International Ichthyoparasitology Newsletter No. 24 January 2017

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CONTENTS

EDITORIAL

As always, I thank everyone who has contributed to this issue of the Newsletter. I am also grateful to David Gibson for his editorial assistance and for posting the Newsletter on his website.

It has been another busy year in ichthyoparasitology and promises to be the same in 2017, with two international conferences on fish parasites scheduled (see below). In addition, according to some of the photos I was sent this year, there appear to be many young "future parasitologists" in the wings, which is great news for the discipline. On a more sober note, I am very sad to report the recent death of E. Tellervo Valtonen. She was an inspirational researcher who will be very much missed by family, friends and colleagues.

If you wish to contribute to the next issue of the Newsletter (Number 25), the deadline date for submission is **November 15, 2017**. 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.talktalk.net/newsletter/

ANNOUNCEMENTS

18th INTERNATIONAL CONFERENCE ON DISEASES OF FISH AND SHELLFISH
Belfast, Northern Ireland
4–7th September 2017

The 18th International Conference on Diseases of Fish and Shellfish (http://eafp2017.com) will be held at the Belfast Waterfront Hall, Belfast, Northern Ireland. Scientific and technical sessions consisting of poster presentations, invited talks, keynotes, oral presentations, workshops and an EAFP General Assembly will take place during the conference. Planned social events include a Welcome Cocktail, Civic

Reception and the traditional Conference Banquet.

In order to ensure that appropriate topics are covered, including emerging areas, we are very interested in hearing any suggestions for potential topics for scientific sessions and workshops at the conference. EAFP members and non-members are encouraged to submit proposals.

More information is available on the EAFP website (http://eafp2017.com) and we look forward to seeing you at the conference. Feel free to contact our Meeting Secretary if you have any questions or need additional information.

Ivona Mladineo, EAFP Meeting Secretary, Institute of Oceanography & Fisheries, PO Box 500, 21000 Split, Croatia
Tel.: +385 21408047, Fax: +385 21358650. E-mail: mladineo@izor.hr

8th INTERNATIONAL SYMPOSIUM ON MONOGENEA

We are pleased to announce the date of the 8th International Symposium on Monogenea, which will take place in the Czech Republic. After 20 years the conference will return to Brno and we are looking forward to see you there in a large number from 6th to 11th August 2017. The conference will be organized by the team from the Parasitology Research Group, Department of Botany and Zoology, Faculty of Science, Masaryk University, Brno, Czech Republic and in cooperation with the Czech Society for Parasitology.

The Symposium program will include following sections:
- Taxonomy and diversity
- Host-parasite interactions
- Population and community ecology
- Immunoecology and molecular genetics
- Transcriptomic and phylogenomics
- Evolution and phylogeny
- Therapy and control
- Aquaculture and pathology

NOTE IMPORTANT DATES!!!

Registration opens	**1st March 2017**
Early registration payment	**1st May 2017**
Late registration payment	**After 1st May 2017**
Deadline for abstracts	**1st June 2017**

The registration fee rates will be as follows:

	Researcher	Student
Early registration	**350 EUR**	**250 EUR**
Late registration	**450 EUR**	**350 EUR**

Local Organizing Committee:

Chair: Milan Gelnar
Secretary: Iva Přikrylová

Members:
Michal Benovics
Lenka Gettová
Maria-Lujza Kičinjaová
Nikol Kmentová
Zuzana Kobíková
Eva Řehulková
Andrea Vetešníková-Šimková

Photo: Iveta Hodová

We would like to especialy motivate students and young researchers (up to 5 years from the defence of their Ph.D. thesis) to attend the conference. Therefore, three free student registrations and three reduced (50 %) registration fees for young researchers will be awarded. Deadline for the award applications will be on 1st April 2017. Abstract and a short motivation letter will be required to submit via email: ism8.brno@gmail.com

Kind regards,

Milan Gelnar and Iva Přikrylová
On behalf of the organizing committee

MEETING REPORT

XIV ENBRAPOA (Brazilian Meeting of Pathologists of Aquatic Organisms)

provided by Maria de los Angeles Perez Lizama maria.lizama@unicesumar.edu.br and
Ricardo Massato Takemoto takemotorm@nupelia.uem.br

The 14th ENBRAPOA, organised by ABRAPOA (Association of Pathologists of Aquatic Organisms) and the Universidade Federal de Santa Catarina, was held August 22–25, 2016, in the beautiful city of Florianópolis, Rio Grande do Sul State. Participants included graduate and post-graduate students, aquaculture professionals and researchers from Brazil and other countries, including Chile, Argentina, Uruguay, Peru, France and Norway. In total, 215 scientific talks/posters on various aspects of aquatic animal pathology were presented over the four days, enabling the exchange of knowledge among students and researchers.

