

SAVING FRESHWATER FISHES AND HABITATS

Newsletter of the IUCN SSC/WI Freshwater Fish Specialist Group

Issue 9 • August 2015



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Front cover image:
The Giant redfin, *Pseudobarbus skeltoni*. Sketch: Rose Palmer.

FFSG UPDATE

Message from the FFSG Global Chair

Dr. Richard Sneider



Welcome to the second newsletter of 2015. We are just one month from the IUCN Leaders' meeting in Abu Dhabi. This will be an important meeting for us, giving an opportunity to discuss where our priorities will be for the next IUCN Quadrennium from 2017-2020, and where we have opportunities for synergy with other SSC Specialist Groups and Subcommittees. We have several opportunities to discuss at the Leaders' meeting, based on the recommendations from our FFSG meeting in December 2014 (see Issue 7, December 2014, of Saving Freshwater Fishes and Habitats for a summary of those recommendations). We continue to be involved with the development of the World Fish Migration Platform (<http://www.worldfishmigrationplatform.com/>), which includes the World Fish Migration Day in 2016 (see the Noticeboard at the end of this newsletter) and the Fish Passage Conference that occurred in June this year. The latter included keynote presentations from two of our Steering Committee members, Claudio Baigún and Zeb Hogan; I encourage you to read the abstracts of their sessions, which you can download from the Conference webpage at <http://fishpassage.umass.edu/>. While at the IUCN Leader's meeting we will have the opportunity to discuss additional project ideas with the Freshwater Conservation Subcommittee and WWF, focusing on studying global fish migration pathway patterns, free-flowing rivers, and planned dams.



Zeb Hogan giving his keynote address at the Fish Passage Conference in June.

Photo from <http://www.dutchwatersector.com/>. For a short video of Zeb announcing the World Fish Migration Day, go to https://www.youtube.com/watch?v=Yn_anZ97aw.

Pete Rand (FFSG Steering Committee and Chair of the IUCN Salmonid Specialist group) and Rajeev Raghavan (FFSG Regional Co-Chair for South Asia) will be hosting a session on Guidelines on recreational fishing as a conservation tool, to obtain feedback on a document that will provide guidance to government policy makers, NGOs, interested stakeholders, and others on best practices to minimize stress and mortality on threatened fishes in recreational fisheries. Ian Harrison (FFSG Technical Officer) will be working with Piero Genovesi (Chair of the Invasive Species Specialist Group) and Topis Contreras MacBeath (Chair of the Freshwater Conservation Subcommittee) to host a session on Invasive alien species in freshwater ecosystems. This will review an emerging collaborative opportunity between the Invasive Species Specialist group and freshwater SSC Groups, focused on developing research and conservation action associated with addressing the problems of invasive species.

So, we will have plenty to report back to you, after the Leaders' meeting. FFSG members have been very active in other areas over the last few months. Scott Dowd, Chair of FFSG's Home Aquarium Fish Subgroup (HAFSG) led a Strategic Development meeting at the important, international Aquarama 2015 congress held in Singapore in May. The meeting further established the HAFSG as a leader in the cross-sectoral dialogues and planning necessary to develop a framework to maximize environmental and socioeconomic benefits as an outcome of the home aquarium trade. This newsletter includes a summary of the meeting at Aquarama and the next steps for the HAFSG.

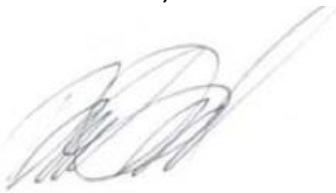
Claudio Baigún attended the twelfth meeting of the Conference of the Parties to the Ramsar Convention (COP 12), held in Uruguay in June. That COP meeting has some important outcomes that relate to the work of FFSG. The full list of resolutions is available at <http://www.ramsar.org/about/cop12-resolutions>, and an interesting summary of the meeting is provided in the Earth Negotiations Bulletin (Vol 17, no. 46), available from <http://www.iisd.ca/ramsar/cop12/>. It is great to see the resolution on water requirements of wetlands for the present and the future (resolution 12), that supports the integration of biodiversity values into the development planning processes and strategies. Hence, the work we do with the IUCN Freshwater Biodiversity Unit and other elements of IUCN's Global Species Programme, on Red List assessments for freshwater species and on identifying freshwater key biodiversity areas, represents essential sources of information for describing those biodiversity values. I am also encouraged by Resolutions 6 and 15 on the status (Res. 6) and effective management and conservation (Res 15) of Ramsar sites. The work we do within the FFSG can provide important data on the status of freshwater fish communities in Ramsar sites, which can be used for informing the status of these sites and for planning effective management. Indeed, our work can help the Ramsar convention identify areas that are not presently Ramsar sites but should be.

