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EDITORIAL

Once again it has been a busy year for ichthyoparasitologists and I enjoyed meeting most of the regular contributors to this Newsletter at ISFP VII in Italy. I extend many thanks to Richard Arthur, who has been an Associate Editor and the Regional Representative for Canada on the Newsletter for many years. Sadly, he has chosen to resign from these duties and I will miss his advice and keen eye for detail. I wish him well in his future endeavours. If you are interested in the position of Associate Editor or would like to be the Regional Representative for Canada please contact me for further information. The new Regional Representatives for Norway are Tor Bakke and Lutz Bachmann. I thank Karin Anderson, the past Norwegian representative, for her service over the years.

Anyone wanting to contribute to the next issue of the Newsletter (Number 16) should note that the deadline date for submission is **November 15, 2008**. My contact details are at the end of this Newsletter. This, and future issues will be available on David Gibson's Web Pages at: http://www.diplectanum.dsl.pipex.com/newsletter/

ANNOUNCEMENTS

Fisheries Society of the British Isles 2008

Late abstracts accepted until the end of December 2007

The Fisheries Society of the British Isles (FSBI) is pleased to announce that its Annual International Symposium in 2008 will be on the theme of "**Parasites as Agents of Sexual Selection in Fish**". The conference will be held at Cardiff University, UK, from **July 21st – 25th, 2008**. A wide selection of symposium sessions have been arranged, with sessions expected on parasite detection and avoidance; host-parasite co-evolution; parasites and host reproductive physiology and ecology; parasites, mate choice and mating tactics; impacts of parasites on host predator-prey interactions; and piscine brood parasitism. Invited speakers include **Kevin Lafferty** (USA), **Lexa Grutter** (Australia), **Steve Feist** (UK), **Bernd Sures** (Germany) and **Mathias Wegner** (Switzerland). Further details are available on the FSBI website (http://www.fsbi.org.uk/).

MEETING REPORTS

ISFP VII
7th International Symposium on Fish Parasites

provided by Bahram Dezfuli, dzb@unife.it

The **7th International Symposium on Fish Parasites (ISFP VII)** was held near Viterbo, Italy September 24–28, 2007. More than 320 people from 46 countries attended the symposium. ISFP VIII will be held in Chile in 2011.

THIRD MYXOZOAN WORKSHOP

Session No. 8 of ISFP VII Symposium

provided by Ariadna Sitjà-Bobadilla, ariadna@iats.csic.es

In view of success of previous meetings and the ever-increasing interest in Myxozoa, a whole session of ISFP VII (Viterbo, Italy) was devoted to the third Myxozoan Workshop on September 25, 2007 (Session No. 8). The session was organised by **M. El-Matbouli** (Munich, Germany) and **Ariadna Sitjà-Bobadilla** (CSIC, Spain) and chaired by **Arik Diamant** (Eilat, Israel) and Ariadna. It included a key note presentation by **Iva Dyková** (Czech Republic), 2 sessions of oral presentations (15 abstracts) (Taxonomy-Pathology-

Epidemiology and Life cycles-phylogeny), a poster session (20 abstracts) and a round-table discussion forum. Abstracts of presentations given during the myxozoan session are available to download in pdf format.

In addition to the standard oral presentations, we continued our tradition of a discussion session, which was chaired by **Jerri Bartholomew** (OSU, USA). This was well attended, with participants having varied ichthyoparasitological interests. A discussion of Actinospore Nomenclature was led by **Sascha Hallett** with additional visual contributions by **Stephen Atkinson** (pictured right) and **Monica Caffara,** who shared novel morphotypes (see poster abstracts for more details). The general consensus after lively discussion was that, although the current system of assigning only a collective group name and number to new actinospores introduces inherent problems, assigning them more descriptive binomial names would cause greater confusion when a myxospore stage is identified.

An outstanding topic for discussion was the higher classification of "Myxozoa" and its placement in the animal kingdom by **Beth Okamura**, which we were only able to touch on briefly, but which should be a priority for the next myxo gathering.

For more information on the **Myxozoan Network** visit the web page http://www.myxozoa.org/

SCOFDA

(Sustainable Control of Fish Diseases in Aquaculture)

The 14th SCOFDA meeting in Copenhagen October 2007

The school of researchers SCOFDA, which addresses topics related to sustainable control of fish diseases, was established in January 2001 and organises 2 annual workshops at the Royal Veterinary and Agricultural University in Denmark. This University merged with the old University of Copenhagen on January 1, 2007 and has become the Faculty of Life Sciences (short name KU-LIFE) under the New University of Copenhagen. However, the physical location and focus of SCOFDA have not changed and the 14th workshop session took place on October 30 and 31, 2007 in the feast auditorium of the university in Frederiksberg near the Copenhagen city centre. A total of 58 participants enjoyed a series of lectures by Australian, Scottish, Norwegian, Israeli and Danish scientists presenting

their latest findings within fish parasitology, fish virology, fish bacteriology, fish immunology, fish vaccinology, welfare of fish and aquaculture. Fish parasitologists, such as **Ken MacKenzie** from the University of Aberdeen, Scotland, presented findings from an on-going investigation of Norwegian cod. The work has been initiated with Norwegian colleagues in order to obtain a database of cod parasites which will be a useful reference during the upcoming expansion of cod farming in Norway. A total of 45 taxa have been recognised at this stage. **Barbara Nowak** from the University of Tasmania presented the latest findings on diagnostics and control of diseases in Australian aquaculture. Special attention was given to amoebae, dinoflagellates, ciliates, myxosporeans, monogeneans, blood flukes and crustaceans. **Alf Skovgaard** from the University of Copenhagen showed his latest findings on dinoflagellates in Baltic cod larvae. These parasites have previously been found but never characterised with the use of molecular tools. Ssu rDNA sequences showed the parasite to be an *Ichthyodinium* species. **Torsten Boutrup** gave a presentation on the complex causes of skin lesions in farmed rainbow trout. A series of pathogens, including at least 3 species of ectoparasites and putative amoebae, interacted with fungi and bacteria in various types of wounds and lesions found in farmed rainbow trout. The presence at the meeting of several types of specialists provided a fruitful atmosphere for innovative discussions and planning of future research possibilities. The next SCOFDA meeting will be held at KU-LIFE in April 2008.