A central theme of the conference was “Biotechnological advances in the health of aquatic organisms”. A diversity of topics related to diseases that affect aquatic organisms was discussed, with emphasis given to emerging diseases and the use and implementation of preventive and therapeutic measures and disease transmission. **Dr. Evelyne Bachère** from IFREMER (*Institut Français de Recherche pour l'Exploitation de la Mer*, Montpellier, France) discussed advances in the molecular diagnosis and genetic enhancement in a presentation entitled “Application of genomic and transcriptomic studies in aquaculture health”.

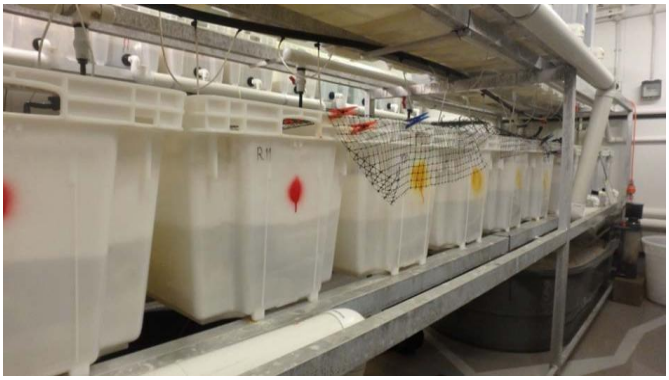
The 15th ENBRAPOA will be held in Rio de Janeiro during 2018.

CURRENT RESEARCH ACTIVITY IN VARIOUS COUNTRIES

AUSTRALIA

James Cook University
provided by Kate Hutson, kate.hutson@jcu.edu.au

The *Marine Parasitology Laboratory*, led by **Kate Hutson** at James Cook University, now has four parasite cultures which provide unique resources for research development, collaboration, industry impact and extension. Over the past five years we have maintained the monogenean fish parasite, *Neobenedenia*, in culture and have recently expanded to include other problematic parasites of fishes, including marine white spot (*Cryptocaryon irritans*) and fish leeches (*Zeylanicobdella arugamensis*). We have also built a large experimental facility dedicated to the study of fish parasites, which includes three separate recirculating seawater systems, each fitted with 2 replicate 120 litre tanks (i.e. 60 tanks in total), and permits control of light and temperature regimes.



PhD student **Alexander Brazenor** is finalising his thesis on the phylogeny, biology and management of monogenean ectoparasites (species of *Neobenedenia*) which threaten the aquaculture of dozens of finfish species. **Giana Bastos Gomes** is in the final year of her PhD and is developing an on-farm device for parasite detection in aquaculture systems. PhD student **Alejandro Trujillo-González** continues his research on parasites infecting ornamental fish imported into Australia, with a focus on new molecular detection techniques and strategic approaches to improve biosecurity protocols. **David Vaughan**, in the second year of his PhD, continues his work on cleaner shrimp and their ability to remove ectoparasites from fishes and to influence wound healing in injured fishes. Masters student **Soranot Chotnipat** is investigating the efficacy of praziquantel on external monogenean infections of fish, and **Julian Wilson** is currently completing a Masters on the parasite assemblages of invasive tilapia *Oreochromis mossambicus* in north Queensland river systems.

The laboratory hosted the 3rd International Workshop on Symbiotic Copepoda held at the Heron Island Research Station in Queensland. The event included research presentations, laboratory based workshops and the opportunity for participants to collect workshop related specimens in the scientific research zone of the Great Barrier Reef Marine Park. Four days were dedicated to symbiotic Copepoda, with the final day on symbiotic Isopoda.

Charles Sturt University
provided by Shokoofeh Shamsi, sshamsi@csu.edu.au

In January, 2016, we welcomed two new students to the lab run by **Shokoofeh Shamsi**. **Isaac Kane** is doing a research project on freshwater fish parasites and **Eleanor Steller** is doing her project on the occurrence of zoonotic nematode parasites in selected fish species

from Moreton Bay, Australia. This is part of a large Australian Biological Resources Study (ABRS) funded project led by **Tom Cribb** (University of Queensland), which has brought together many of the world's renowned ichthyoparasitologists and students to document parasite biodiversity from marine fish in Moreton Bay. **Lesley Warner** (South Australian Museum) visited the lab for two weeks in January as part of her research on the Acanthocephala from freshwater fish. **Anita Poupa** is coming toward the end of her research project on parasites of fish from off New Caledonia.

