

1. Introduction

It is a pleasure for me to introduce the laboratory's 2001 Annual Report.

The finances of DPIL was put under pressure during the year 2001. The reason was the fact that the Government announced cuts in connection with the new Budget - not only for 2001 but also for the years to come. Furthermore, the future of all governmental research institutes within the public sector was to be investigated. In this light the laboratory chose not to fill vacancies and wait for the situation to clarify, which is expected by the end of 2002. Therefore three research scientist positions are still vacant, and this fact together with extensive building activities resulted in very difficult times. Despite all this the Annual Report brings interesting information about finalized research projects and product tests.

The construction project of the laboratory reached its climax in 2001. When the raw house was ready at the end of 2000, the workmen started on the interior in the extensions and on the renovation of the existing buildings. Even though special consideration was shown for the requirements of the scientists, the laboratory experienced some periods with very difficult working conditions. The mammal building was especially hard hit and at times it could not be used at all. The fine co-operation with the contractor was continued, the schedule was kept and by the end of the year approx. 90% of the construction project had been finished. The laboratory is very pleased with both the progress of the work and the end result and is looking forward to being able to use the new facilities in the beginning of May 2002. It is my hope for the future that the economic situation will steady so that the laboratory can recruit research scientists who can make optimum use of the new laboratory facilities.

Finally, I would like to thank the Board and the entire staff for their fine cooperation during the past year.

N. Bille

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

Annie Enkegaard
Danish Institute of Agricultural Services, Flakkebjerg

Peter Esbjerg
Royal Veterinary and Agricultural University
Vice-chairman

Lise Stengård Hansen
Danish Pest Infestation Laboratory

Ghita Cordsen Nielsen
Danish Agricultural Advisory Centre

Elisabeth Nørbygaard
Danish Medicines Agency

Peter Weile
Danish Environmental Protection Agency

Bent Aagaard Petersen
Research Secretariat, Danish Directorate for Development
Observer

2.2 Staff 2001

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

Marianne Christensen (part-time)

Lisbeth Gammelgaard (part-time)

Jette Hansen (part-time)

Ilse Hall Jensen (until 31.03)

Anita Askhøj Lauritsen (from 01.01)

Hanne Olsen

Volker Pieper

INFORMATION TECHNOLOGY

Vibeke Rostgaard Schmidt

DEPARTMENT OF ENTOMOLOGY

Scientists

Jørgen Brøchner Jespersen (Head)

Lise Stengård Hansen* (part-time)

Karl-Martin Vagn Jensen*

Vibeke Kalsbeek (Ph.D. student) (from 02.08 until 08.08)

Ole Østerlund Kilpinen*

Michael Kristensen* (until 30.06)

Mette Knorr (part-time)

Per Sejerø Nielsen* (until 31.08)

Henrik Skovgård Pedersen*

Anne Marie Rasmussen (part-time)

Tove Steenberg*

Technicians

Aase Borges (part-time)

Claus W. Dahl

Lars Damberg

Eva Hald (until 31.05)

Kristian Hansen (from 15.03)

Nicolai Hansen

Gitte Jensen

Dorthe Kyster (until 31.01)

Ib Bjarne Nielsen

Bodil Malle Pedersen (part-time)

Kirsten Peschel

Santina Petersen (until 31.01))

Minna Wernegreen (part-time)
Mirjana Zibar

MAMMAL DEPARTMENT

Scientists

Herwig Leirs (Head) (until 30.11)
Mogens Bildsøe (from 01.02 until 31.05)
Ann-Charlotte Heiberg (Ph.D. student) (until 23.08)
Ann-Charlotte Heiberg (from 01.09)
Jens Lodal*
Solveig Vibe-Petersen (Ph.D. student) (until 31.03)
Solveig Vibe-Petersen (Ph.D. student) (from 02.12)

