

**International Ichthyoparasitology**  
**Newsletter No. 7**  
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**EDITORIAL**

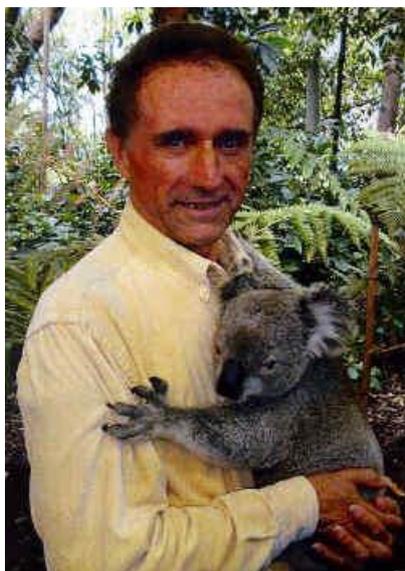
This is the first issue of the Ichthyoparasitology Newsletter of the 21<sup>st</sup> century. I'd like to thank everybody who contributed and David Gibson for posting it on the web. Anyone wishing to contribute to the next issue of the newsletter (No. 8) should note that the deadline date for submission is September 30, 2000. Because the newsletter is now web based, contributors are welcome to send images along with their contribution (please see the editorial policy at the end of the issue).

This and future issues will be available on David Gibson's Web Pages at:  
<http://dSPACE.dial.pipex.com/town/plaza/aan18/news15.htm>

## ANNOUNCEMENTS

### **The Fourth International Symposium on Monogenea First Announcement**

The dates of this symposium are set for July 9-13, 2001 and the venue will be The Women's College at The University of Queensland, Brisbane, Queensland, Australia. A local committee is established to organise details for the various scientific sessions, social events, excursions and accompanying person's programme. A Scientific Committee will also be appointed comprising selected persons around the world representing different regions to generate ideas and themes for some key symposia. We aim to open the conference with a session embracing all of the platyhelminths. Subject to sufficient demand, there may be a post-symposium workshop at Heron Island on the Great Barrier Reef.



Calls for expressions of interest to attend the 4<sup>th</sup> *International Symposium on Monogenea* will follow later in 2000. Details about registration, submission of abstracts and a preliminary scientific programme will be available in late 2000. Contact persons are: Dr Ian D. Whittington and Dr Leslie A. Chisholm, Department of Microbiology & Parasitology, The University of Queensland, Brisbane, Queensland 4072, Australia. Fax: +61 7 3365 4620; e-mail: [i.whittington@mailbox.uq.edu.au](mailto:i.whittington@mailbox.uq.edu.au) / [l.chisholm@mailbox.uq.edu.au](mailto:l.chisholm@mailbox.uq.edu.au)

Keep an eye open for notices and further information on our web page at:

<http://www.biosci.uq.edu.au/micro/academic/ianw/ism4.htm>

Professeur Claude Combes recently visited Brisbane and stayed at Women's College. He and his furry friend gave the venue "two thumbs up!"

## MEETING REPORTS

### **Interrelationships of the Platyhelminthes July 14-16, 1999 (reported by Rod Bray)**

The meeting was organised by Tim Littlewood and Rod Bray. It was sponsored by the Linnean Society of London, The Systematics Association and the British Society for Parasitology and took place at the historical home of the Linnean Society at Burlington House, Piccadilly, London. The purpose was to bring together parasitologists and workers on free-living flatworms to discuss the phylogeny of the whole group. Despite this wide remit, there were several papers and posters of direct interest to fish-parasitologists.