Kurt Buchmann
SCOFDA
Research School Leader

CURRENT RESEARCH ACTIVITIES IN VARIOUS COUNTRIES

AUSTRALIA

provided by Ian Whittington, whittington.ian@saugov.sa.gov.au

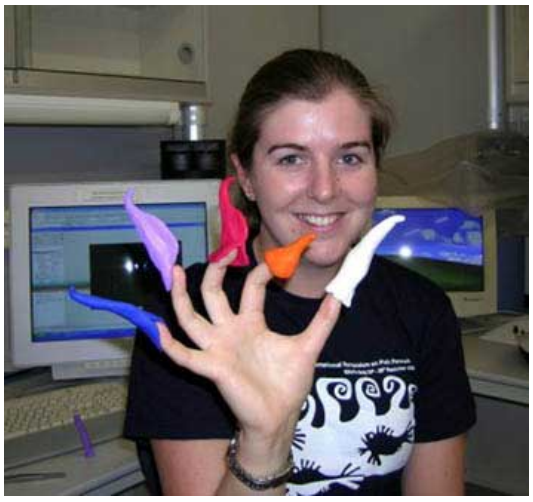
In July 2007, the Australian Society for Parasitology held its Annual Scientific Meeting in Canberra. Apart from man-made Lake Burley Griffin, created in 1963 and stocked with introduced carp, there wasn't a huge turn out of ichthyoparasitologists for the Canberra meeting. Those in attendance, however, were treated to an oration by **Tom Cribb,** who gave a career-spanning talk covering his work on trematode biology and systematics when he was awarded the Bancroft-Mackerras Medal for Excellence. This recognises Tom's outstanding contributions to Australian parasitology, especially over the last 5 years.

For the second year in a row, **Leslie Chisholm** migrated back to her homeland Canada to avoid another Adelaide winter. She spent 6 months working at the Royal Ontario Museum in Toronto on a variety of monogenean-related projects, including processing samples of gills and nasal tissues from sharks and rays collected by **Janine Caira** as part of the international, multi-collaborational NSF-funded '*Survey of the elasmobranchs and their metazoan parasites of Indonesian Borneo (Kalimantan)*'. With restrictions on the transportation of preserved biological samples by air globally, it was easier to road-freight samples from Connecticut to Toronto!

A major reason why so few Australian fish parasitologists attended our national meeting was because they were saving their hard-earned grant funds to attend the *7th International Symposium on Fish Parasites* (ISFP VII) at Viterbo, Italy. **Ian Whittington** was a co-convenor of the *Monogenea* session with **Cláudia Portes Santos** (Brazil). Attendees from Ian's group (pictured above) in the Marine Parasitology Laboratory at The University of Adelaide were **Leslie Chisholm**, **Vanessa Glennon**, **Kate Hutson** (recently awarded her PhD) and **Lizzie Perkins**. Lizzie won 1 of the 5 Best Oral Presentation Awards for her talk on mitochondrial genomes of capsalids. Leslie Chisholm presented our current thoughts on systematics of capsaline monogeneans from cosmopolitan pelagic fish and indicated the large number of synonymies worldwide. Vanessa Glennon presented the latest instalment of her studies on whether or not several monogenean species are shared across several rhinobatid host species which form a continuum along the southern half of the continent from Western Australia to Brisbane, Queensland. A talk on one of her current parasite passions, blood flukes (sanguinicolids) infecting *Seriola* species was delivered by Kate Hutson. Ian Whittington presented a paper with collaborators **Graham Kearn** and **Rick Evans-Gowing** (Norwich, UK) attempting to sort out 250 years of taxonomic confusion in *Entobdella* (see UK News). **Barbara Nowak** (University of Tasmania-Launceston) gave a keynote address on amoebic gill disease and a contributed paper on metazoan parasites of farmed southern bluefin tuna, *Thunnus maccoyii*, co-authored with **Craig Hayward** (SARDI Aquatic Sciences) and **Hamish Aitken**. **Marty Deveney**, recently appointed to the Biosecurity programme at SARDI Aquatic Sciences in Adelaide, South Australia, spoke about *Uronema* infections in the same tuna species also in collaboration with Craig Hayward, **Nathan Bott** (University of Melbourne) and Barbara. Her PhD student **Melanie Andrews** talked about chondracanthid copepods on *Latris lineata*. Tom Cribb co-convened the symposium *Parasite Biodiversity in the Austral Region* with **Marcelo Oliva** (Chile) in which 2 of Tom's PhD students presented. **Janet Hunter** spoke about the *Transversotrema licinum* complex from fish on the east Australian coast and **Abi Downie** talked about trophic transmission of digeneans on the Great Barrier Reef. Another of Tom's students, **Terry Miller**, presented his coevolutionary studies on cryptogonimids in lujanids and haemulids of the Indo-West Pacific. Also from Brisbane, PhD student **Nicole Gunter** represented the myxozoan group headed by **Rob Adlard** and spoke on *Ceratomyxa*. While in Viterbo, many of the Australians were pleased to catch up

with 2 ex-Aussies now living in Oregon, namely **Sasha Hallett** and **Stephen Atkinson,** who work on Myxozoa, in-between taking care of son, Calvin. **Ian Beveridge** was asked to contribute information on his recent activities for this newsletter but his fieldwork this year was confined to collecting road-kill kangaroos in our Northern Territory. He continues his collaborations on things ichthyoparasitological with **Shokoofeh Shamsi** on anisakids and with **Ron Campbell** on trypanorhynchs. Ian Beveridge was represented at ISFP VII on posters with a cast of thousands plus **Jean-Lou Justine** from Ian's visits to New Caledonia in 2005 and 2006.