This newsletter includes some information about awards received this year by our fellow members (past and present). Congratulations to Steven Cooke, Vishwanath Waikhom, and my predecessor as Global Chair Gordon McGregor Reid for your excellent achievements. I encourage all FFSG members to let Ian Harrison know of any awards you receive related to your work on freshwater biodiversity and fishes in particular. It is helpful for us to keep a record of this information, to show the excellent professional standards of our membership.

Sadly it is not all good news from me for this report. At the end of May this year we ran out of money to support Alex Mauroner, our Programme Officer. I know don't need to remind you of the excellent work that Alex has done over the last year, supporting the FFSG members, developing projects and proposals, running the website and helping to create these newsletters and our annual report, 'and Much More!!!' -to adopt the phrase we use on the cover of these newsletters. I have been able to support Alex's position financially over the year with the collaboration of IUCN-SSC and the Zoological Society of London. I am extremely grateful to my friends in SSC and ZSL for helping with this. FFSG would not have made the progress it has over the last year without Alex's astonishingly enthusiastic participation, so this has been money well spent. I truly hope that we are in a temporary situation with the loss of Alex from our staff, and will have money to bring him back as our Programme Officer very soon.

In the meantime I also wish to offer my sincere thanks to Olay Weyl, our new Regional Chair for Southern Africa (see page 14), and especially his intern Ann Wu who helped significantly with the editing and design of this issue of our newsletter. Ann studies Ichthyology and Aquaculture at Rhodes University. She has an MSc in Aquaculture and is currently an intern in the freshwater ecology and conservation group at the South African Institute of Aquatic Biodiversity, and is intent on pursuing a PhD next year. She is actively involved in biodiversity assessment in a variety of ecosystems ranging from headwater streams in the Eastern Cape to Lake Malawi. We also have a great theme on fishes of southern Africa in this newsletter. Many thanks to all of you who have contributed to the newsletter and I look forward to exciting times ahead with developing various project ideas.

Best wishes,

A handwritten signature in grey ink, appearing to read 'Richard Sneider', with a long, sweeping flourish extending to the right.

Richard Sneider
FFSG Global Chair

Gordon McGregor Reid - 2015 LeCren medalist of the Fisheries Society of the British Isles

Ian Harrison

FFSG Technical Officer

Each year, the Fisheries Society of the British Isles makes a call for nominations for their Le Cren medal. This medal is named in honour of David LeCren, a former Director of the Freshwater Biological Associations, Windermere Laboratory, and is awarded to individuals who have made a lifelong contribution to all aspects of the study of fish biology and/ or fisheries science, **with a focus on conservation, training or public understanding of the discipline.**

Gordon McGregor Reid, who had been Global Chair of the IUCN-SSC/Wetlands International Freshwater Fish Specialist Group (FFSG) from 2004 to 2013 was among the nominees, and at the beginning of June, 2015, the Fisheries Society of the British Isles announced that their Council had selected Gordon as the recipient for the medal in 2015. The medal was presented to Gordon by Ian Winfield, President of the Fisheries Society of the British Isles, at a ceremony held on July 31 at the Society's Annual Conference (focused on shark biology and conservation). The gala dinner was hosted by the National Marine Aquarium, Plymouth, UK.

Any of us who were lucky enough to be a part of FFSG under his leadership, or to work alongside him in projects, this medal will come as no surprise. This is a fitting and excellent recognition of all the qualities that make Gordon so dear to so many of us. I would encourage you to take another look at Will Darwall's accolade to Gordon when he retired from his role as Chair, which includes comments on his stellar qualities from many of us in FFSG, published in Issue 3 (October 2013) of our newsletter '*Saving Freshwater Fishes and Habitats*' .