Walter Boeger and Delane Kritsky presented an up-to-the-minute phylogeny of the Monogenea (quaintly called Monogenoidea), reiterating earlier findings on the two distinct lineages. Willi Xylander discussed the Gyrocotylidea, Amphilinidea and the early evolution of the cestodes, showing that the taxon 'Cestodaria' can no longer be sustained. Janine Caira, Kirsten Jensen and Claire Healy showed that the Tetraphyllidea remains in serious question as a monophyletic group. General papers on tapeworms by Jean Mariaux and Peter Olson (on molecular phylogeny), Ian Beveridge (life-cycles) and Eric Hoberg, Jean Mariaux, Dan Brooks and Boyko Georgiev (total evidence phylogeny) covered various aspects of interest to fish-parasitologists in their wider reviews. Klaus Rohde used a review of the Aspidogastrea to air views on the evolution of parasitism in the Neodermata. Rod Bray, Tom Cribb, Tim Littlewood, Sylvie Pichelin and Elisabeth Herniou discussed the phylogeny of the Digenea in two papers. A total evidence study indicated that there are three major candidates as basal digeneans, two, the bivesiculids and transversotrematids, are fish parasites. The third candidate, a clade including strigeids, diplostomes and blood-flukes, includes fish parasites. In addition to the verbal contributions, several of the posters were of interest to fish-parasitologists, and included studies of the host specificity of *Lamellodiscus* (Desdevises, Morand & Legendre), cospeciation of sparids and opecoelids (Jousson, Pawlowski & Bartoli), molecular phylogeny of monogeneans (Mollaret, Jamieson & Justine), molecular evidence for host-specific tetraphyllidean clades (Ruhnke, Olson, Sanney & Hudson), a review of the systematics of the Proteocephalidea (Scholz & de Chambrier) and a molecular phylogeny of the proteocephalids (Zehnder, de Chambrier & Mariaux). The venue, opposite Fortnum & Mason's and close to the flesh-pots of Soho, was conducive to a friendly and sociable meeting.

A book including chapters by most of the contributors should be published in 2000.

**The Fifth International Symposium on Fish Parasites**  
**August 1999**  
**(reported by David Gibson)**

The Fifth International Symposium on Fish Parasites, which included the Second Workshop on the Myxosporea, took place at Ceské Budějovice in the Czech Republic during August. The meeting was wonderfully well organised and run by Frank Moravec, assisted ably by Iva Dyková and other colleagues. Like earlier meetings in the series, this was a great success: it was probably the best yet and certainly the best attended. There were some 170 participants from more than 30 countries worldwide and it included more than 190 oral presentations and posters. At the beginning of the meeting a presentation of life-membership was made to Dr Jiri Lom by the European Association of Fish Pathologists.

The symposium consisted mainly of two concurrent sessions, generally divided into protozoan and metazoan parasites, although there were some united sessions. The sessions were a mixture of invited talks (30 mins) and free presentations (15 mins). In order to give a flavour of the meeting, a list of the invited talks is included below. Among so many excellent presentations and posters, any selection of particularly interesting contributions would vary from person to person. However, two which caught my eye were the paper by I. Upeniece, who reported hooks, resembling those of helminth parasites, associated with fossil fishes from the Devonian, and a poster by C. Agustí *et al.*, who linked two forms of tetraphyllidean larvae (*Scolex pleuronectis*) from the gut of a dolphin with the presence *Phyllobothrium delphini* and *Monorygma grimaldii* in the tissues.

Invited talks:

- J. Lom: Roots of ichthyoparasitology in the Czech Republic.  
C. R. Kennedy: The ecology of fish parasites – plus ultra?  
P.T.K. Woo: Strategies against *Cryptobia (Trypanoplasma) salmositica* and salmonid cryptobiosis.  
H. Taraschewski: Defence strategies of fish against endoparasitic helminths.  
K. Molnár: Possibilities and difficulties in the treatment of parasitic fish diseases.  
S. L. Poynton: Parasitic diseases in aquaculture: discoveries and directions.  
C. Sommerville: The changing face of parasite research in aquaculture.  
M. Kjøie: The life-cycles of nematodes in gadoid and pleuronectid fish.  
C. R. Kennedy: Infra-community diversity in freshwater fish helminths: the limits to richness.  
K. B. Andree, C. Székely, K. Molnár, D. B. Antonio, T. S. McDowell, S. Bahri, R. W. Hoffmann, M. El-Matbouli, R. P. Hedrick: New approaches to the study of myxosporean parasites using molecular biological techniques.  
K. D. E. Everett, T. G. Clark, H. W. Dickerson: The molecular biology of the *Ichthyophthirius* immobilization antigens.  
R. A. Matthews: *Ichthyophthirius multifiliis* (Fouquet, 1876): a review of infection, development and survival strategies within fish host populations.  
R. M. Overstreet: Fish protozoans as indicators of pollution.  
B. Sures: Fish parasites as promising indicators of environmental pollution: facts, appraisal and perspectives.  
A. Berland: Novel techniques in helminthology. Part two.  
J. C. Chubb: Biodiversity: dynamic equilibrium and synergy.  
D. I. Gibson: The evolution and systematics of the Trematoda.  
L. Basson, J. G. Van As: Diversity of the peritrichian family Trichodiniidae (Peritrichia: Mobilida) occurring on fishes.  
M. L. Kent, C. R. Vossbrinck, A. V. M. Brown, M. L. Adamson, J. Khattri, R. P. Hedrick, S. Gresoviac, R. H. Devlin: Phylogeny of fish microsporidia based on ribosomal DNA sequences.  
T. A. Dick, J. Carney, M. Johnston: Factors shaping freshwater fish parasite systems.  
I. Dyková: Free-living amoebae – a new chapter in fish parasitology.