Shokoofeh (pictured right with conference organiser **Prof Antti Oksanen**) attended the 12th European Multicolloquium of Parasitology (EMOP) in Turku, Finland in July, 2016. She presented her diverse work on fish parasites, including: parasites of edible fish in New Caledonian waters, Australian cormorants and their role in the transmission of seafood borne parasites, a revised method for the detection of parasites in seafood and new species of zoonotic parasites in edible fish from the Persian Gulf. EMOP also hosted the First International Parasite Film Festival. On behalf of the Australian Society for Parasitology, **Shokoofeh** presented "Gula Guri mayin", which means "Heal the body". This was the result of a partnership between the Society and a group of aboriginal artists in the far-north of Queensland to raise awareness of the impact of parasite-related illness on Aboriginal and Torres Strait Island communities. Within this, the role fish can play in parasite life-cycles is highlighted. To find out more see: http://parasite.org.au/outreach/gula-guri-mayin/

IRAQ

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

University of Salahaddin

At the University of Salahaddin (Kurdistan Region), **Prof Dr Shamall M. Abdulla** continues to be very active supervising the MSc projects of **Younis Sabir Abdulla** from Sulaimania University, **Karwan Sallo Najim Al-Marjan** from the Medical Technical Institute at Hawler (Erbil) and **Dalya S. Hashim** (in cooperation with **Dr Hussain F. Hassani**) from Karkok University. The team has carried out the following investigations. Three species of the monogenean genus *Paradiplozoon* were recorded from cyprinids in watersheds of the Sharbazher area, Sulaimania City, northern Iraq. Histopathological changes in the gills of the goldfish *Carassius auratus* infested with *Ichthyophthirius multifiliis* from Erbil Aquariums were also investigated. *Dactylogyrus dulkeiti* (Monogenea: Dactylogyridae) was recorded for the first time on the gills of *C. auratus* from Dukan Lake in the Kurdistan Region. In addition we identified some Iraqi fish parasites using biochemical and molecular methods.

University of Basrah
Dr Khalida Al-Niaeem (Department of Fisheries and Marine Resources, College of Agriculture) and several colleagues and external collaborators, including, **I. Shnawa**, **B. Al-Saiada**, **S.A.A. Al-Azizz**, **F. Ameen**, **A. Hatamlech**, **F. H. Al-Ataby**, **H.A. Al-Hasson**, **M. Bakri** and **Lesley Smales** (South Australian Museum) were involved in a number of research projects. A new species of *Neorhadinorhynchus* (Acanthocephala) was described from *Platax teira* collected from Iraqi marine waters. Pathological studies were conducted using infections of *Ichthyophonus* sp. in *Oreochromis aureus* from Iraq and a new record of *Pseudogrillotia spratti* (Cestoda: Trypanorhyncha) parasitic in some carangid fishes from Iraqi marine waters was recorded.

Dr Atheer H. Ali redescribed *Paraleptus chiloscyllii* (Nematoda: Physalopteridae) from *Chiloscyllium arabicum* (Chondrichthyes: Hemiscylliidae) off Iraq. He also described a new species of *Cucullanus* (Nematoda: Ascaridida) from *Pomacanthus maculosus* (Perciformes: Pomacanthidae) from an Iraqi coral reef. Using the SEM, he provided new morphological characters and notes on the histopathology of *Neoechinorhynchus* (*Neoechinorhynchus*) *dimorphospinus* (Acanthocephala: Neoechinorhynchidae) collected from the Arabian Gulf. In addition, he investigated philometrids (Nematoda: Philometridae) from marine fishes off Iraq, described two new species and provided the first description of the male of *Philometroides eleutheronemae* Moravec & Manoharan, 2013.

University of Hamdania
Prof Dr Zohair I.F. Rahemo (Anatomy Division, College of Education, University of Hamdania, Ankawa, Erbil, Kurdistan, Iraq) is preparing special review papers on *Pseudochetosoma salmonicola* collected from the freshwater fish *Acanthobrama marmid* caught in the River Tigris as it passes through Mosul city. He is also investigating important protozoan and crustacean parasites of Iraqi fishes and their control.

