

1. Introduction

It is a pleasure for me to introduce the laboratory's 2002 Annual Report.

The investigation announced in 2001 concerning the future of governmental research institutes was initiated in 2002 and required heavy involvement of the staff of the DPIL for several periods of time. On account of this uncertain future the laboratory chose not to fill three vacant scientist positions.

In 2000 an extension and a renovation of the facilities of the laboratory was commenced. The construction project was officially finished on the 2nd of March, 2002 with the inauguration of 1200 m² of new laboratory and office space. In addition 800 m² of the most worn-down facilities in the existing buildings were renovated. The result is that today's DPIL is capable of carrying out its research in modern laboratories with the highest degree of safety.

On the 24th of June Mrs Mariann Fischer Boel, Minister of Food, Agriculture and Fisheries, visited the laboratory. The visit consisted of a guided tour of the new facilities, where selected research projects and work areas were presented to the Minister by the staff.

The Annual Report of the laboratory contains the usual description of a number of research activities as well as other activities, in which the staff has been involved throughout the year. As it will appear from the report, the level of activity has been high, and I would like to take this opportunity to thank the entire staff for a fine cooperation in the past year. I also thank the members of the board for their interest in the work of the laboratory as well as thank them for their cooperation.

Jørgen Brøchner Jespersen

On March 31 2003, **Nils Bille** retired from his position as the director of the Danish Pest Infestation Laboratory, a post he has held since 1985.

Educated as a veterinary doctor, Nils Bille had previously been employed as a scientist and lecturer in the field of diseases of pigs and, later, specialised in the field of toxicology. Thus, he brought with him expertise and experience in the toxicological aspects of pesticides, application and registration of pesticides, research as well as administrative and legislative matters. This, combined with his management qualities, put him in a strong position as the manager of the DPIL.

These qualities have been in great demand during his 18 years at the head of the laboratory. He has brought the laboratory through several transitions:

- from being primarily a control and testing agency to being a research institute
- from researching primarily in aspects of chemical pest control and to its present position as a research institution involved in aspects of pest control that are related to food quality and safety reflected in the development of non-chemical control methods
- from its initial appearance through a major expansion and refurbishment phase, so that the DPIL today has modern, well equipped research facilities
- from being a small, independent institute to preparing the DPIL for recent political developments, i.e. negotiating the fusion of the DPIL with the Danish Institute of Agricultural Sciences (January 1, 2004)

Nils Bille led these transition procedures with competence and, on all occasions, with great respect for different opinions among individuals or groups of DPIL staff. He was always well informed about matters of importance for the laboratory and was well respected by representatives of the Ministry, other research institutions and the collaborative partners of the DPIL.

Nils Bille's versatile interests cover many different fields: public matters, politics, history, art, gardening, cooking, giving material for lively discussions around the lunch table at the laboratory. His informal management style combined with a genuine consideration for his fellow human beings led to many pleasant conversations, which will be missed at the laboratory. We would like to thank Nils Bille for the effort he has put into bringing the DPIL to its present position and wish him all the best in the years to come.

Staff, Danish Pest Infestation Laboratory

2. Management and organization

2.1 Board of the Danish Pest Infestation Laboratory

Members:

Niels Ørnbjerg
Danish Bilharziasis Laboratory
Chairman

Lars Damberg
Danish Pest Infestation Laboratory

Susanne Harding
Royal Veterinary and Agricultural University

Peter Esbjerg
Royal Veterinary and Agricultural University
Vice-chairman

Lise Stengård Hansen
Danish Pest Infestation Laboratory

Ghita Cordsen Nielsen
Danish Agricultural Advisory Centre

Hanne Storgaard Schultz /
Asbjørn Brandt
Danish Medicines Agency

Peter Weile
Danish Environmental Protection Agency

Bent Aagaard Petersen
Research Secretariat, Danish Directorate for Development
Observer

2.2 Staff 2002

E-mail addresses for DPIL staff are available on the Web-site

in Danish: http://www.dpil.dk/frames/medarb_frm.htm

in English: http://www.dpil.dk/frames/Estaff_frm.htm

DIRECTOR

Nils Bille

SECRETARIAT, ACCOUNTS AND BOOKKEEPING

Inge Børgesen

Anne Christensen (from 01.07 until 31.07)

Marianne Christensen (part-time)

Lisbeth Gammelgaard (part-time)

Jette Hansen (part-time)

Anita Askhøj Lauritsen (until 31.10)

Mette Drude Kjær Marcussen (from 11.11)

