

## CV NIELS HOLST

### EDUCATION

1993 - 1996 University of Copenhagen

PhD Biology

A simulation model of cereal aphids and their regulation by natural enemies.

1980 - 1990 University of Copenhagen

MSc Biology

A meta-population model of biological control: predatory mites vs. spider mites on cucumber.

1983 - 1986 University of Copenhagen

BSc Computer Science

### WORK EXPERIENCE

Since 2011 Aarhus University, Department of Agroecology

Senior Scientist

I am working on the theory and best practices of ecological modelling, while I keep developing models for various applications.

1999 - 2010 Aarhus University, Department of Agroecology, Weed Ecology and Decision Support

Section Leader and Senior Scientist

As a daily leader of 15 researchers and technicians and with budget responsibility, I gained experience with people management and the dynamics of a project-funded organisation. Meanwhile, I continued to develop models and carry out statistical analyses for a range of systems including honeybees.

1997 - 1998 Danish Institute of Agricultural Sciences, Department of Integrated Pest Management

Scientist

Since weed ecology was the only aspect of agroecology I had not yet worked with, I took this position to work with weed control in arable crops; however, simulation studies on grain store pests in West Africa ended up taking most of my time.

1987 - 1993 DataMagic ApS, Copenhagen

Director, Systems Analyst

Initiated together with fellow students, this small company taught me how to keep good customer relations, delivering on time and all aspects of small-scale business management.

### SKILLS

Numerical analysis. I find numbers fascinating, and I am very good at wrestling out patterns whether through statistics or simulation modelling.

Ecology. I know how the first principles of ecology can be applied to concrete ecological systems. Together with a much varied project portfolio, this has given me an unusual breadth in my understanding of ecological mechanisms.

Communication. I am an attentive listener and precise communicator. This underlies my success as a teacher, meeting facilitator and project leader. I like communicating in speech and writing, and I like being quiet.

Tools. I am an expert in C++ and R and besides master a range of software; I am always open to learn and apply new concepts and tools.

### LANGUAGE

Danish and English. Fluent in speaking and writing.

German. Reading fine, listening acceptable, speaking vestigial.

### INTERESTS

Exploration. I like trips on foot or on bike into unknown territory, with my family or on my own.

Butterflies. Since childhood I collected butterflies (now by camera) and have fun raising them indoors.

Cacti. Since then I have also had a cactus collection, nursed from seeds (patience!).

Electronics. Still an amateur, I tinker with sensors and automatization at home.

### TEACHING

Since 2010 Aarhus University, Denmark

- Ecological Modelling, online PhD course; Course Leader
- Systems Analysis and Modelling
- Biological Control
- Integrated Pest Management
- Plant Physiology.

Since 2000 University of Copenhagen, Denmark; Guest Lecturer

- Invasion Biology
- Population Dynamics.

2016 ENDURE PhD Summer School, Italy

- The role of IPM in mitigating the effects of climate change on pest dynamics - modelling approaches (9-14 Oct).

2012 University of Dar-es-Salaam, Tanzania

- Applied Statistics and Ecological Modelling in R (15 Feb - 1 Mar).

2009 ENDURE PhD Summer School, Italy

- Modelling approaches to support integrated pest management (15-20 Jun).

### INVITED LECTURES

- Holst N (2011). How can modelling be used in the development of sustainable weed control strategies? Nordic Association of Agricultural Scientists, DJF Seminar 446. Forecasting Pests and Diseases of Field Crops in a Changing Climate, 30 November-1 December 2011, Bäckaskog, Sweden.
- Holst N (2009). Concepts and tools for collaborative weed demographic modeling. Annual Meeting of the Weed Science Society of America, 9-12 February 2009, Orlando, Florida.

- Holst N, Rasmussen IA, Bastiaans L (2005). Weed population dynamics: a review of model approaches and applications. 13th Symposium of the European Weed Research Society, 20-23 June 2005, Bari, Italy.
- HONOURS
- OECD Research Fellow, October- December 2014, Carl Hayden Bee Research Laboratory, USDA-ARS, Tucson, Arizona.
  - Founder (2010) and Leader of The Universal Simulator project at [www.ecolmod.org](http://www.ecolmod.org).
  - OECD Research Fellow, May 2005, European Biological Control Laboratory, USDA - ARS, Montferrier sur Lez, France.
- GRANTS SINCE 2001
- 2014-16: Danida bilateral project with Vietnam. Climate change impacts on outbreak of brown plant hopper. Danish Project Leader.
  - 2013-18: AgroTech, Denmark. Simulation modelling of greenhouse climate and cultivation. Research Consultant.
  - 2011-14: EU FP7 Collaborative project, PURE. Task Leader.
  - 2008-09: Euphresco Phytosanitary ERA-NET. Strategies for Ambrosia control. Project Leader.
  - 2007-10: EU Commission Reg. No. 797/2004. Biological control of varroa mites. Project Leader.
  - 2007-10: Danida. Capacity building for biosafety and ecological impact assessment of transgenic plants in East Africa (BiosafeTrain). Project Partner.
  - 2007-10: EU FP6 Network of Excellence. European Network for the Durable Exploitation of crop protection strategies (ENDURE). Sub-activity Leader.
  - 2007-10: Danish Research Centre for Organic Farming. Effective control of perennial weeds and intra-row weeds in organic cropping. Project Partner.
  - 2005-07: EU Commission Reg. No. 797/2004. Research and communication concerning key problems in Danish apiculture. Project Partner.
  - 2004-07: Danida. Capacity building for biosafety and ecological impact assessment of transgenic plants in East Africa (BiosafeTrain). Project Partner.
  - 2004-07: Danish Environmental Protection Agency. Herbicide tolerant GM crops: Long-term effect of spraying strategies on flora and fauna in neighbouring biotopes Project Leader.
  - 2003-06: GTZ. Aflatoxin risk assessment, biological control options and validation (IITA, Benin). Project Partner.
  - 2000-02: Danida. The International mycoherbicide programme for water hyacinth control in Africa (Cabi Bioscience, UK). Project Partner.
  - 2000-01: Danida. Sustainable integrated management of whiteflies as pests and vectors of plant viruses in the tropics (CIAT, Colombia). Project Partner.