For 4 weeks in October/November, **Diana Minardi** (supervisors: **Maria Letizia Fioravanti** and **Giuseppe Paladini**) from the Aquaculture & Ichthyoparasitology Laboratory at the University of Bologna, visited Adelaide. In the Marine Parasitology Laboratory at The University of Adelaide, Diana worked with Ian Whittington to identify and work on some capsalids from captive aquarium fish. Her visit was funded by a travel scholarship from Italy. While in Australia, Diana (left) learned some barbecuing techniques.



Kate Hutson remained in Europe after ISFP VII to visit laboratories in Spain and England, aided by a Researcher Exchange grant from the ASP/NH&MRC Research Network for Parasitology. At the University of Valencia she collaborated with **Paco Montero**, **Astrid Holzer** and **Aigues Repulles** on the morphology and molecular systematics of blood flukes of fishes. This included moulding model parasite spines out of plasticine (pictured right). In London she worked at the Natural History Museum with **Geoff Boxshall** and **Rod Bray** to identify parasitic copepods and digeneans respectively from Southern Australian fishes. This marks the start of Kate's new project co-funded by the Australian Biological Resources Study and the Fisheries Research & Development Corporation to investigate metazoan parasites of about a dozen species of macro-inshore fish of Australia, including species of commercial importance. She had a very productive visit and is thrilled with her early progress.

BRAZIL

provided by José Luis Luque, jlluque@ufrrj.br

The Ichthyoparasitology group of the Department of Animal Parasitology, Universidade Federal Rural do Rio de Janeiro is headed by **José Luis Luque**. After one year of postdoctoral research at the Department of Zoology of the University of Otago, New Zealand, working with **Robert Poulin** on macroecological aspects of biodiversity of parasites of Neotropical fishes, José Luis returned to Brazil in March 2007 to pursue his research on parasites of Brazilian Fishes.

José Luis (pictured right) is supervising the research by the Ichthyoparasitology Group, which includes a junior post-doctoral research fellow, **Luiz E. Tavares,** who is investigating the composition and structure of parasite communities in serranid fishes from the southern coastal zone of Brazil. We also have a large number of students who are currently working on their theses on biodiversity of fish parasites from Brazil. These include: **Daniele F. Rosim** (PhD), who is examining variability of parasite communities in *Hoplias malabaricus* from 4 Brazilian river basins; **Adriano Reder Carvalho** (PhD), who is working on seasonal variation of parasite biomass in marine and freshwater fishes; **Sonia C. dos Santos** (PhD), who is investigating the taxonomy and ecological aspects of helminth parasites in fishes from Pantanal wetland, Mato Grosso do Sul; **Vanessa Abdallah** (PhD) and **Rodney K. Azevedo** (PhD), who are working on the biodiversity of parasites in a pool of 20 fish species from Guandu River, Rio de Janeiro; and **Patrícia B. Cepeda** (MSc), who is examining the composition and structure of the parasite community of *Trachinotus carolinensis* from Rio de Janeiro. Also, a young research fellow, **Caroline Saad**, is quantifying anisakid larva in the musculature of some marine fishes of commercial importance in Rio de Janeiro. These projects are supported with fellowships and grants from the Conselho Nacional de Desenvolvimento Científico e Tecnológico do Brazil (CNPq) and Fundação de Amparo à Pesquisa do Estado do Rio de Janeiro (FAPERJ).

In addition, José Luis is compiling an inventory of parasite species from Brazilian fishes. This work will be published in a series of checklists in collaboration with **Claúdia Portes Santos** (Instituto Oswaldo Cruz) and on the internet. José Luis is also conducting an extensive collection of metazoan fish parasites from some important Brazilian river basins and ecosystems such as Guandu River (the main source of water in Rio de Janeiro), Mogi-Guaçu River in the State of São Paulo, and the Pantanal wetland, in the State of Mato Grosso do Sul (the latter 2 in collaboration with **Paulo S. Ceccarelli**, CEPTA, Chico Mendes Brazilian Biodiversity Institute).

INDIA

provided by Amlan Kumar Mitra, amlan_mitra@hotmail.com

Indian ciliate biologists had the opportunity to interact with their foreign counterparts during the International Symposium on Ciliate Biology hosted by Sri Guru Tegh Bahadur Khalsa College, University of Delhi, Delhi, India held between February 6–7, 2007. The plenary lecturers and symposium organisers are pictured below.

The keynote address was given by **Klaus Hausmann** of the Free University of Berlin, Germany. Many leading ciliate biologists including **Denis Lynn** (Editor, The Journal of Eukaryotic Microbiology) of the University of Guelph, Canada, **Allan Warren** of the Natural History Museum, London, **Weibo Song** of the Ocean University of China and many other distinguished parasitologists took part in the symposium. **Amlan Kumar Mitra** (pictured right with **Sergei Fokin**) gave a brief lecture on taxonomy, systematic and biodiversity of trichodinid ciliophoran parasites of fishes of India, with reports of many new species and genera. The lecture outlined the planned investigation of this poorly studied group of parasitic trichodinid ciliophorans from fishes, especially from wild Indian fishes. It is hoped this work will attract the interests of young Indian biologists and assist in the transfer our research knowledge to fish farmers in India to help fish production and strengthen the national economy. Abstracts from the International Symposium on Ciliate Biology can be downloaded at: http://www.uga.edu/~protozoa/meetings/meeting_reports/internat_ciliate.htm

