 1938 to September 1939 are kept at National Archives of Australia

**History**
Built to the Fisheries authorities in British Malaya to do experimental trawling following Stead’s advice. John Butcher in *The closing of the frontier* (2004) claims it was bought secondhand and renamed *Tongkol*
1926 to 1927: Did trawling surveys in Straits of Malacca and South China Sea
Mid 1928: Sold to Ceylon
1929: Bought by A. A. Murrell for £9,000 (very cheap). Arrived in Sydney 24 November. (Stead tried to get Commonwealth to buy the vessel upon arrival) It appeared that Murrell tried to sell the vessel upon its arrival, but in the end kept it.
September 1939: Requisitioned by Royal Australian Navy for minesweeping off Brisbane. Value of vessel quoted by Murrell £25,000. Lloyds Surveyor estimated the value of the ship at requisition to be £8,500
July 1943: Sold to Royal Australian Navy for £15,500
1944: Released to A. A. Murrell. Started fishing in November 1944