Hanne Olsen

Volker Pieper

INFORMATION TECHNOLOGY

Vibeke Rostgaard Schmidt

DEPARTMENT OF ENTOMOLOGY

Scientists

Jørgen Brøchner Jespersen (Head)

Lise Stengaard Hansen* (part-time)

Karl-Martin Vagn Jensen*

Ole Østerlund Kilpinen*

Michael Kristensen* (from 01.08)

Mette Knorr (part-time)

Henrik Skovgård Pedersen*

Anne Marie Rasmussen (part-time)

Tove Steenberg*

Technicians

Aase Borges (part-time)

Claus W. Dahl

Lars Damberg

Kristian Hansen

Nicolai Hansen

Gitte Jensen

Ib Bjarne Nielsen

Bodil Malle Pedersen (part-time)

Kirsten Peschel

Minna Wernegreen (part-time)

Mirjana Zibar

MAMMAL DEPARTMENT

Scientists

Stephen Davis (from 08.07)
 Ann-Charlotte Heiberg
 Herwig Leirs (part-time) (from 01.04)
 Jens Lodal*
 Solveig Vibe-Petersen (Ph.D. student)

Technicians

Sarah Adams
 Folmer Jensen
 Iver Munch Skadborg

TECHNICAL MANAGEMENT

Jørgen Christensen
 Sonja Ranveig Jacobsen (from 01.12)
 Bethina Munkstrup (from 09.07 until 31.08)

* Senior scientists

2.3 Ph.D. and M.Sc. students

Ann-Charlotte Heiberg, Ph.D. student (University of Copenhagen) (until 29.05)
 Solveig Vibe-Petersen, Ph.D. student (Royal Veterinary and Agricultural University, Copenhagen)

Mia Andersen, M.Sc. student (University of Copenhagen)
 Marie Nykjær Larsen, M.Sc. student (University of Copenhagen)
 Thomas Lisborg, M.Sc. student (University of Odense)
 Mette Drude Kjær Markussen, M.Sc. student (University of Copenhagen)
 Charlotte Nielsen, M.Sc. student (University of Copenhagen)
 Hans Henrik Petersen, M.Sc. student (University of Copenhagen)
 Lena Stenseng, M.Sc. student (University of Copenhagen)

2.4 Guest Scientist

Meng-Hao Hsu

3. International collaboration

3.1 Conferences

May 2-3: L. Stengård Hansen hosted the 3rd meeting of the Ad hoc group on Stored Product Protection for Council of Europe, Public Health Committee at the DPIL. The group is working on a set of guidelines for minimizing health risks due to biological contaminants in stored products.

May 18-20: T. Steenberg participated in the meeting of Working groups 1 and 2 of the COST Action 842 (Biological Control of Pest Insects and Mites with special reference to Entomophthorales), Heraklion, Greece.

May 30-31: L. Stengård Hansen and T. Steenberg participated in a meeting of COST Action 842: Working Group 4: "Biocontrol of arthropod pests in stored products" in Prague, Czech Republic. L. Stengård Hansen presented a paper entitled "A description of grain storage and associated pest problems in Denmark".

July 22-26: L. Stengård Hansen participated in the 8th International Working Conference on Stored Product Protection in York, U.K., where she presented a poster entitled "Near Infrared Transmission Spectroscopy for detection of insects and mites in grain", co-authored by L. Åberg, M. Kristensen and M. Sandgren, and gave an oral presentation entitled "Biological control of flour moths in flour mills – field trials with two natural enemies".

September 18-21: J.B. Jespersen and O. Kilpinen participated in the EU-funded Cost Action 833 meeting on "Mange and Myiasis in Livestock" in Bari, Italy.

October 7-12: J.B. Jespersen, H. Skovgård and C. Nielsen participated in the VII European Congress of Entomology, Thessaloniki, Greece, where they gave the following presentations 1) Sustainable management of arthropod pests of veterinary importance (invited oral presentation), 2) Biological control of the housefly *Musca domestica* and the stable fly *Stomoxys calcitrans* (Diptera: Muscidae) using *Spalangia cameroni* (Hymenoptera: Pteromalidae) in Danish dairy cattle and swine facilities (oral presentation), 3) Development of alternative control methods against chicken mites (poster), and 4) Interactions between two species of mitosporic fungi, larvae of *Musca domestica* and *Stomoxys calcitrans*, and the pupal parasitoid *Spalangia cameroni* (Hymenoptera: Pteromalidae) (poster).

October 29-31: J.B. Jespersen participated in the 3rd Annual Meeting of the African Network for Vector Resistance to Insecticides, Johannesburg, South Africa. Invited oral presentations: 1. Insecticide resistance management strategies with special reference to houseflies and 2) ENMARIA: European Network for the Management of Arthropod Resistance to Insecticides and Acaricides.