IRAQ

provided by Prof Dr Z.I.F. Rahemo, zohair_rahemo@yahoo.com

Work on fish parasites continues in our laboratory. A total of 18 species of crustacean parasites were recovered from freshwater fishes of Iraq. These parasites belong to 3 families namely: Ergasillidae, Therodamsidae; Lernaeidae and 1 subclass. Many of these belong to *Ergasilus,* including: *E. barbi, E. iraquensis, E. mosulensis, E. pararostralis, E. pereggrinus*, *E. rostralis* and *E. sieboldi.* Other species of ergasilids found include: *Dermaergasilus varicoleus, Paraergasilus inflatus* and *Mugilicola kabatai.* Lernaeids

include: *Lernaea cyprinacea* and *L. oryzophila* in addition to *Lamproglena pulchella* and *Pseudolamproglena annulata.* Among the maxillopods (subclass: Branchiura) we found 2 species of *Argulus,* namely: *A. foliaceus* and *A. japanicus*. A peculiar species was also encountered which we recently identified as *Tracheliasttes polycotypus.*

Mrs **Badda Hazim Al-Khayat** submitted her PhD thesis entitled "Optical and biochemical study of the liver of some teleost fish and the effect of parasitism on *Acanthobrama marmid* as a model in Tigris River in Mosul" to the College of Science, University of Mosul. One of her major finds was that infections with a digenean trematode, *Pseudochetosoma salmonicola,* and a cestode larva, *Ligula intestinalis*, have significant effects on biochemical changes in the liver of *Acanthobrama marmid*. There was a significant decrease in the total concentrations of protein, glycogen, cholesterol and also in the activity of GPT and GOT, while there was an increase in the activity of AIP and AcP. She found that the multiple infections have a greater effect on the biochemical changes than single infections.

MÉXICO

provided by Scott Monks, smonks@uaeh.edu.mx

México was pleased to be the host-county for the First North American Meeting of American Society of Parasitologists (ASP), Sociedad Mexicana de Parasitología (SMP) and the Parasitology Section of the Canadian Society of Zoologists "From Alaska to Chiapas: the first North American Parasitology Congress". The Mexican organisers were headed by **Ana Flisser**, Faculty of Medicine, UNAM, **Guadalupe Ortega-Pierres, Patricia Talamás-Rohana**, **Juan Sandoval Gío**, and **Victor M. Vidal Martinez**, all of CINVESTAV-IPN, Mérida, Yucatán. All the gossip indicated that the meeting was a huge success and gave many that normally can't attend meetings outside México the opportunity to meet those whose names are so familiar to icthyoparasitologists but whose faces are unknown.

Virginia Léon-Regàgnon, Dept. de Zoología, Instituto de Biología, UNAM, as Editor of the Revista Mexicana de Biodiversidad, issued a call-for-papers for a special issue of the journal to honour **Rafael Lamothe-Argumedo**, Laboratorio de Helmintología, Instituto de Biología, UNAM, for his life-long work with helminths. Although he works with groups from a wide variety of host types, a large portion of his research has focused on fish parasites, many of them from the marine environment. Virginia was joined in this project by an editorial staff that included **Gerardo Pérez-Ponce de León**, **Luis García-Prieto** and **David Osario-Sarabia**, all of UNAM. They had their work cut out for them because of the many who wanted to participate in this tribute to "Maestro" Lamothe. In the call-for-papers, the editors wrote "[Lamothe's] pioneering research on the Mexican parasite fauna settled the basis for major advances in establishing parasite biodiversity in México that definitively 'set the scene' for a wide range of research approaches on this rich fauna…". Those who are familiar with his work know that this clearly indicates the importance of his contribution.

Miguel Rubio Godoy, Instituto de Ecología, Xalapa, Veracruz, and his students have been studying the monogenean parasites of native and introduced freshwater fishes in Veracruz, México: MSc student **Daniel Aguirre-Fey** has been looking at the gills of several types of farmed tilapia and describing the communities of *Cichlidogyrus* and

Sciadicleithrum; BSc student **Emanuel Mimila-Herrera** has captured *Heterandria bimaculata* and *Oncorhynchus mykiss* monthly and recorded infection levels of *Gyrodactylus*; and Miguel himself is studying the populations of *Gyrodactylus* on farmed tilapia. Preliminary results from these projects were presented at the 1st North American Parasitology Congress in Mérida, México, and the 7th International Symposium on Fish Parasites at Viterbo, Italy. In order to identify the parasite species found, Miguel has been collaborating with **Gerardo Pérez-Ponce de León,** UNAM, and with **Andy Shinn** and **Adriana García-Vásquez** at the University of Stirling.

Two conferences were held this year at the Universidad Autónoma del Estado de Hidalgo (UAEH). The first was an international workshop on the "Ecology of Helminth Communities and Case Studies of Helminths". Speakers included **Griselda Pulido-Flores** (UAEH- organiser), who discussed how helminth communities are different to those of free-living organisms, **Raúl Pineda-López** (Lab. de Parasitología, Univ. Auto. de Querétaro, Querétaro), multidisciplinary megaprojects, **Serapio López-Jiménez** (Universidad Juárez Autónoma de Tabasco), helminths in aquaculture, **Dennis Richardson** (School of Health Sciences, Quinnipiac University, USA), life cycles and ecology, **Guillermo Salgado-Maldonado** (Laboratorio de Helmintología, IBUNAM), parasite biodiversity and how to plan projects and **Scott Monks** (UAEH), who discussed aspects of parasite ecology. Although the speakers did not exclude any type of helminth, the focus was on those infecting fish.