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)
Vibeke Kalsbeek, Ph.D. student (Royal Veterinary and Agricultural University, Copenhagen) (until 17.12)
Christian Nansen, Ph.D. student (Royal Veterinary and Agricultural University, Copenhagen) (until 31.01)
Solveig Vibe-Petersen, Ph.D. student (Royal Veterinary and Agricultural University, Copenhagen)

Ditte Hendrichsen, 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)
Hanne Martin-Légéne, M.Sc. student (University of Copenhagen)
Katrine Mohr, M.Sc. student (University of Copenhagen)
Charlotte Nielsen, M.Sc. student (University of Copenhagen)
Thomas Nørgaard, M.Sc. student (University of Aarhus)
Hans Henrik Petersen, M.Sc. student (University of Copenhagen)
Lena Stenseng, M.Sc. student (University of Copenhagen)

3. International collaboration

3.1 Conferences

January 15: J. B. Jespersen participated in the Management Committee Meeting of the EU-funded Cost Action 833 on “Mange and Myiasis in Livestock” in Amsterdam, Holland.

February 22-23: L. Stengård Hansen participated in the 1st meeting of the Ad hoc group on Stored Product Protection for Council of Europe, Public Health Committee in Berlin, Germany.

March 22: J. Lodal participated in the conference “Invasive species and GMOs - new threats to nature” arranged by the Danish Nature Council.

May 12-15: O. Kilpinen participated in the 6th International Symposium on Ectoparasites of Pets, Westport, Ireland.

May 29-June 2: T. Steenberg participated in the 8th European Meeting of the IOBC/WPRS Working Group Insect Pathogens and Insect Parasitic Nematodes”, Athens, Greece, where she presented a paper entitled “Fungus infection of the chicken mite *Dermanyssus gallinae*”.

August 12-17: H. Leirs participated in the 8th International Theriological Congress, Sun City, South Africa: He chaired a symposium on “Small rodent population dynamics in the tropics”, presented a paper “Leirs, H. & G. Singleton. Trends in population ecology of tropical rodents” and two posters “Mohr, K., S. Vibe-Petersen, L.L. Jeppesen & H. Leirs. Feeding decisions as an anti-predation strategy in the African multimammate rat *Mastomys natalensis*” and “Vibe-Petersen, S., H. Leirs, L. de Bruyn & L. Mulungu. The effect of different predation pressure on the population dynamics of *Mastomys natalensis* and subsequent effect on crop damage and yield”.

September 2-5: L. Stengård Hansen participated in a meeting of the IOBC working group on Integrated Protection in Stored Products in Lisboa, Portugal, where she presented a paper entitled: “*Trichogramma turkestanica* against *Ephestia kuehniella* in flour mills: extent of host-feeding and initial results of a field trial”, co-authored by K.-M. Vagn Jensen.

September 6-7: L. Stengård Hansen participated in a meeting of COST Action 842: Working Group 4: “Biocontrol of arthropod pests in stored products” in Lisboa, Portugal, where she presented a paper entitled: “*Blattisocius tarsalis* as a control agent of *Ephestia kuehniella* in flour mills; initial results of a field trial”, co-authored by P. S. Nielsen.

September 9-14: H. Leirs participated in the 3rd European Vertebrate Pest Management Conference in Ma’ale Hachamisha, Israel. He was a member of the Scientific Committee, chaired a session and presented two lectures: “Leirs, H. A bioeconomic model for the management of *Mastomys natalensis* rats in maize fields” and “Heiberg, A.-C. & H. Leirs. Population effects of anticoagulant rodenticide resistance in Norway rats”.

September 16-21: J. B. Jespersen participated in the 3rd International Congress of Vector Ecology in Barcelona, Spain.

September 24-26: J. B. Jespersen participated in “Resistance 2001; Meeting the challenge” in Harpenden, UK.

October 1-3: K.-M. Vagn Jensen and L. Stengård Hansen participated in the conference “2001 – A Pest Odessey: Integrated Pest Management for Collections” in London, UK, where they presented a poster entitled: “Research concerning pests in museums and historic buildings”.