November 20-21: H. Skovgård and L. Stengård Hansen participated in the Danish Conference for Organic Farming, Odense, where they presented an exhibit of biological control of pests in stored products and animal husbandry.

December 18: L. Stengård Hansen participated in a seminar about "Quality of seed and grain" at DJF, Slagelse, where she gave a presentation entitled "Pests in stored grain and seed".

3.2 Visits and co-operation

DPIL staff paid visits to the following countries:

January 13-14: J.B. Jespersen visited the University of Granada, Spain, to initiate a CEC project on chicken mites.

February 25–March 8: O. Kilpinen visited Rothamsted Research, Harpenden, UK, for an introduction to methods for collection of volatiles and behavioural bioassays within the framework of the EU-project “CHIMICO: Development of alternative control methods against the chicken mite, *Dermanyssus gallinae*”.

May 17–June 1: J. Lodal visited the Rodent Control Centre and Sokoine University of Agriculture, Morogoro, Tanzania, to follow up on laboratory and field experiments carried out in the framework of the EU-project “STAPLERAT: Protecting staple crops in eastern Africa: integrated approaches for ecologically based field rodent pest management.”

May 30-31: J.B. Jespersen visited WHO, Geneva, Switzerland, to discuss further collaboration

June 11-12: J.B. Jespersen visited Bayer AG, Monheim, Germany, to discuss further collaboration.

June 15-18: J.B. Jespersen, T. Steenberg and O. Kilpinen visited University of Granada, Spain, for a meeting in the EU-project “CHIMICO: Development of alternative control methods against the chicken mite, *Dermanyssus gallinae*”.

November 18-23: J.B. Jespersen participated in the meeting of the FAO Working Group on Parasite Resistance and the FAO/Industry Contact Group Meeting, Montevideo, Uruguay.

November 25–December 5: O. Kilpinen visited Central Veterinary Laboratory, Lilongwe, Malawi, for supervision of an M.Sc. student working on ectoparasites of poultry.

DPIL was visited by the following colleagues and other guests:

April 23: SIFF, Norway, visited the DPIL.

June 18: Jan-Erik Bergh, Monika Åkerlund and Martin Andrén, Sweden, visited the laboratory to discuss plans for a project on control of museum pests.

August 12-16: Cezary Tzaksuk, University of Siedlce, Poland, visited the DPIL as part of a short-term scientific mission within the framework of COST Action 842. He conducted bioassays with different entomopathogenic fungi against chicken mites and collected samples for his study of naturally occurring fungi in different species of mites.

September 17: Visit from the Swedish Ministry of Food.

From September 23: Meng-Hao Hsu from Taiwan University came to DPIL for a one-year project on behavioural preferences of cat fleas with regard to host stimuli.

November 4-8: Carmen Vega Robles from the University of Granada, Spain, to discuss and try out protocols for the collection and screening for fungal pathogens in chicken mites within the framework of the EU-project “CHIMICO: Development of alternative control methods against the chicken mite, *Dermanyssus gallinae*”.

November 13: Various projects on biological and microbial pest control were presented to students from the Royal Veterinary and Agricultural University.

3.3 FAO Expert Panel on Resistance in Parasites in Livestock

J.B. Jespersen has been a member of the FAO Panel of Experts on Resistance in Parasites in Livestock since 1998.

3.4 Scientific and Environmental Monitoring Group (SEMG)

In 1985 the European Commission formed the SEMG to monitor the application of insecticide in the Regional Tsetse and Trypanosomiasis Control Programme (RTTCP) in Malawi, Mozambique, Zambia and Zimbabwe. In 1992 the mandate of SEMG expanded to include other effects of tsetse control with regard to land use and other possible environmental effects. In addition the activities of SEMG were not to be restricted to just RTTCP, but could now also involve all other EDF-funded projects in Africa. In 1997 the role and mandate of the SEMG were reviewed again. The mission of SEMG is now to support the European Commission, its member states and partners in the development and implementation of socially, economically and environmentally sustainable livestock production systems for agriculture.

J. B. Jespersen has been the Danish member of SEMG since 1988.

3.5 ENMARIA: European Network for the Management of Arthropod Resistance to Insecticides and Acaricides

ENMARIA (European Network for the Management of Arthropod Resistance to Insecticides and Acaricides), an EU-funded Concerted Action, was launched in November 1996 to promote the development and implementation of management strategies for insecticide and acaricide resistance throughout Europe, thereby minimizing reliance on these chemicals and avoiding their increased use following resistance outbreaks. Nominated participants in ENMARIA include scientists and advisors from 13 countries and the agrochemical industry's Insecticide Resistance Action Committee (IRAC). ENMARIA hopes to achieve progress in four main areas - compilation of a European resistance database, workshops, training visits and publicity.