The second meeting, "First symposium on Investigation at Lago de Tecocomulco, Hidalgo", brought together many who are participating in studies at this important locality. For those who are not familiar with the lake, it is one of the last relicts of the great lake that once covered the entire valley of central México, the area where the mega-metropolis of Mexico City now stands. Presenters discussed the use of helminths of fish of the lake as bioindicators (**Berenice Alemán-García,** [Master's student-UAEH], S. Monks**,** G. Pulido-Flores and S. López-Jiménez), the presence of hydrocarbons in the water and fish of the lake (**Claudia Romo-Gómez** [Doctoral student], S. Monks**, Alberto José Gordillo-Martínez** and **Francisco Prieto-García**, all of UAEH), pesticides of carp from the lake (**Jessica Aguilar-Martínez** [BS. student], F. Prieto-García, and **Alma Delia Román-Gutiérrez**, UAEH). The meeting was closed after a final presentation that summarised the results of an ongoing study of the environmental quality of the lake (S. Monks, G. Pulido-Flores, A. J. Gordillo-Martínez, and **Juan Carlos Gaytán-Oyarzun**, all of UAEH).

NORWAY

provided by Ken Mackenzie, k.mackenzie@abdn.ac.uk

Our 3-year project "The parasite fauna of wild and cultured coastal Atlantic cod *Gadus morhua*: transmission of parasites?" (CODPAR) is continuing and the second year's sampling has been completed successfully. We have now sampled 4 different sites and recorded >50 species of protozoan and metazoan parasites from the 278 farmed and wild cod examined, with 3 new host records and 2 new species (one protozoan and one myxosporean). The early results were presented at a cod farming workshop in St. Andrew's, NB, Canada in May, at ISFP VII near Viterbo, Italy in September and at the SCOFDA meeting in Copenhagen in October, 2007. In the past year **Erik Sterud** has left

the project and **Haakon Hansen** of the National Veterinary Institute in Oslo has joined it, along with **Paal Haugen** of the Institute of Biology, University of Tromsø.

provided by Tor. A. Bakke, t.a.bakke@nhm.uio.no, and
Lutz Bachmann, bachmann@nhm.uio.no

The *Gyrodactylus* group at the University of Oslo, Natural History Museum, Department of Zoology, Norway, addresses taxonomic, systematic, and ecological issues of gyrodactylids, particularly those that parasitise salmonid hosts (see our web-page under development: www.nhm.uio.no/gyrodactylus). *Gyrodactylus salaris* that parasitises Atlantic salmon and causes significant ecological and economic damage and related species are the main research topics. Current projects focus on (i) the phenotypic plasticity of *G. salaris* and *G. thymalli*, (ii) mitochondrial haplotype diversity in *G. salaris* and *G. thymalli*, and (iii) the gyrodactylid fauna of Norwegian Arctic charr (*Salvelinus alpinus*), grayling (*Thymallus thymallus*) and brown trout (*Salmo trutta*). The projects are addressed using modern morphometric and molecular methods as well as infection experiments in the institution's aquarium, and are conducted with international cooperation partners. Currently, the group consists of the Prs **Tor A. Bakke** and **Lutz Bachmann**, the PhD students **Kjetil Olstad** and **Ruben A. Pettersen**, the Master student **Ole Gunnar Øvstaas**, and the technician **Kjersti Kvalsvik**. After graduation in spring 2007, **Haakon Hansen** left the group to take a position at the Veterinary Institute, Oslo. **Karin Andersen** retired in 2005 and professor emeritus **Odd Halvorsen** retired in late 2006 but is still active in parasitological research at our department.

The *Gyrodactylus* group also runs a **Graduate School in Systematic Parasitology** funded by the University of Oslo, Norway, that aims to provide highest level education to PhD students in parasitology.

PERU

provided by José Iannacone, aphia2005@yahoo.com

On December 11 and 12, 2006, APHIA offered a second theoretical and practical advanced course (participants pictured below) entitled: "Laboratory and field methods and techniques for helminthological studies". This course was offered under the auspices of the Laboratory of Invertebrates from the Faculty of Biological Sciences, Ricardo Palma University. The main biological materials used were parasites from freshwater and marine fishes of Lima, Peru, particularly those from the common dolphinfish, *Coryphaena hippurus*.

The Peruvian Helminthologist Day and 2nd Anniversary of the signing of the foundation of the Peruvian Association of Helminthology and Associated Invertebrates (APHIA) was commemorated on February 12, 2007 in the auditorium of the General Director of Epidemiology of the Ministry of Health.

On July 23, 2007, Dr **John Shea** (Loyola University, Chicago, USA) gave an invited presentation in Lima, Peru entitled: "Using helminth infections in Peruvian wetlands as an indicator of ecosystem health". In a study with the biologist **Jorge Cardenas,** he discussed the use of snail and freshwater fish parasites, mainly the cercarial fauna, as

possible biological tags in ponds and coastal wetlands in the south of Peru. In addition, John received a certificate from APHIA.

The Laboratory of Invertebrates, Faculty of Biological Sciences, Ricardo Palma University, has been performing investigations in the field of marine parasitology for the last 2 decades. With the background knowledge accrued on the parasite fauna of different species of marine fishes in this area, the research group under the supervision of Prof Dr **José Iannacone** is currently looking at the community structure of the metazoan parasites of species of marine fishes from the coast of Chorrillos, Lima, Peru. Serranids, grunts and butterfishes were selected for the research. The helminth community of Peruvian rock seabass, *Paralabrax humeralis,* was studied in detail. Quantitative aspects of metazoan parasite communities of 2 fish species, smallmouth grunts, *Anisotremus scapularis* and Pacific harvestfish, *Peprilus* medius, were also analysed.

PORTUGAL

provided by Maria João Santos, mjsantos@fc.up.pt

The Animal Pathology Group of the Department of Zoology-Anthropology / CIIMAR, University of Oporto, headed by **Jorge Eiras** (jceiras@fc.up.pt), includes senior researcher team members **Aurélia Saraiva** (amsaraiv@fc.up.pt), **Cristina Cruz** (cfcruz@fc.up.pt) and **Maria João Santos** and a young research fellow **Margarida Hermida**. Several students are also currently working on their theses in fish parasitology: **Joana Marques** (PhD), **Custódio Boane** (PhD), **Francisca Cavaleiro** (MSc), **João Soares** (MSc)**, Luis Rangel** (MSc) and **Daniella Duarte** (MSc).