Gordon receiving the LeCren medal from Ian Winfield, President of the Fisheries Society of the British Isles. Photo: Ian Winfield

But it might be worth reminding ourselves of what makes Gordon so suitable as the 2015 LeCren medalist. Much of the information I have supplied below originated from Gordon's own accounts of his career, published in Issues 3/14 (August 2014) and 2/15 (2015) of WAZA News (the newsletter of the World

Association of Zoos and Aquariums, for which Gordon was President from 2007-2009). I strongly encourage you to read these for more details.

The LeCren medalists must have made a lifelong contribution to the studies of fish biology (especially conservation and contributing to public understanding and training). Gordon has certainly done that – and continues to. His interest in fishes started young, keeping fish as a teenager, joining the Scottish Aquarium Society, and twice winning the Waterlife Cup for ‘excellence in aquarium keeping’ in the 1960’s. In 1967 he became an Animal Technician in the Zoology Department of the University of Glasgow. He took charge of the Department’s marine and freshwater aquarium, and assisted Dr. Peter Maitland in his field surveys of British fishes, including the first echo soundings of fish populations carried out in some of Scotland's largest lochs. He also made technical illustrations for the first *Key to British Freshwater Fishes* published by the Freshwater Biological Association. During Gordon’s subsequent work with the Voluntary Service Organization in Botswana and Nigeria he worked on fisheries and aquaculture projects, in difficult circumstances, and developed his skills in organizing local field teams for scientific collections of fishes for major international institutions such as the Natural History Museum, London. Following his BSc (Zoology) in 1974, Gordon worked on his PhD – a revision of African species of the genus *Labeo*; at the same time working as a Lecturer in Biology and setting up a new department in the University of Sokoto, Nigeria. He set up an aquarium and museum facilities at the University.

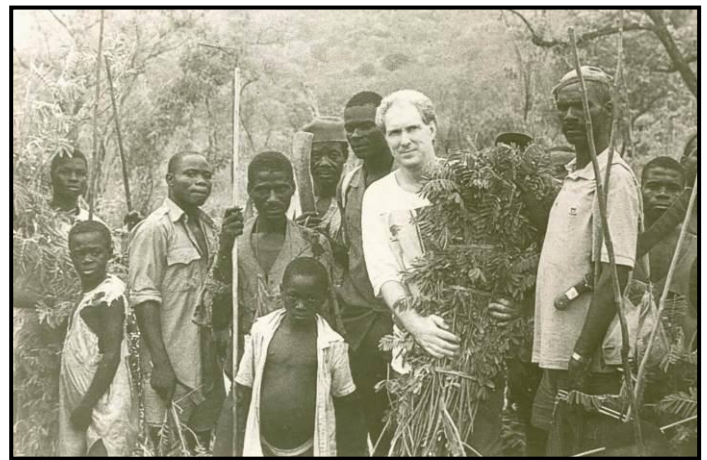


Gordon fishing in his youth in the West of Scotland

After completing his PhD Gordon became the Conservation Officer in the Liverpool Museum, in 1982, and subsequently the Keeper of Natural History (Conservation) where he maintained museum collections and the largest museum-based Aquarium and Vivarium in the UK. In 1985 Gordon was offered the position of Keeper of Natural History at the Horniman Museum & Gardens, London. During this time Gordon oversaw work on the museum’s collections, as well as public lectures, educational interpretation, and exhibitions. Most significantly, he raised funds for, and implemented the development of a new ‘*Living Waters Aquarium*’ – the

world's first dedicated entirely to conservation; and a Fish Rescue and Breeding Centre for endangered cichlid fishes. (For more information on the Horniman and the *Living Waters Aquarium*, see James Robson's chapter in the recently published *History of Zoos and Aquariums*, mentioned below). While based at the Horniman, Gordon chaired a London Wildlife Trust Woodland Management Committee and teamed with the new London Ecology Unit to employ longterm jobless youths to survey and conserve local animals and plants. He continued his African field programs and managed an essential ecological survey, in collaboration with WWF, on the freshwaters of the Korup rainforest and the Barombi Mbo Crater Lake, Cameroon. This included collections of new species as well as new records of invasive species beyond their previously known range of invasion. The report from the work at Korup was placed as a selected project by the Rolex Awards for Enterprise 1990. The work also led to an important review of the fishes of the Cross River basin (Cameroon/Nigeria); this remains one of the most important sources of information for this part of western central Africa.