MEXICO

provided by Miguel Rubio-Godoy, miguel.rubio@inecol.mx

Instituto de Ecología, A.C. (INECOL)
Miguel Rubio-Godoy's research group (including **Adriana García-Vásquez** and **Ismael Guzmán-Valdivieso**) has continued characterising the *Gyrodactylus* fauna infecting both farmed and wild fishes in Mexico. We finished analysing parasite samples collected from tilapia farms across the country (literally, from the Yucatán peninsula in the southeast through to Sonora on the Mexico-USA border). We confirmed that the most abundant species in the country is *G. cichlidarum*. This is the most common gyrodactylid infecting tilapia worldwide and an established, invasive species in Mexico. In the southeastern Mexican states (Chiapas, Tabasco, Campeche), we also recovered *G. yacatli*, a species sporadically recorded in southern Africa, and also an undescribed species. We plan to assess whether these two taxa 'hitched a ride' out of Africa with their tilapia hosts when they were exported worldwide, as was the case with *G. cichlidarum*, or whether the parasites switched their host from one of the several native cichlids (e.g. *vieja*, *castarrica*, *tenguayaca*, etc) that live in southeastern Mexico, precisely where the tilapia farms are located.

To characterise parasites infecting native fishes, we had the help of **Ulises Razo-Mendivil**, who did a postdoc in the lab. Together, we described several new species of *Gyrodactylus* infecting poeciliid fishes and a couple collected from the characid *Astyanax aeneus*. In collaboration with long-time friends and colleagues **Andy Shinn** (FishVet, Thailand), **Giuseppe Paladini** (Stirling University, UK) and **Mark Freeman** (Ross University School of Veterinary Medicine, West Indies), we tested the hypothesis that poeciliid fishes co-introduced their gyrodactylid parasites upon their translocation to the Mexican highlands and that these then switched hosts to the ecologically-similar, endemic goodeid fish *Goodea atripinnis*. We determined that they do not: each fish family has their own parasites. Surprisingly, however, we discovered that invasive poeciliids carry the tilapia parasite *G. cichlidarum* in waterways close to fish farms. We will next assess how widespread this phenomenon is, both geographically and in terms of poeciliid fish species that serve as hosts.

With fellow fish parasitologists **Guillermo Salgado-Maldonado** (Universidad Nacional Autónoma de México), **Edgar Mendoza-Franco** (Universidad Autónoma de Campeche) and **Juan Manuel Caspeta-Mandujano** (Universidad Autónoma del Estado de Morelos), we identified all the parasites we could find on the poeciliid *Pseudoxiphophorus bimaculatus* (syn. *Heterandria bimaculata*). Our ichthyologist friend **Norman Mercado-Silva** (Universidad Autónoma del Estado de Morelos) dutifully provided us with these fish from his fishing trips in the La Antigua river basin between the base of the Cofre de Perote volcano and the river mouth, where it opens into the Gulf of Mexico. We haven't finished analysing the data yet, but watch this space…

Finally, in collaboration with our colleagues **Gerardo Pérez-Ponce de León**, **Martín García-Varela** and **Rosario Briosio-Aguilar** (all Universidad Nacional Autónoma de México), we are looking at digeneans of the genus *Clinostomum* infecting cichlid fishes; again, watch this space for future updates!

PORTUGAL

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

The **Animal Pathology Group of CIIMAR** – CIMAR Associated Laboratory, University of Porto, headed by **Maria João Santos,** includes several other senior researcher team members: **Aurélia Saraiva** (amsaraiv@fc.up.pt), **Carlos Azevedo** (azevedoc@icbas.up.pt), **Cristina Cruz** (cfcruz@fc.up.pt), **Graça Casal** (gcasal@icbas.up.pt) and **Jorge Eiras** (jceiras@fc.up.pt). Several students and collaborators are currently working on their theses or other projects in fish parasitology, including: **Susana Pina** (Post Doc), **Joana Costa** (Post Doc), **Francisca Cavaleiro** (Post Doc), **Luis Rangel** (Post Doc, Volunteer), **Sónia Rocha** (PhD student), **Caner Sirin** (PhD student), **Ricardo Severino** (Masters student, Aquaculture Farm), **Duarte Frade** (Masters student, Volunteer) **Daniela Cruz** (BSc student), **Marco Amaral** (BSc student) and **José Pedro Silva** (BSc student).

Staff of the Laboratory of Pathology investigate the pathology of freshwater and marine fish. Some of our studies focus on Portuguese fish, whereas others include work on important tropical fish species, mainly from South America (Brazil) and Saudi Arabia. Thus, we have a strong collaborative research programme which was established more than two decades ago. Several projects currently running include:

- Survey of pathogenic agents of important aquacultured fish
- Parasites of marine fish from off Alagoas, Brazil
- Apicomplexa and Myxozoa from seabass (*Dicentrarchus labrax*), seabream (*Sparus aurata*) and estuarine polychaetes
- Trematode life cycles using morphology and molecular tools

More detailed information about our previous work and publications can be seen at: http://www.ciimar.up.pt/researchgroup.php?id=PATHOLOGY

Graça Costa (gcosta@uma.pt), from Madeira University, also carries out research on fish parasites off Madeira and the Selvagens (Savage) Islands.