Various studies on the fish parasites of eels, trout, seabass and sand soles are being carried out. Currently, the following project is underway in our laboratory: "Black scabbardfish in the Portuguese waters: conservation measures and fish quality control", with a project on the use of parasites as possible biological tags, supported by the National Science Foundation – J. Eiras, A. Saraiva, C. Cruz and M.J. Santos. Meanwhile,

collaborative projects with other Portuguese universities and with institutions from other countries are also being carried out. More detailed information about our previous work and publications can be seen at the web page: http://www.fc.up.pt/zoo-ant/seccoes/patol/patol.html

SOUTH AFRICA

provided by Linda Basson, BassonL.SCI@mail.uovs.ac.za

During our university's autumn recess in April, we normally take our third year Zoology students to the De Hoop Nature Reserve as part of their Marine Ecology course. This year was no different in that regard, except that we were joined by **Robin Overstreet** and **Ash Bullard**, both from the Gulf Coast Research Laboratory, Ocean Springs, University of Southern Mississippi. Before the third year students joined us at De Hoop, a team of intrepid fish parasitologists, which included **Jo van As**, **Linda Basson**, **Liesl van As** and **Candice Jansen van Rensburg** and the 2 visiting scientists from the USA (pictured right) spent a week at the De Mond Nature Reserve where we collected fish in the estuary as well as the Zoetendalsvlei area. During this trip the annual "catch and release" activities lured us to the coast, where we had to convince some extremely serious anglers not to follow the second part of their assignment in certain "interesting" cases, all of course with the permission of Nature Conservation Authorities. Although we concentrated on mullets, we aggressively also looked for the fish host of the elusive *Argulus capensis* and other branchiurans. Although being successful in collecting a number of the Cape kurper, *Sandelia capensis*, we did not find any branchiurans. Fish collected from the estuary and those coaxed and wheedled from the anglers revealed a number of parasitic crustaceans, numerous ciliates and a wide spectrum of worms, the latter making our American guests very happy indeed.

Our research laboratory (pictured left) was set up outside our humble cottage, and a very productive week was spent there before we moved off to meet the third year students at De Hoop Nature Reserve. Here some of us spent our time and energy with the students on the rocky shore, while Robin Overstreet, Ash Bullard together with Linda Basson and our post graduate students happily poked around in

tidal pools, sometimes reverting to more sophisticated collecting methods, such as actually using a rod and line (Overstreet pictured right). Ash even tried his luck by diving into some of the deeper tidal pools to ensnare fish. Both of the visiting scientists also did their part in the academic component of the Ecology Programme and presented talks to the third year students; Robin Overstreet presented an overview of his Parasitological Research, while Ash entertained the students on the "boring life" of a world travelling fish parasitologist. It must be also mentioned that both Robin and Ash enthusiastically did their part in the annual cricket game with the students, a very serious activity of the excursion.

SPAIN

provided by Ariadna Sitjà-Bobadilla, ariadna@iats.csic.es

The Fish Pathology Group of the Institute of Aquaculture of Torre de la Sal (CSIC) has been investigating fish parasites since it was established in 1985 by **Pilar Álvarez Pellitero**. The primary aim of the group (pictured below) is to contribute to the improvement of aquacultured marine fish sanitary status by generating the necessary knowledge for the development of control and prophylactic measures. The most important pathogens and their impact on the main marine fish species cultured in Spanish waters (mullets, turbot, European sea bass, gilthead sea bream, and common dentex) have been studied.

We focus on parasitic infections by Myxozoa, Coccidia, Monogenea and Scuticociliatida. Specifically, we have been involved in several National and International research programmes dealing with pathological, epidemiological, and immunological aspects of these fish parasitoses. Aspects, such as *in vitro* cultivation and antigenic characterisation of the parasites, evaluation and modulation of fish innate and adaptive immune responses, or histopathology and pathogenic mechanisms, are among our primary research lines. We try to keep a trade-off between applied research (development of validated diagnostic tests, treatments, immunoprophylaxis) and more basic research (life cycles, molecular phylogeny and taxonomy). In addition, we offer diagnostic services and consulting in fish health, as well as scientific coordination in joint private-public research programmes.

Currently, we have the following projects running on different parasites affecting cultured fish:

1. We have recently described the new myxozoan genus, *Enteromyxum*, which presents interesting biological features, such as direct fish-to-fish transmission and very high pathogenicity. *Enteromyxum leei* infects a wide spectrum of hosts, including sparids and other Mediterranean fish, and *E. scophthalmi* infects turbot and sole. We study aspects of the life cycle and epidemiology, and we have developed and validated PCR diagnostic tests, useful for large-scale epidemiological surveys of wild and cultured fish, as well as putative invertebrate hosts. The study of pathogenesis and host mechanisms of resistance to the infections is oriented to the control of these important infections through immunomodulation or selection of resistant families. Part of these studies has been framed in the EU-funded research project MYXFISHCONTROL (QLRT-2001-00722). A summary of this project can be downloaded at http://www.iats.csic.es/patologia/myxfish_web_abstract.pdf. We are currently coordinating a Spanish project focused on these 2 myxozoan species (AGL2006-13158-C03).

2. Infections by an *Uronema*-like scuticociliate (*Philasterides dicentrarchi* according to some authors) are among the most serious current parasitic threats for turbot cultivation. Ongoing studies in our laboratory are aimed at the characterisation of different strains, the evaluation of their virulence, and the development of a first generation of imunoprophylactic strategies based on live-attenuated, or killed, ciliate strains. We keep several strains of fish scuticociliates *in vitro* in our facilities.