In 1992 Gordon became Curator-in-Chief at Chester Zoo where he altered the collection focus to species that are threatened on the IUCN *Red List* (rising to 50%, with 25% placed in internationally managed breeding programmes). Indeed, in the early 1990's, Gordon established and chaired a Fish and Aquatic Invertebrate Taxon Advisory Group for the European Association of Zoos and Aquariums (EAZA). This Taxon Advisory Group organized the first collaborative international breeding and research programmes for these taxa in public aquariums, focusing on rare and Red Listed



Gordon on fieldwork in Nigeria in 1992

species. At Chester Zoo he oversaw improvement in exhibition and interpretation, and established overseas programmes in support of in-situ conservation work. He was promoted to Director of the Zoo in 1995, and subsequently Director General. Gordon drove huge developments in the zoo's on-site work with animals, including conservation breeding programmes and education and outreach programmes. The annual business turnover of the zoo passed £25 million and Gordon oversaw the transfer of portions of the profits to support conservation and research. Fishes, being the core of Gordon's interest, were at the heart of his work. During this time he was elected as Linnean Society President (2004–2006) – the world's oldest learned institution for botany and zoology, and served as an editor for the *Journal of Fish Biology*. As noted above, he was President of the World Association of Zoos and Aquariums from 2007 to 2009. His work for WAZA was prolific and is well summarized in the issue 2/15 of WAZA News. Worth noting here is that, working with WAZA and EAZA Gordon helped produce important strategy documents such as *Developing the Research Potential of Zoos and Aquaria: The EAZA Research Strategy* (2008), and *Turning the Tide: A Global Aquarium Strategy for Conservation and Sustainability* (2009). The later was endorsed by several international organizations, including IUCN-SSC, Wetlands International, and Conservation International (all of whom are closely associated with FFSG). The report was translated into many languages and downloaded from the WAZA

website thousands of times. Under Gordon's Presidency WAZA funded a symposium on *Bio-CryoBanks & Wildlife Conservation*, where Gordon gave a keynote address on *The Frozen Ark – saving the DNA of endangered species*; and he co-authored 'a paper on *Cryobanking of viable biomaterials: implementation of new strategies for conservation purposes* (published in 2009 in *Molecular Ecology*, volume 18). Gordon was also responsible for bringing together the research, conservation, and education interests of WAZA and the FFSG, by arranging joint meetings of the organizations to share ideas and information. One of these meetings – the 4th *International Zoo and Aquarium Symposium: Global Freshwater Fish Conservation – Linking In Situ and ex Situ Conservation Actions*, that was hosted in Chester in 2010 by Chester Zoo, the Zoological Society of London, and FFSG, ultimately resulted in the publication of a special issue of *International Zoo Yearbook* (Volume 47, 2013) on *Freshwater Fishes and Their Conservation*. This volume, which includes an excellent mix of scientific research, global data analysis, and application of the information to conservation and education, included contributions from several FFSG members.



2005 meeting of the Freshwater Fish Specialist Group

Gordon has maintained active, and often leading roles in numerous scientific and conservation committees, including many IUCN Committee and Specialist Groups. Most notably, as noted above, he served as the Global Chair of the IUCN-SSC/Wetlands International Freshwater Fish Specialist Group (FFSG) for almost a decade. During that time he expanded our group from almost nothing to about 200 expert members, with expert coverage from around the world. He built the strength of the group by organizing international meetings, almost yearly, to share information on fish biology and conservation. Many of these were hosted by Chester Zoo, and he found funds to support the attendance of colleagues from less developed countries, since he knew their input to these meetings to be essential for advancing conservation on the ground. The discussions at these meetings provided the seeds for future collaborations within our group, and with others (such as in

the zoo community, as discussed above). Through his position as Director of Chester Zoo, Gordon was able to help find funding to support field projects proposed by FFSG members. He supported the development of IUCN *Red List* assessment projects for freshwater fishes; and supported the publication of critical faunal guides such as Kottelat & Freyhof's (2007) *Handbook of European Freshwater Fishes*, and Shrestha's (2008) *Ichthyology of Nepal*. He provided extensive input as a co-author on IUCN publications on the distribution and conservation status of fishes in Africa.