**Symposium Committee (reported by K. Ogawa)**

As only two members of the Symposium Committee [K. Ogawa (Chairman) and T. Scholz] attended the meeting, previous committee members were re-recruited [D.I. Gibson, K. Molnar, O. Pugachev, E.T. Valtonen].

It was decided that the next Symposium would be held in Aberdeen, Scotland in 2003 (see below).

The first five symposia (1983-1999) were held under different titles (Ichthyoparasitology, Fish Parasites, Fish Parasitology). Therefore, it was decided to adopt the title *International Symposium of Fish Parasitology* for future meetings.

The old Committee was dissolved and a new one selected as follows: Dr Kazuo Ogawa (Japan; re-elected as Chairman); Dr Iva Dykova (Czech Republic); Dr Robin M. Overstreet (USA); Dr Alan Pike (UK); Dr Oleg Pugachev (Russia), Dr Jo G. Van As (South Africa).

## **Sixth International Symposium of Fish Parasitology**

This meeting will be organised by Drs Alan Pike, Les Chappel and Ken MacKenzie and held in Aberdeen, UK, in 2003. More details will be given in future issues.

## **Third Workshop on Myxosporea**

This meeting will be held independently from now onwards because of the rapid advances in this field. The venue and timing (likely to be in two years time) will be decided by members of the group and announced in the future.

## **7th International Conference of the World Association for the Advancement of Veterinary Parasitology, Copenhagen, August 1999**

### **Aquaculture Workshop: Chair's Report.**

**Chair: Chris Sommerville, Institute of Aquaculture, University of Stirling, Stirling, UK**  
**Co-Chair: Susan Lim, Institute of Biological Sciences, University of Malaya**

Aquaculture has expanded and intensified rapidly during the past three decades though its roots go back several centuries. In addition, the ornamental fish industry is the fastest growing pet industry worldwide. Along with intensification, parasitic diseases have grown in number and importance and control of parasites in fish culture presents problems unique to the aquatic environment. Few chemical or drug treatments have been available and husbandry techniques to reduce disease are still widely used.

With the increasing value of fish production globally more pharmaceutical companies are developing selected products for licence. This is particularly the case with the sea lice treatments developed over the past 10 to 15 years. A coincident combination of interest in consumer safety, environmental issues and media awareness has brought about a deep concern for the fate of treatment drugs and chemicals. Dr Trevor Telfer and Dr Donald Baird of the Institute of Aquaculture, University of Stirling are involved in assessing the ecological impacts of environmental chemicals. They have developed models for assessing impacts of sea lice drugs for the purpose of licence, as well as for monitoring their use for environmental agencies. They highlighted that little is known about the fate of these chemotherapeutants in the marine environment and that this should be addressed to show the true implications to this system.

Different husbandry systems present unique problems. Dr Kurt Buchmann of the Department of Veterinary Microbiology, Royal Veterinary and Agricultural University, Denmark described a range of problems in freshwater culture systems. Cyprinids, salmonids, ictalurids and anguillids suffer devastating effects from protozoans such as *Ichthyophthirius*, *Trichodina* and *Hexamita*. The most effective drugs against these parasites are prohibited or have harmful environmental effects. Many new drugs are being tested and some of these have promise. The major helminth problems under the freshwater culture conditions are the monogeneans and a range of anthelmintics have been tested. In all cases management practices are used and this is especially the case against the eye flukes, though the drug Praziquantel is effective as a water treatment as well as in feed. Immunoprophylaxis is a possibility in some cases but these treatments are not yet developed.