3. Infections by the apicomplexan *Cryptosporidium molnari and C. scophthalmi* are not usually considered a primary, serious threat for fish aquaculture. However, a high prevalence and intensity has been found in some lots of sea bream and turbot, causing growth retardation and trickling mortalities. The interaction and synergistic effects of *C. molnari* with some opportunistic bacteria has been shown. Furthermore, piscine *Cryptosporidium* have not yet been characterised at the molecular level. Molecular phylogeny studies are currently being conducted on *C. molnari* in order to compare fish cryptosporidia with species infecting other vertebrates, including *C. parvum.*

4. The monogenean *Sparicotyle chrysophrii* is one of the most insidious pests in gilthead sea bream culture. It provokes gill damage, serious anaemia, lethargy, respiratory stress and enhanced susceptibility to secondary, opportunistic infections. We are currently studying the epidemiology and pathology of the infections, the interactions with other parasites and bacteria and, more specifically, the effect of Praziquantel as a possible therapy for the control of these infections.

5. We are also studying the effect of feeds based on vegetable proteins and oils on the immune response of gilthead sea bream and its susceptibility to parasitic infections, through the EU project AQUAMAX (www.aquamaxip.eu).

More information on the group can be found at http://www.iats.csic.es/patologia/

TURKEY

provided by Naim Saglam, nsaglam@firat.edu.tr

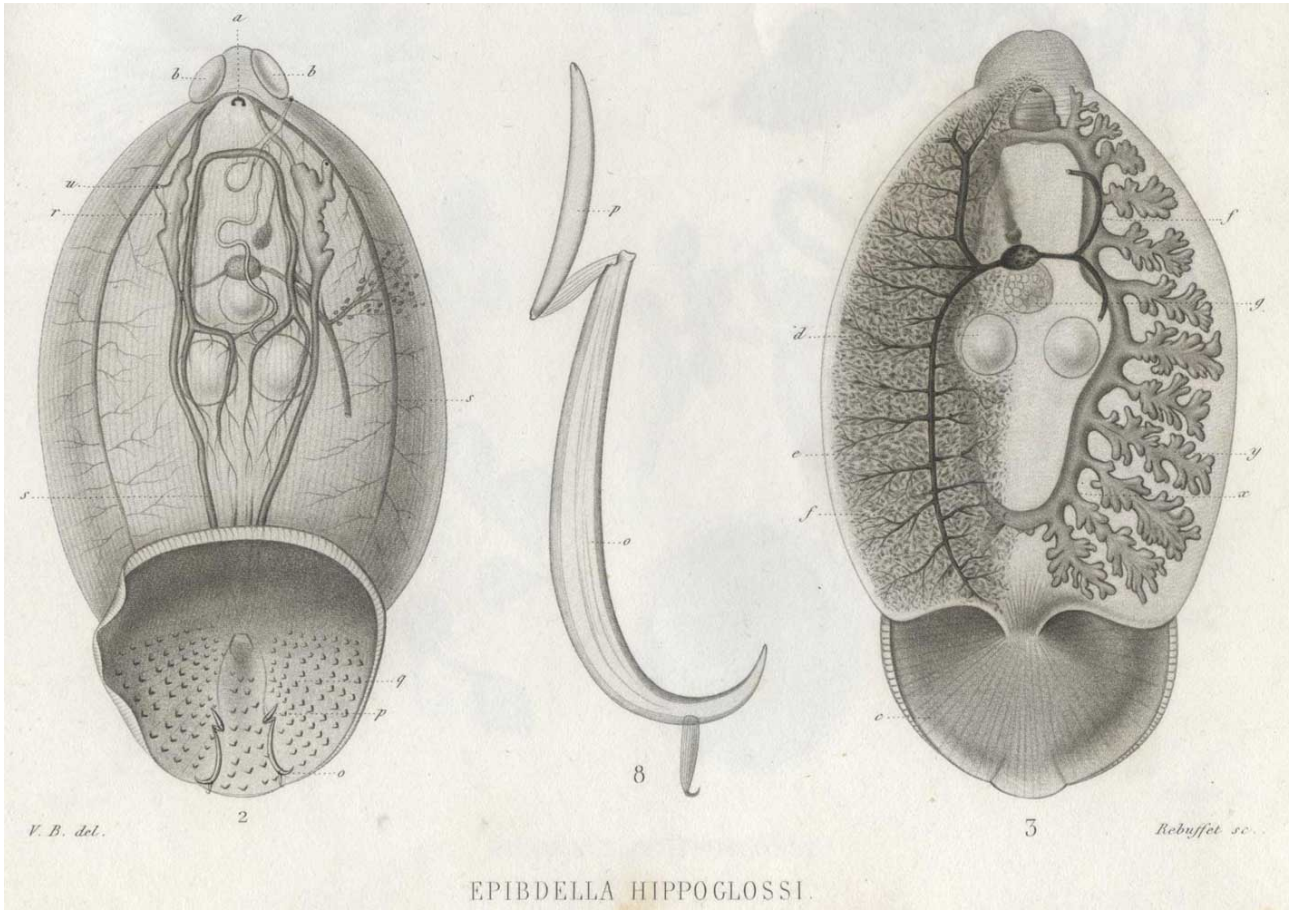
The XIV Aquaculture Symposium was held at the Fisheries Faculty of Mugla University, in September 2007. During the symposium, oral presentations on the parasite fauna of *Aphanius danfordii* and *Platichthys flesus,* a re-evaluation of parasitism of *Epinephelus marginatus* using self organising map (SOM) and the treatment of coccidiosis (*Eimeria truttae*) in rainbow trout (*Oncorhynchus mykiss*) were presented. Posters on *Hysterothylacium aduncum* and *Livoneca punctata* on shad (*Alosa pontica*), the seasonal changes of *Trichodina* spp. on whiting (*Merlangius merlangus*), monogeneans (*Zeuxapta seriolae*) on *Seriola dumerili*, the helminth fauna and endoparasites of some freshwater fishes, seasonal changes of protozoan parasites and the parasite infections of farmed rainbow trout were also presented. These presentations showed the increasing importance of parasites in wild and farmed fish species. In addition, seasonal changes of some fish parasites, their pathogenicity and possible control methods of fish parasites were highlighted.