October 3-6: J. B. Jespersen and O. Kilpinen participated in the Fourth Annual Workshop of the Cost Action 833 on “Mange and Myiasis in Livestock” in Toulouse, France.

October 4-5: L. Stengård Hansen participated in the 2nd meeting of the Ad hoc group on Stored Product Protection for Council of Europe, Public Health Committee in Dublin, Ireland.

October 21-26: H. Leirs co-authored two posters at the 5th Biennial Conference of the African Crop Science Society in Lagos, Nigeria: “Odhiambo, C., N. Oguge & H. Leirs: Aspects of population ecology of *Mastomys* in a maize cropping system in Nakuru District, Kenya.” and “Mutinda, A., N. Oguge & H. Leirs: Rodent pests’ problems and farmer management practices in Rongai Division, Nakuru District, Kenya.”

October 24-28: T. Steenberg participated in a meeting on modelling within the EU COST Action 842 “Biological control of pest insects and mites, with special reference to Entomophthorales”, Cordoba, Spain.

3.2 Visits and co-operation

DPIL staff paid visits to the following countries:

January 9-17: S. Vibe-Petersen visited University of Oslo (UIO), Oslo, Norway, for discussions with colleagues on her Ph.D. data analysing.

January 29-31: J. B. Jespersen visited the Central Science Laboratory, Sand Hutton, York, UK, to discuss the development of a fly model on insecticide resistance.

February 10-17: H. Leirs visited Mutanda Research Station, Solwezi, Zambia, to follow up on the 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.”

February 27–March 6: H. Leirs visited Dushanbe, Tajikistan, as a WHO consultant on urban rodent management.

March 19: J. B. Jespersen visited the WHO in Geneva, Switzerland, to discuss future collaboration.

April-May: A.-C. Heiberg visited, in connection with her Ph.D study, associated professor Michael Blouin at the Zoological Institute, Oregon State University, Corvallis, USA, for a period of six weeks. The purpose of the visit was analysis of DNA molecular data.

May 4: H. Leirs attended a meeting in Manchester, UK, preparing an EU project proposal.

May 7-9: H. Leirs visited the University of Oslo, Norway, for collaborative work on rodent population dynamics and the bioeconomics of field rodent management.

June 3-9: H. Leirs visited the Kazakh Anti-Plague Research Institute, Almaty, Kazakhstan, for the first co-ordination meeting of the EU project “STEPICA: The plague of Central Asia - an epidemiological study focusing on space-time dynamics”.

September 1-7: H. Leirs visited Addis Ababa University, Ethiopia, for the 2001 co-ordination meeting of the EU project “STAPLERAT: Protecting staple crops in eastern Africa: integrated approaches for ecologically based field rodent pest management.”

September 12-13: J. B. Jespersen and K.-M. Vagn Jensen visited Novartis, Basle, Switzerland, to discuss fly control strategies and methods.

October 11-12: J. B. Jespersen participated in the Meeting of the FAO Working Group on Parasite Resistance and the FAO/INDUSTRY Contact Group Meeting, in Rome, Italy.

DPIL was visited by the following colleagues and other guests:

April 17–May 5: Patrick Mwanjabe from Rodent Control Centre, Morogoro, Tanzania, to discuss and try out protocols for the testing of repellent seed dressings in the framework of the EU-project “STAPLERAT: Protecting staple crops in eastern Africa: integrated approaches for ecologically based field rodent pest management.”

April 22-24: Dr. Stephen Davis from CSIRO-Sustainable Ecosystems, Canberra, Australia, to discuss population modelling of field rodents.

October 25-26: Dr. Roland Klunker, Federal Environmental Agency, Berlin, Germany, to discuss biology and control of insects of public health importance.

November 7: Various projects on biological and microbial pest control were presented to students from the Royal Veterinary and Agricultural University visiting the DPIL.