UNITED STATES

provided by Robin M. Overstreet, robin.overstreet@usm.edu
and Andrew Claxton, Andrew.Claxton@usm.edu

The **Overstreet lab group,** housed at the University of Southern Mississippi, Gulf Coast Research Laboratory, in Ocean Springs, Mississippi, has continued its numerous studies of finfish and shellfish parasites during the past year. The newest lab member, **Apryle Panyi**, has assisted with field collections of fish, shell fish, and piscivorous predators and their necropsies. She has also assisted with the handling of snakes and raccoons to collect parasites transmitted by local fishes. Her dissertation will likely focus on the taxonomy of monorchiid trematodes occurring in the Gulf, the Caribbean and elsewhere in the world.

Another student, **Andrew Claxton,** has kept up the pace dissecting hundreds of Atlantic Croaker and Pinfish for different projects. These studies will show how parasite

communities in fish hosts vary over spatial, temporal, and ontogenetic stages of host development. Also, they will show how environmental perturbations affect food web structure, leading to changes in parasites. Besides examining parasite assemblages, we are also examining individual parasites; for example, we have found a variety of morphological abnormalities in local acanthocephalans recovered from fish. With the help of **Stephen Curran**, we have completed a study documenting the parasite assemblage within Vermilion Snapper occurring in the northern Gulf of Mexico. As well as conducting field studies, we have successfully built and maintained a population of Guppies for use in experimental exposures and the description of morphology over the course of trematode infections.

Former students still affiliated with our lab group continue to study fish parasite ecology and taxonomy. **Michael Andres** continues his work with the movement ecology of Gulf Sturgeon and the parasites of mid-water fishes. Additionally, he has started looking at the parasite community of anchovies in the Mississippi Sound, following a recent publication he and Robin co-authored with researchers from Dauphin Island Sea Lab (USA) describing the ecology of a didymozoid of Atlantic Spanish Mackerel. **Michael** and **Eric Pulis** have continued to publish together on the systematics of haploporoid and opecoelid trematodes.

Robin Overstreet continues to collaborate with colleagues, including former students, on a variety of papers with topics including the diversity of larval Digenea to species descriptions of both digeneans and hirudineans. These studies occurred worldwide, ranging from within the Gulf of Mexico (GOM) to the north east Pacific Ocean, South Africa, and Australia. In addition, he has contributed to book chapters on fish parasites and abnormalities in the GOM prior to a massive oil spill, with **William Hawkins,** and on transitions from commensalism to parasitism, with **Jeff Lotz**.

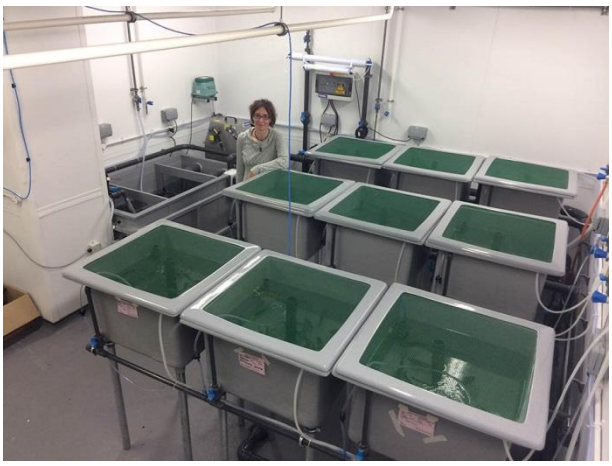
Photo – Left to right: Apryle, Andrew, Robin, Jean Jovonovich (Lab Technician), Steve, and Annabelle Curran (future parasitologist)

WALES

provided by Jo Cable (cablej@cardiff.ac.uk)