UNITED KINGDOM

provided by Graham Kearn, g.kearn@uea.ac.uk

Ian Whittington (Monogenean Research Laboratory, The South Australian Museum & Marine Parasitology Laboratory, The University of Adelaide, Australia) spent a week in my laboratory in School of Biological Sciences, University of East Anglia Norwich in September 2007. This enabled us, with **Richard Evans-Gowing**, to finalise a detailed review of the monogenean genus *Entobdella*. This paper is now accepted by *Zootaxa*. One of our findings is of special interest. Müller introduced the world to monogeneans in 1776 by briefly describing the first monogenean *Entobdella hippoglossi* (as *Hirudo hippoglossi*) from the skin of the Atlantic halibut, *Hippoglossus hippoglossus*. Our studies have revealed that the halibut is host to not 1 but 2 *Entobdella* species and that both species can occur together on the same host fish. The 2 species are similar in size and to the casual observer appear anatomically similar, but closer examination reveals distinct differences in the reproductive system and in the haptor. It is remarkable that the presence of this large (up to 2.2 cm long) second species has been overlooked since 1776.

We have named the second species after P.J. Van Beneden to acknowledge the work of this outstanding parasitologist of the 19th century, whose contribution included an anatomical study of *E. hippoglossi* of exceptional quality (illustration below from Van Beneden, P -J 1858 *Mémoire sur les vers intestinaux*. J.-B. Baillière et fils: Paris).



NEW BOOKS

South American Trematode Parasites of Fishes

Authors and editors: Anna Kohn, Berenice M. M. Fernandes, Simone C. Cohen
2007. Imprinta Express Ltda, Brasil. Rio de Janeiro. CDD- 21.ed.-592.48. 318 p. Hardback.
Price: free.
To order contact: annakohn@ioc.fiocruz.br

This catalogue lists species of trematode (aspidogastrean and digenean) parasites of freshwater and marine fishes from South America. Four-hundred and forty-nine known species of the Digenea and 11 species of aspidogastrean have been recorded: 109 from Argentina including the Patagonian region, 247 from Brazil, 48 from Chile, 43 from Colombia, 12 from Ecuador, 24 from the Falklands, 3 from French Guyana, 41 from the Galapagos, 3 from Paraguay, 35 from Peru, 10 from Uruguay and 49 from Venezuela.

These parasites have not been reported from fishes in Bolivia, Guyana or Surinam. This survey is based on bibliographic sources and includes the main measurements, figures, hosts, geographical distribution and references.

Photo: Simone Cohen, Anna Kohn and Berenice Fernandes (from left to right) during the launch of the book "South American Trematodes Parasites of Fishes" at the Oswaldo Cruz Institute.

Histopathology of Protistan and Myxozoan Infections in Fishes

Authors: Iva Dyková and Jiří Lom

2007. Academia, Prague, Czech Republic. Hardback
ISBN 978-80-200-1546-4
Price: EUR 25+ post paid
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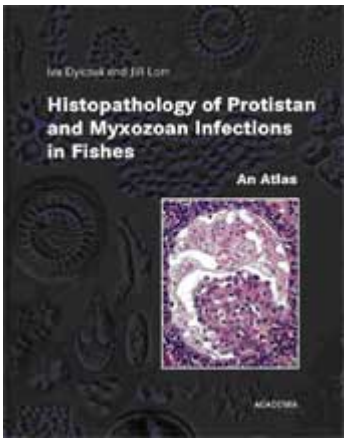

This is the first publication devoted entirely to the histopathology of fish infections cause by protistan and myxosporean agents. It sums up the data collected over many years of research and offers comprehensive pictorial representation of the action of the eukaryotic microorganisms formerly known as protozoa upon their fish hosts.

Separate groups of these parasites are introduced by a brief characterisation, including photographs, representing their typical species as seen in fresh preparations for comparison with their appearance in stained tissue sections. The variability of changes elicited by protists and myxozoans in fish tissues and organs is documented in a series of 150 full-page plates of black and white and colour photographs. In addition to portraying the tissue changes, the atlas yields an insight into defence reactions towards such pathogens and may also expand the existing knowledge of the parasites in question. A short survey of fish histology is also supplied to provide a handy comparison with histopathological alterations described in the main part of publication

Selected examples of basic pathological processes are also presented as reminder that they should not all be attributed to the action of parasites. The contents of the atlas will be of importance to ichthyoparasitologists and fish veterinarians engaged in the field of diagnostics of fish diseases, but it may also find its place on the bookshelves of protozoologists and biologists interested in fundamental biological research.

EDITORIAL POLICY

Please note that material for the next issue should be sent to the Editor, Dr Leslie Chisholm [e-mail: chisholm.leslie@saugov.sa.gov.au], Parasitology Section, The Science Centre, South Australian Museum, North Terrace, Adelaide 5000, South Australia, Australia: Fax: +61 8 8207 7222, before November 15, 2008.

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 are also welcome. The Newsletter is intended for any news, notices, comments, etc. that you feel would be of interest to the world's ichthyoparasitologists. Please note that publication lists are not accepted. The editor would be grateful if submissions would follow the format similar to that of the present Newsletter. Images are welcome. Please send images as separate JPG files (do not incorporate them in your text file).

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.

Thank you

Leslie Chisholm

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