As stated by Simon Stuart, (Chair of IUCN's Species Survival Commission), "Gordon's energetic leadership has shaped and strengthened the FFSG, and the success and stability of this group owes much to his dedication and his ceaseless enthusiasm." Indeed, his exemplary, visionary and charismatic leadership of the FFSG was formally recognized in February 2014 when he received the SSC Chair's Citation of Excellence, which is awarded in recognition of outstanding contributions to the SSC.

Gordon has a prodigious publication record, with over 240 publications since about 1978. Through these, he has shared information with scientific and public audiences. His publications cover many different subjects, including information on the anatomy, taxonomy, and conservation of fishes, and on the role of zoos in science and conservation, as well as publications reviewing the history of science (especially concerning fishes). His publications have continued into his retirement from the Zoo and FFSG, with his most recent publication (co-edited with Geoffrey Moore of the University Marine Biological Station, UK) being *History of Zoos & Aquariums: From Royal gifts to Biodiversity Conservation*. Further information about this publication is given on page 11 of this newsletter.

In summary, Gordon has made an enormous personal and direct contribution to our understanding of the science of freshwater fishes, and how to conserve them. But he has had an ever greater impact by supporting his colleagues in the development of their projects, and in bringing the message of freshwater fish conservation to the public through his career, and his role in chairing the FFSG for many years. Indeed, the LeCren medal is well deserved.

New Publication - *History of Zoos and Aquariums: From Royal Gifts to Biodiversity Conservation*

By Gordon McGregor Reid and Geoffrey Moore

Ian Harrison and Alex Mauroner

FFSG Technical Officer and FFSG Programme Officer

This excellent publication, co-edited by the former Global Chair of FFSG, Gordon McGregor Reid, is now available. It is the outcome of the proceedings of an international symposium titled, *From Royal Gifts to Biodiversity Conservation: History and Development of menageries, Zoos and Aquariums*, that was hosted by Chester Zoo in May 2011 and was co-sponsored by the Society for the History of Natural History, The Linnean Society of London, the Bartlett Society, and the World Association of Zoos and Aquariums. Besides Gordon's role as co-editor, he also co-authors with Geoffrey Moore the Introductory chapter on 'What is Zoo History', and he co-authors a chapter with our former FFSG Programme Officer, Suzanne Turnock, on the Artis Royal Zoo in Amsterdam. Suzanne and her predecessor as FFSG Programme Officer, Katalin Csatádi, also worked with Gina Douglas (of the Linnean Society of London, and the Society for the History of Natural History) as editorial assistants on the production of the book.

The book (158 pages) is split into four sections, each with several enlightening chapters, drawing on diverse case studies to illustrate the points being discussed. These sections are: 1) Zoos from small beginnings; 2) Aquariums... Zoos Underwater; 3) Zoos and Aquariums working with others; 4) Zoos and Aquariums into the Future.

Most FFSG members would probably turn first to section 2, specifically on Aquariums. It opens with an excellent chapter by Bernd Brunner on 'History and future of aquariums: perspectives in culture, science and conservation' and this includes a discussion of the relationship between institutional aquariums and the aquarium trade and hobby. Geoffrey Moore provides a great review of 'The Robertson Museum and Aquarium at Millport's Marine Station, Scotland: a century of compromise.' The Robertson Aquarium is a small aquarium focused on displaying local fauna and educating visitors about the local ecosystems. The chapter highlights the challenges faced by a small, and geographically isolated institution. The final chapter of this section, written by James Robson (Deputy Aquarium Curator of the Horniman Museum), is on the 'History and Future of the Horniman Museum Aquarium, London'. This is a very interesting piece, not least because it gives a review of the development of the Living Waters Aquarium project coordinated by Gordon McGregor Reid when he was Keeper of Natural History at the Horniman. This exhibit was innovative, placing individual exhibits in the context of moving along a river from source to sea, and highlighting issues of threats and conservation. The chapter concludes with a discussion of a second rebuild of the Aquarium in 2005, with the