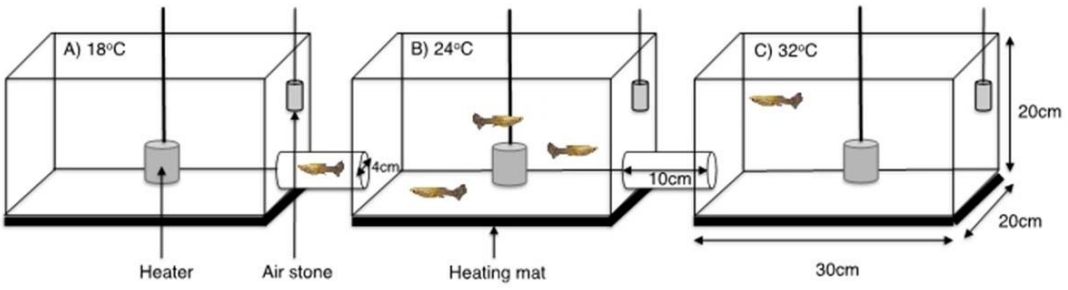
AQUAWALES has rather dominated our thoughts in the lab this year. It is a collaborative project between our own Cardiff University together with Swansea and Aberystwyth Universities funded by the Welsh Government and Higher Education Funding Council for Wales through the Sêr Cymru National Research Network for Low Carbon, Energy and Environment. In Cardiff, **Dr Amy Ellison** is investigating the impact of disease and stocking densities on the *Tilapia* genome. This has been challenging for us because of the amount of tank cleaning required to keep these "dirty fish", but, thanks to an additional grant from the Welsh Government, we have just had our first mini-RAS system installed by PontusAqua (more science and less tank cleaning here we come!). Infection trials though will still be

performed in isolated tanks, particularly as **Amy** is working mostly on *Saprolegnia parasitica*, a potentially virulent oomycete. With new PhD student, **Emily Matthews,** and our friends at the Environment Agency, Amy is also looking at the genetic diversity of *Saprolegnia* species around the UK.



Our links with the Environment Agency Brampton Fish Pathology (**Chris Williams** and **Amy Reading**) were greatly strengthened in 2016, because one of our former PhD students, **Dr Jo James**, joined their team as a technical officer. **Jo** completed her Cardiff PhD in 2015 but has left a legacy of invasion biologists here, namely PhD student **Rhidian Thomas** and MSc student **Rhi Hunt,** who are investigating the impact of parasites on several invasive species (from signal crayfish to topmouth gudgeon). **Rhidian** and former PhD student **Dr Alex Stewart** have been doing a lot of their work in collaboration with the Cardiff School of Engineering at Cardiff (**Dr Catherine Wilson**), making great use of their hydrology laboratory (feels more like an aircraft hangar to us) to assess how parasites affect the hydrodynamics and swimming performance of riverine fish in more natural habitat conditions. After celebrating the completion of his PhD on three-spined sticklebacks (*Gasterosteus aculeatus*), eco-immunology and parasitology, **Alex** is now frantically writing papers assessing the three-way interactions between temperature variability, the host's immune response and a range of different parasites (*Saprolegnia parasitica, Gyrodactylus gasterostei* and *Argulus foliaceus*), while occasionally demonstrating his artistic side.

Meanwhile, our guppy research has not been neglected. PhD student **Willow Smallbone** has conducted a wealth of experiments assessing the effect of Major Histocompatibility Complex variation on the fitness, fertility, longevity, mate choice and parasite resistance (*Gyrodactylus turnbulli*) of *Poecilia reticulata.* This is a joint project with long term collaborator **Prof van Oosterhout** (UEA) and is linked to a long term mesocosm experiment in Tobago run by **Prof Jacek Radwan** (Poland), **Dr Karl Phillips** and **Ryan Mohammed**. **Willow** is also looking at the microbiome of her guppies in collaboration with FCT Fellow **Dr Raquel Xavier. Ryan** (based in Trinidad) and **Mike Reynolds** have been investigating the 'Direct and indirect impacts of climate change on host-parasite interactions in freshwater



ecosystems'. One particular interesting finding to emerge is the 'behavioural fever' response of guppies to gyrodactylid infection – in an experimental chamber fish seek out warmer water when infected – warm water can be damaging to the parasites directly or indirectly via the host's immune response. In collaboration with **Dr Justin Pachebact**, **Mike** is also sequencing the genome of *G. turnbulli* with the aim at looking at adaptation of this parasite over time.

In the New Year, we are delighted that research fellow **Dr Rachel Patterson** will be joining our group. **Rachel** has worked on various fish pathogens, starting her career as a PhD student with **Robert Poulin** and most recently working in Norway on the impacts of rotenone. We also hope to welcome at least one new PhD student (recruiting now), and of course we are always open to incoming fellows. For more information about our research, see our lab webpage, designed and managed by our post-graduates (www.cripescardiff.co.uk), and/or follow us on twitter @CRIPESCardiff

IN MEMORIAM

Professor (Emerita) E. Tellervo Valtonen (1943-2016)

Professor Elsa Tellervo Valtonen (née Punkeri) passed away on 23rd July, 2016 after a long and very brave fight with cancer. In a career extending over a period of almost 40 years, she developed into a world leader in the field of fish parasite ecology.