November 23: T. Steenberg gave a talk on the biology and ecology of entomopathogenic fungi to a group of students from Frederiksværk Gymnasium visiting the DPIL.

December 20: Professor Godehard Hoffmann, Federal Environmental Agency, Berlin, Germany, to discuss biology and control of insects of public health importance.

3.3 FAO Expert Panel on Resistance in Parasites in Livestock

In 1998 J. B. Jespersen became a member of the FAO Panel of Experts on Resistance in Parasites in Livestock.

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. At a meeting in Brussels on September 23-24, 1997, the new terms of references were discussed, agreed upon, and referred to the member states.

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:

Dr. Jørgen Brøchner Jespersen
Danish Pest Infestation Laboratory
Skovbrynet 14
DK-2800 Kgs. Lyngby
Denmark
Tel.: (45) 45 87 80 55
Fax: (45) 45 93 11 55
E-mail: j.b.jespersen@ssl.dk

Dr. Ian Denholm
IACR-Rothamsted
Harpenden
Herts, AL5 2JQ
United Kingdom
Tel.: (44) 1582 763 133
Fax: (44) 1582 762 595
E-mail: ian.denholm@bbsrc.ac.uk

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 Concerted 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 2001 J. B. Jespersen participated in one Management Committee meeting. O. Kilpinen and J. B. Jespersen participated in the Fourth Annual Workshop, 3-6 October, in Toulouse, France, where they presented a paper on the chicken mite *Dermanyssus galinae*.

4. Educational activities

4.1 Training courses

In February and March nine 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 625 persons participated.

4.2 Lectures

January 23: J. B. Jespersen gave a lecture on the biology and control of arthropod vectors at the Army's Sanitary school.

February 2: H. Leirs gave a lecture about rodent management at the Army's Sanitary School.

March 2: 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.

August 21: J. Lodal gave a lecture on rat resistance to anticoagulants at an Authorization Course in Rat Control held by the Ministry of the Environment.

October 1: O. Kilpinen gave a lecture on human ectoparasites for master students at the study of International Health, University of Copenhagen.

4.3 External examiner and reviewer duties

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

L. Stengård Hansen served as external supervisor for one Ph.D. student at the Royal Veterinary and Agricultural University, Copenhagen.

L. Stengård Hansen served as referee for the journal Biological Control.

K.-M. Vagn Jensen served as external examiner for a group of M.Sc. students at Roskilde University.

K.-M. Vagn Jensen served as external examiner for one M.Sc. student at the University of Aarhus.

J. B. Jespersen served as external examiner for one M.Sc. student at The Royal Veterinary and Agricultural University, Copenhagen.

J. B. Jespersen served as adviser to one Ph.D. student at The Royal Veterinary and Agricultural University, Copenhagen.

H. Leirs served as a supervisor for one Ph.D. student at the Royal Veterinary and Agricultural University, Copenhagen, one Ph.D. student at the University of Copenhagen and two Ph.D. students at the Sokoine University of Agriculture, Morogoro, Tanzania.

H. Leirs served as adviser to four M.Sc. students at the University of Copenhagen, one M.Sc. student at the University of Odense and two M.Sc. students at the Kenyatta University, Nairobi, Kenya. He also regularly advised students at the Royal Veterinary and Agricultural University, Copenhagen.

H. Leirs served as Associate Editor for the journal *Mammalia*, Paris, France.

H. Leirs served as referee for the journals *Biotropica*, *BMC Biotechnology*, *Mammalia* and *Oikos*.

J. Lodal served as referee for the journal *Mammalia*.

T. Steenberg served as a reviewer for the journal *BioControl*.

T. Steenberg acted as external supervisor for one Ph.D. student from The Royal Veterinary and Agricultural University and for one M.Sc. student from the University of Copenhagen.

S. Vibe-Petersen refereed a manuscript for the journal *Mammalia*.