Vishwanath Waikhom Receives the EK Janaki Ammal National Award for Animal Taxonomy



The EK Janaki Ammal National award for Animal Taxonomy given away by the Hon'ble Union Minister of Environment, Shri Prakash Javadekar to Vishwanath Waikhom (Regional co-chair for South Asia FFSG) for his contribution to freshwater fish taxonomy of the Eastern Himalaya at the World Environment Day celebration in New Dheli. 5th June 2015

Steven Cooke Receives the NSERC E.W.R. Steacie Fellowship



FFSG member received the Natural Sciences and Engineering Research Council of Canada (NSERC) E.W.R. Steacie Fellowship in February of this year (so we are giving our belated congratulations), awarded by the Canadian Government. As part of the award, Steven receives \$250,000 to continue his research on stress experiences of individual fish during migration, with a focus on salmonids. Cooke will be relieved of teaching and administrative duties for two years in order to devote his time and energy to research and mentoring students. In the photo Cooke (on the left) is receiving the award from the Governor General of Canada.

FFSG Welcomes Two New Regional Co-Chairs

Alex Mauroner

FFSG Programme Officer

As part of our continued effort to support activity at the regional level, the FFSG has undergone two more changes in regional leadership. Dr. Paul Skelton, who has been dutifully serving as Regional Chair for Southern Africa, is retiring and had asked to step down from his position within the FFSG. Upon Paul's recommendation, Dr. Olaf Weyl (new to the FFSG) will now serve as Regional Chair for Southern Africa. He is also Principle Scientist for the South African Institute for Aquatic Biodiversity. Dr. Weyl has already been proactive and enthusiastic in his new position with our group.

We are also happy to welcome Dr. Dmitry Lajus to the FFSG as the new Regional Chair for the Eastern Palearctic Region (formerly "Northern Asia"). Dr. Lajus will be taking over leadership from Dr. Nina Bogutskaya, who had very recently stepped down. Dmitry is an Associate Professor at Saint Petersburg State University in their Department of Ichthyology and Hydrobiology. Though he is new to the FFSG, Dr. Lajus has worked with some of our members in the past and comes highly recommended in the area of conservation. We look forward to seeing the work that he and others will accomplish in this very important region for freshwater fishes and habitats.

HAFSG Chair Leads Strategic Development Meeting at Aquarama 2015

Scott Dowd

New England Aquarium and Chair of the Home Aquarium Fish Sub-Group

A complete report of the meeting is available from the FFSG website at:

<http://www.iucnffsg.org/about-ffsg-2/home-aquarium-fish-sub-group/>

Executive Summary

At the Aquarama 2015 Seminars held in Singapore May 28 – June 1 the IUCN Freshwater Fishes Specialist Group worked with the event organizers to convene discussions, panels, and a Strategic Development Meeting with the goals of developing a framework to maximize environmental and socioeconomic benefits as an outcome of the home aquarium trade.

In recent years, it has become increasingly clear there is substantial overlap in the shared goals for environmental and socioeconomic benefits between commercial stakeholders, the academic/conservation community, and zoos and public aquariums. Leaders in these three groups convened at Aquarama to discuss shared goals, shared challenges, and how a harmonized strategy may yield significant benefits to all.