Tellervo was born at Rantsila, a farming community, in Oulu Province, NW Finland. She was educated locally and in the city of Oulu, where she attended the university and acquired a degree in biology in 1968. At about the same time, she married one of her university teachers, Tapani Valtonen, a fish biologist, and proceeded, during the 1960s and 70s, to have six children. In the 1970s, she also found time to study for a PhD, investigating the parasites of fishes in the brackish waters of the Bothnian Bay (northern Baltic) and in the Kuusamo lakes close to the Karelian border. She once joked that during this period she had one baby attached to her left breast, another being rocked in a crib by her foot, leaving her with a free hand to focus her microscope. As you can imagine, Tellervo was a very energetic lady; and very strong, both mentally and physically, the latter being attested to by the bruises on the shoulders and back of those she decided needed a Finnish massage.

I first met her at the European Multicolloqium of Parasitology in Cambridge in 1980, where she caused a stir by pretending to read the palms of fellow delegates. I became Tellervo's first international collaborator, as she recognised that, in order to best study her worms, she

needed the help of a taxonomist (she herself found taxonomy rather boring – imagine that!). Similarly, she soon acquired a host of national and international specialist collaborators in different, but usually related, fields. Nevertheless, there was usually no argument as to who was the 'boss'. In 1984, the family moved from Oulu further south to Jyväskylä, where Tellervo mixed academic teaching positions of Senior Lecturer and Associate Professor in the university with that of a Senior Researcher with the Finnish Academy. Between 1996 and 1998, she became Head of the Department of Biological and Environmental Science, and, also in 1998, was made a Professor of Hydrobiology, becoming the first female full professor in the Faculty of Science. Tellervo retired in 2007, but did not stop – she was just as active as ever, with papers appearing regularly and even posthumously.

Her research interests related to the parasites of freshwater fishes in central Finland in terms of both the situation in fish farms and in the wild. For example, she was interested in how intensive aquaculture might trigger changes in the ecology, the epidemiology and evolution of pathogens, how global warming might increase the risks of some fish pathogens, what role trophically transmitted parasites play in aquatic food webs, the importance of parasites in terms of biodiversity in ecosystems, transmission patterns, control, etc, etc. Tellervo published almost 230 papers in peer-reviewed national and international journals, and made numerous contributions in Finnish to domestic magazines and publications relating to the fish industry. Hence, over the past 25 years, the subjects of her publications included those on community structure, population dynamics, biodiversity, pathology, seasonal biology, immunology, life-cycles and transmission, experimental infections, parasite-induced stress, pollution, behaviour, resistance, molecular studies and the evolution of virulence. Most of her papers are multi-authored, mainly with her students and other members of her team. Over the years she supervised almost 60 MSc students and more than 20 PhDs. Such was her scientific reputation that numerous young researchers from all over Europe spent all or part of their post-doctoral or other fellowships as part of her team – many said that she became a 'second mother'. Her often proclaimed attitude to science was: "Always remember that it is important to have fun when writing papers. The fun comes from being interested in the topic, in the joy of finding something new and undiscovered, and from not to taking it too seriously".

Tellervo enjoyed teaching – and she was very good at it, enthusing her students with her passion for parasitology. She loved to talk (a lot), but she was also a good listener. Since Tellervo was so talkative, her students were allowed - and even expected - to talk in the laboratory. However, they were not expected to stop looking down the microscope. So, if they raised their head while talking, they would immediately hear Tellervo shout "point your eyes at the microscope", hence they all learned to talk without raising their heads. She was also very approachable and, above all, optimistic, but could be too trusting – she was known to have waylaid a passing student, hand over her bank card and PIN and request that the student fetch her cash from the bank.

During her retirement, in addition to inspiring students and helping them with research projects, she fulfilled a life's dream by publishing a book, '*Suomen kalojen loiset*' ('*Finnish fish parasites'*), in Finnish as a legacy. Her positive outlook, her faith and her love of family stood her well during latter months of her life. In terms of her expertise, productivity, scientific integrity and as a role model, she is a great loss to science, and as a mentor, friend,

wife, mother and grandmother, she will also be sorely missed. Tellervo Valtonen was a genuinely nice person.