Dr Rod Wootten of the Institute of Aquaculture, University of Stirling, highlighted the problems of parasite control in mariculture. He emphasised the practical difficulties of bath treatments of the large numbers of fish held in floating net cages which are labour intensive, expensive and time consuming. Oral treatments are advantageous but few of these are available. Treatment is often based on a mixture of chemotherapy and management techniques such as fallowing. There is considerable scope for the development of treatment strategies based on a good knowledge of parasite biology.

According to Dr Denis Thoney of the New York Aquarium / Osborne Laboratories of Marine Sciences, USA, enclosed systems increase the probability of infection owing to high host density and the retention and concentration of infective stages in the recycling water. In public aquaria where multiple species are maintained, infection susceptibility and chemotherapeutic intolerance further complicate problems of treatment. In indoor systems, parasites with indirect life-cycles are not a problem. The most pathogenic are those with direct life-cycles amongst which, the flagellated protozoans, monogeneans and copepods are the most pathogenic. Treatments are not restricted to the same extent as food fishes and, though copper sulphate and trichlofon are useful for teleosts, many fishes including elasmobranchs, are not tolerant of these chemicals. Preventing introduction and strict quarantine are the most effective measures taken.

Dr Susan Lim of the Institute of Biological Sciences, University of Malaya reported that tropical aquaculture is now moving away from subsistence multispecies culture to intensive commercialised mariculture systems but, because of the lack of infrastructure and inadequacies of mandatory reporting systems, information is lacking on fish mortalities. As a consequence it is difficult to set research priorities including the formulation of effective control measures against parasitic diseases. Lack of, or prolonged, disease diagnosis is a major factor and control is effected by destruction of diseased stock, rearing of less susceptible species or simple methods such as reverse salinity dips. Chemicals are used but information regarding their use is not available from government institutions. There remains a lack of institutional support and management and trained personnel for research and extension. Most importantly, there is a need for regulations and laws concerning disease management and aquacultural activities that promote the spread of disease.

There were lively exchanges during the discussions and it was evident that this subject is rather too large to be dealt with in the short time allocated. The general consensus of the discussion was to recommend the use of a variety of strategies in the control of parasitic infections.

## **CURRENT RESEARCH ACTIVITIES IN VARIOUS COUNTRIES**

### **IRAQ**

**(provided by Zohair Rahemo)**

In Iraq there are 3 institutes working on fish parasites. They are as follows.

#### **I. Department of Biology, College of Science, University of Mosul, Mosul, Iraq.**

Professor Zohair Rahemo initiated the work on fish parasites in the institute by submitting an M.Sc. thesis in 1975 entitled "Parasites of some freshwater teleost of Tigris passing through Mosul City". Prof. Rahemo continued his interest in fish parasites after finishing his PhD

thesis at Birmingham University, U.K. He has supervised many M.Sc. and PhD students who examined parasites of vertebrates, especially of freshwater fishes. Among these include:

Studies on the nematode parasites in many species of freshwater fishes in Iraq. Fatin M. Nawab - Al - Deen. M.Sc. thesis.

Studies on the cestode parasites in some teleost fishes in the Tigris River. Shehab A. Mohammad. Ph.D. thesis.

Study on histological changes in the gonads of *Acanthobrama marmid* infected with plerocercoid of *Ligula intestinalis*. Atika Abdu-Wahab Al-Nouri. M.Sc. thesis.

Studies on the parasites of certain teleost fishes from the River Tigris Mosul, Iraq. Bushra H. Saeed. M.Sc. thesis.

## **II. Department of Fisheries, College of Agriculture, University of Basrah, Iraq.**

Prof. F.T. Mhaisen has conducted much research on parasites of different freshwater fishes of the Tigris River, Shat-Al-Arab, and marshes in southern Iraq. He has supervised many M.Sc. and Ph.D.projects. Among these include:

Taxonomic and ecological studies on the metazoan parasites of some marine fishes of Khor Al-Zubair estuary northwest of the Arabian Gulf. Salim A. Al-Daraji. Ph.D. thesis.

Ecological and biological studies on some copepods of the family Ergasilidae infesting gills of the mugil fish, *Liza abu* from Basrah. N. R. Khamees. Ph. D. thesis.