The database will detail all individuals and institutions engaged in insecticide and acaricide resistance research activities and all available information on the incidence, impact and management of resistance in EU and EFTA countries. It will also include information on insect strains (especially susceptible reference strains) cultured by various laboratories that could be shared to save unnecessary duplication of effort.

The workshops will aim at developing and promoting standardized methods for detection and monitoring of resistance and at identifying and disseminating guidelines for its management. The first workshop was held at IACR-Rothamsted in April 1997, in conjunction with the Resistance '97 International Conference on Pesticide Resistance. The second workshop took place in Almería in southern Spain in May 1998, whereas the third workshop took place in Thessaloniki, Greece in May 1999. Difficulties encountered in these regions with insect and mite control encapsulate well the need to integrate resistance management tactics with non-chemical approaches and are relevant to protected horticulture and agriculture throughout Europe.

ENMARIA sponsors technical training visits, focusing on techniques for monitoring resistance and evaluating resistance. Until now 10 such training visits have been funded.

The primary long-term objective of ENMARIA is to encourage close and formal scientific collaboration on resistance research between European laboratories, thereby avoiding duplication of effort and expertise. In addition, ENMARIA will remain committed to creating an environment more favourable for the implementation of resistance management strategies, notably by promoting open and frequent dialogue between researchers, pest management advisors, the agrochemical industry and regulatory authorities.

Involvement in ENMARIA is open to all interested individuals and organizations; further details are available from the main coordinators whose details are as follows:

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Danish Pest Infestation Laboratory

Dr. Ian Denholm
IACR-Rothamsted

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ENMARIA has established a Website giving information about its activities. The Homepage includes logos, maps and details of participants, and the site will eventually include working papers prepared by national representatives reviewing resistance problems in their respective countries. The address is:

www.res.bbsrc.ac.uk/enmaria

3.6 Mange and Myiasis in Livestock in Europe

As part of the European co-operation in the field of scientific and technical research, a European COST Action 833 on Mange and Myiasis in Livestock was established in 1998 with the following objectives:

1. To develop accurate means of diagnosis of mange and myiasis in livestock and so prevent suffering and improve animal welfare.
2. To develop effective and environmentally sensitive methods of treatment and control of these diseases and so increase economic performance and decrease pressure on the environment.
3. To increase the epidemiological knowledge of these diseases in order to facilitate control and eradication programmes.

Altogether, 16 countries are involved in implementation of the COST Action 833, which is organized by the Management Committee. In 1998 J.B. Jespersen was appointed the Danish representative of the Management Committee. In 2002 J.B. Jespersen participated in a Management Committee meeting in Cordoba, Spain.

4. Educational activities

4.1 Training courses

In February and March ten one-day courses for personnel using phosphine-generating pellets for control of moles and water voles were run by J. Lodal in various parts of the country. A total of 743 persons participated.

4.2 Lectures

22 January, J. Lodal gave a lecture on rat resistance to anticoagulants at an Authorization Course in Rat Control held by the Ministry of the Environment.

8 April, L. Stengård Hansen gave two lectures on pests in relation to storage and processing of food for food technician students at the Royal Veterinary and Agricultural University, Copenhagen.

12 April, L. Stengård Hansen gave a presentation entitled “Common furniture beetle infestations in roof timber in Danish medieval churches” at the National Museum, Copenhagen.

21 August, A.-C. Heiberg gave a lecture on rat resistance and vitamin K requirement at an Authorization Course in Rat Control held by the Ministry of the Environment.

December 18, O. Kilpinen gave a lecture on the techniques for collecting ectoparasites at the Royal Veterinary and Agricultural University.

4.3 External examiner and reviewer duties

L. Stengård Hansen served as external examiner in the subject of forest entomology and ecology for forestry students at the Royal Veterinary and Agricultural University, Copenhagen.

A.-C. Heiberg served as a referee for Australian Center for International Agricultural Research (ACIAR).

O. Kilpinen served as referee for the Journal of Medical Entomology and acted as external supervisor for one M.Sc. student from the Network for Smallholder Poultry Development at The Royal Veterinary and Agricultural University.

T. Steenberg was external supervisor for C. Nielsen, University of Copenhagen, acted as referee for the journals *Experimental and Applied Acarology* and *BioControl*, and served as reviewer of a grant proposal submitted to the Binational Agricultural Research and Development Fund.