David I. Gibson

NEW BOOKS

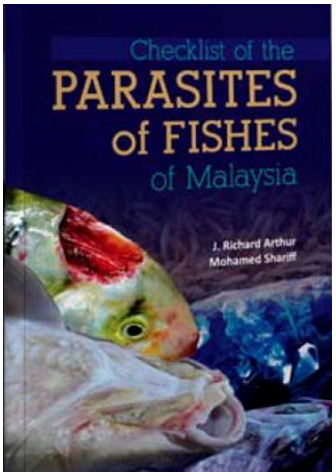
Parasitos de Peixes Marinhos da América do Sul

Jorge C. Eiras, Ana Luiza Velloso & Joaber Pereira Jr. (Eds)
ISBN: 978 85 7566-390-5; published 2016; Paperback; 441 pages; Portuguese.
Editora de FURG, Rio Grande, Brazil

In this book, experts from four countries - Brazil, Chile, Portugal and the UK - have gathered together an exhaustive list of parasites associated with South American marine fish. In the 11 chapters, on the Flagellata, Apicomplexa, Ciliophora, Myxosporea, Monogenea, Trematoda, Cestoda, Nematoda, Acanthocephala, Hirudinea and Crustacea, the available records are listed for each of parasite species, with their known host(s), geographical localities, sites of infection/infestation and their respective bibliographical references. The volume also contains a checklist of hosts and their parasite species. This book represents a compilation of data useful not only to researchers, veterinarians and others in the field of fish parasitology in South America but is also an important resource for those interested in fish biology and parasitology in general.

Checklist of the Parasites of Fishes of Malaysia

J. Richard Arthur & Mohamed Shariff
ISBN: 978-967-344-395-6; Published 2015; Paperback, 374 pages; For international ordering information and price, contact: Prof Dato' Mohamed Shariff (pshariff@gmail.com)



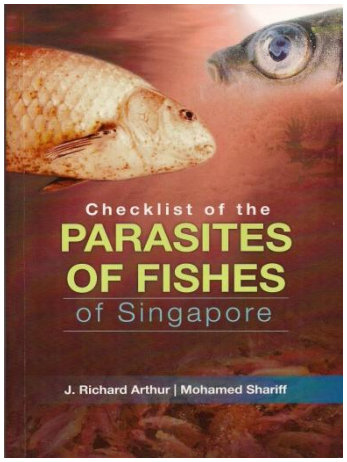
This book compiles the dedicated efforts of several Malaysian fish parasitologists and their students, who have published extensively on the taxonomy, lifecycles, ecology, pathology and treatment of parasites of freshwater and marine fishes. Also included are the many taxonomic and other studies conducted by foreign scientists, working both in Malaysia and in international laboratories. This checklist includes all pertinent literature dating from the year 1902 when the first record appeared through the end of 2013. Information is presented in the form of parasite-host and host-parasite lists. Included are 425 named species of parasite, distributed among the higher taxa as follows: Protista – 18, Myxozoa – 22,

Digenea – 39, Monogenoidea – 207, Cestoda – 72, Nematoda – 24, Acanthocephala – 4, Hirudinida – 1, Branchiura – 4, Copepoda – 26, Isopoda – 6 and Pentastomida – 2. Also included are many records of parasites not identified to species level. The Parasite-Host List is organised on a taxonomic basis and provides information for each parasite species on the environment (freshwater, brackish water, marine), the location (site of infection) in or on its host(s), the species of host(s) infected, the known geographic distribution (by state) in Malaysia, and the published sources for each host and locality record. A Host-Parasite List, list of References, a Parasite Index and a Host Index complete the volume.

Checklist of the Parasites of Fishes of Singapore

J. Richard Arthur & Mohamed Shariff

ISBN: 978-967-344-537-0; Published 2016; Paperback, 107 pages; For international ordering information and price, contact: Prof Dato' Mohamed Shariff (pshariff@gmail.com)



This checklist includes all pertinent literature dating from the year 1865 when the first record appeared through to the end of 2014. Information is presented in the form of parasite-host and host-parasite lists. Included are 38 named species of parasite, distributed among the higher taxa as follows: Protista – 6, Digenea – 2, Monogenoidea –7, Cestoda – 7, Nematoda – 8, Acanthocephala – 2, Hirudinida – 2, Branchiura – 1 and Copepoda – 3. Also included are many records of parasites not identified to species level. The Parasite-Host List is organised on a taxonomic basis and provides information for each parasite species on the environment (freshwater, brackish water, marine) the location (site of infection) in or on its host(s), the species of host(s) infected, and the published sources for each host and locality record. A Host-Parasite List, list of References, a Parasite Index and a Host Index complete the volume.

EDITORIAL POLICY

Please note that material for the next issue should be sent to the Editor, Dr Leslie Chisholm [e-mail: leslie.chisholm@samuseum.sa.gov.au] Parasitology Section, The Science Centre, South Australian Museum, North Terrace, Adelaide 5000, South Australia, Australia; before November 15, 2017.

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 and do not send image files as PDFs).

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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