## **III. Department of Biology, College of Science, University of Babylon, Babylon, Iraq**

Studies on the parasitic fauna of carp in Al-Furat fish farm, Babylon Province, Iraq. Ali B. Al-Zubaidy. Ph.D. thesis.

## **MEXICO** provided by Scott Monks

Dr. Roberto Javier Almeyda-Artigas (**Lab. de Sanidad Acuicola y Parasitología Molecular, Univ. Auto. Metropolitana-Xochimilco, D.F.**) and his laboratory are continuing their work on gnathostomiasis with a focus on control as well as distributions of infective stages within animal populations.

Dr. Rafael Lamothe-Argumedo (**Lab. de Helminología, Inst. De Biología, UNAM, D.F.**) is working on a revision of a group of monogeneans from elasmobranchs . Along with Dr. Gerardo Pérez-Ponce de León and Luis García-Prieto, he is also organising the first national reunion of curators of parasite collections that will meet at UNAM, August 17-18, 2000. Dr. Pérez-Ponce de León has recently returned from a sabbatical year spent at the H. W. Manter Lab at the University of Nebraska, USA where he was working on phylogenetic studies of nematodes. In spite of his heavy administrative workload, Dr. Guillermo Salgado-Maldonado still finds time to work with his students who are concentrating on studies of ecological parameters of parasite populations in freshwater fishes. The work of those at the Instituto is

suffering somewhat from interruptions arising from the move of the institute and the helminth collection to a new building on the other side of campus as well as a campus-wide student strike.

Dr. Victor M. Vidal-Martínez (**Lab. de Parasitología, CINVESTAV-IPN, Merida, Yucatan**) is continuing work on parasites of freshwater fishes with an emphasis on fish of economic importance in the Yucatan Peninsula.

Dr. Scott Monks (**El Colegio de la Frontera Sur (ECOSUR), Chetumal, Quintana Roo**) has begun a project that involves a survey of the helminths of fishes from Chetumal Bay. As well, he is working on the systematics and phylogenetics of Acanthocephala. His students are working on phylogenetics of monogeneans from rays and population studies of parasites of freshwater and marine fishes. Dr. Monks is expecting to move his laboratory into a new building that will be completed later this year.

Dr. Raúl Pineda-López (**Lab. de Parasitología, Univ. Auto. De Querétaro, Querétaro**) and his students are involved with studies of the ecology of parasite populations and communities of freshwater fishes.

M. en Ciencias Maria C. Gomez del Prado-R. (**Dept. de Biología Marina, Univ. Auto. De Baja California Sur, B.C.S.**) is studying parasites of fishes of the Gulf of California and beginning several projects dealing with parasite ecology.

Dr. Virginia León-Règagnon (**Lab. de Parasitología Molecular, Inst. De Biología, UNAM, D.F.**) has received grants enabling her to continue her work on molecular systematics of helminths and she is also devoting time to phylogenetic studies based on morphological characters.

## **BOOKS AND CD ROMS**

### **Ichthyoparasitology and Parasitosis**

Zhang Jianying, Qiu Zhaozhi and Ding Xuejuan

Science Press of China, 1999, 738 pages, Chinese price 98.00 RMB.

This recently published book in Chinese is based mainly on the publications, research findings and teaching experience of the authors over a period of more than 40 years. It is arranged in 15 chapters in taxonomic order. A total of 685 genera belonging to 197 families are covered, including all of the published families, genera and principal species described in China before the end of 1998. The external morphology, internal structures, life-history, pathogenicity and diagnostic characteristics are described in detail. For the especially harmful species, more detailed information is provided on pathology, symptoms, epizootic potential, prevention and control. There are taxonomic keys down to generic level and approximately 1,000 illustrations. Overall, the content of the book is considerable and it represents a major compilation of the current knowledge of ichthyoparasitology in China.

The book represents cooperative venture between South China Normal University, Kunming Zoological Institute, Academia Sinica, Nan Kai University, Zhongshan University and Hainan Normal College, and was published with the help of the Scientific Publishing Fund of Academia Sinica.

[Available from: Science Press, 16 Donhuangchenggan North Street, Beijing 100717, China].  
Yang Tingbao. School of Life Sciences, Zhongshan University, Guangzhou, P.R. China

### **An Exploration of Marine Parasitic Crustacea: An Interactive CD-ROM**

Timothy M. Goater

University of British Columbia Press, ISBN 1-896886-22-1, \$39.95 (Cdn).

Available from: Raincoast Books, 8680 Cambie St., Vancouver, BC, V6P 6M9, Canada

[custserv@raincoast.com](mailto:custserv@raincoast.com) Details at: <http://www.mala.bc.ca/parasite>

"This learning resource utilises the latest in multimedia technology to enable students and teachers of parasitology and invertebrate zoology to interact in a self-paced, fun and stimulating way with the bizarre and fascinating world of parasitic Arthropoda. Focus is on the biology of parasitic crustaceans of invertebrates and fish of coastal marine waters of British Columbia, Canada, including the parasitic Copepoda, Cirripedia, Isopoda and Amphipoda."

The CD includes: over 600 Mb of text information, photographs, video and sound files; spectacular video-microscopy footage and colour photography of arthropod parasites; audio recordings of taxonomic pronunciations; a video interview with world-renowned parasitologist Dr Z. Kabata; detailed line drawings; an interactive glossary, index and references; and a challenging interactive quiz.

### **The International Code of Zoological Nomenclature [4th Edition (1999)]**

The new and extensively revised 4th Edition of the International Code of Zoological Nomenclature has been published. It entirely supersedes the 3rd Edition (1985) from January 1, 2000. Notes about the new edition, which contains many new provisions, will be found on the International Commission on Zoological Nomenclature's Website ([www.iczn.org](http://www.iczn.org)).

The price of the 4th Edition is £40 or \$65 US including surface post. Individual members of a scientific society or students ordering a copy for personal use are offered a 25% discount (price £30 or \$48 US). Institutes or booksellers ordering 5 or more copies are also offered a 25% discount.

Copies may be ordered from: ITZN, c/o The Natural History Museum, Cromwell Road, London SW7 5BD, UK (e-mail: [iczn@nhm.ac.uk](mailto:iczn@nhm.ac.uk)) or AAZN, Att. D.G. Smith, MRC-159, National Museum of Natural History, Washington, DC 20560-0159, USA. (e-mail: [smithd@nmnh.si.edu](mailto:smithd@nmnh.si.edu)).

Cheques should be made out to 'ITZN' (sterling or dollars) or to 'AAZN' (US dollars only). Payment to ITZN may be made by Visa or MasterCard giving card number and expiry date.

### **Diseases of Seawater Netpen-Reared Salmonid Fishes**

Edited by noted fish disease researchers Drs. M.L. Kent and T. Poppe, a new, fully illustrated, 137 page, manual on diseases of salmonid fishes is now available. Clinical signs, pathology and treatment of various bacterial, viral and metazoan diseases are presented. More information can be obtained at <http://www-sci.pac.dfo-mpo.gc.ca/aqua/pages/netpen.htm>

## **EDITORIAL POLICY**

Please note that material for the next issue should be sent to the Editor, Dr Leslie Chisholm [e-mail: [l.chisholm@mailbox.uq.edu.au](mailto:l.chisholm@mailbox.uq.edu.au) ], Department of Microbiology & Parasitology, The University of Queensland, Brisbane, Queensland 4072, Australia: Fax: +617 3365 4620, before the end of September, 2000.

The Newsletter is issued once a year and the persons listed on the cover page act as regional representatives. Each representative may write or collect information from the members of their country or region. Naturally, direct contributions from any recipient to the Newsletter will also be welcome. However, bear in mind that the Newsletter is intended for any news, notices, comments, etc. that you feel would be of interest to the world's ichthyoparasitologists rather than detailed reviews of personal research. Images, preferably saved as Jpeg files, are welcome. Hard copies of images can also be sent directly to the editor for scanning.

In order to save postal charges, national representatives are asked to download a copy of each issue of the Newsletter and make this available (photocopies, e-mail, URL, etc) to his or her domestic members where necessary. When it is impossible to download a copy, please advise the editor. In addition, the information in the Newsletter can be made available via E-mail. It is hoped that the use of electronic formats rather than hard-copy will enable us to distribute information on ichthyoparasitology throughout the world quickly and cheaply.

Thank you  
Leslie Chisholm