In the not too distant past, these three groups would not necessarily have viewed the others as partners; in fact, a certain degree of reservation towards each other was not uncommon. The sincere commitment to collaboration that took place at the Singapore meeting was, itself, a great step forward. The key perspectives of the three groups at this point can be described through the following examples:

- Industry: Dr. Gerald Bassleer, President of Ornamental Fish International (OFI), expressed eagerness for trade members to support research on the industry. He also described intolerance within OFI for poor ethics and unsustainable practices. He saw a great opportunity to partner with zoos and aquariums to inspire and foster the next generation of responsible fishkeepers.
- Academic/conservation organizations: Ms. Lynn Tang from Conservation International (CI), responding to descriptions of how the aquarium trade is being negatively affected by activists in the EU, shared examples from CI's work that demonstrate to the trade community that CI and other mainstream scientific/conservation groups are able and ready to work with industry to redirect and rebrand it as a force for good. These examples were: a) CI's commitment to working on opening a legal path for the dragonfish (*Scleropages formosus*) market in the US, with recognition that the trade of dragonfish will help to direct funds to the conservation of the species in situ, and; b) she cited a case study in which CI

maintained their partnership with the SEA Aquarium despite the fact that the aquarium was being attacked by animal rights groups in protests over dolphins exhibits.

- Public zoos and aquariums: Cindy Lee of the Toronto Zoo (Association of Zoos and Aquariums) called for increased two-way exchange between the home aquarium trade and zoos and aquariums in technology and overall strategic planning. Cindy shared that zoos and public aquariums have approximately 200 million visitors annually and that they represent an ideal platform for messaging that will reach a broad and relevant population.

The goal of elucidating the shared priorities by the three groups was met. A broad strategic framework plan was developed, which calls for the Home Aquarium Fish Sub-group to produce a Consensus Statement and White Paper identifying opportunities to maximize socioeconomic and environmental benefit from the aquarium hobby, case studies to be showcased and promoted in public aquariums and zoos, and harmonized and reflective marketing with commercial trade partners, and the hobby community.



Photo: Facilitators Network Singapore

Next steps and timeline:

- June 19, 2015: Open commentary and review on a) the Aquarama meeting report, and b), the overall strategy of the HAFSG to identify beneficial case studies and opportunities associated with the trade, which can be used to showcase positive examples at zoos and public aquariums in a way to foster a market for aquarium fishes that are sustainable, benefit the environment, and help support local livelihoods.

- Ongoing: The HAFSG Steering Committee (SC) maintains dialogue with the broader working group of stakeholders within the aquarium fish trade, the scientific/conservation community, and zoos and public aquariums.
- July 15, 2015: The HAFSG SC will produce a Consensus Statement comprising points of agreement in regard to fostering environmental and socioeconomic benefits from the aquarium fish trade.
- September 1, 2015: The HAFSG SC will produce a first draft White Paper describing examples of where the home aquarium fish trade currently results in environmental and/or socioeconomic benefit, where through attainable adaptation it could result in benefit, and where there is the urgent need for environmental stewardship or livelihoods that could be attained from the aquarium trade.
- Ongoing: Work with trade groups such as Ornamental Fish International (OFI), Ornamental Aquatic Trade Association (OATA), and the Pet Industry Joint Advisory Council (PIJAC) to seek examples that might be included in the HAFSG White Paper.
- AZA National Conference, Sept 2015: Advance an industry-wide initiative for zoos and aquariums to showcase examples from the HAFSG White Paper in their exhibits and programs. This initiative should highlight conservation themes, while encouraging visitors to enter the fishkeeping hobby and seek fishes that have been sourced in ways that result in beneficial outcomes.
- Ongoing: Plan development meetings at venues where working group members are likely to convene: AZA, EUAC, RAW, Aquatic Experience, Interzoo, Aquarama, etc.



Photo: Facilitators Network Singapore



New Publication - *The Status and Distribution of Freshwater Biodiversity in the Arabian Peninsula*

Nieves Garcia, Ian Harrison, Neil Cox and Marcelo F. Tognelli

IUCN-Conservation International Biodiversity and FFSG Technical Officer (Ian Harrison)

This report, published in July 2015, evaluates the conservation status, at the regional scale, of 292 species belong to five taxonomic groups, including 18 species of fishes, 30 species of molluscs, 59 species of dragonflies and damselflies, three species of freshwater crabs and 182 wetland dependent plants. The report shows that freshwater crabs and fishes show a high degree of endemism, with 100% and 83% of the species respectively not being found anywhere else outside of the region. Overall 17% of the Arabian freshwater taxa are threatened with extinction at the regional scale, with a further 3% assessed as near Threatened and 20% as data Deficient.

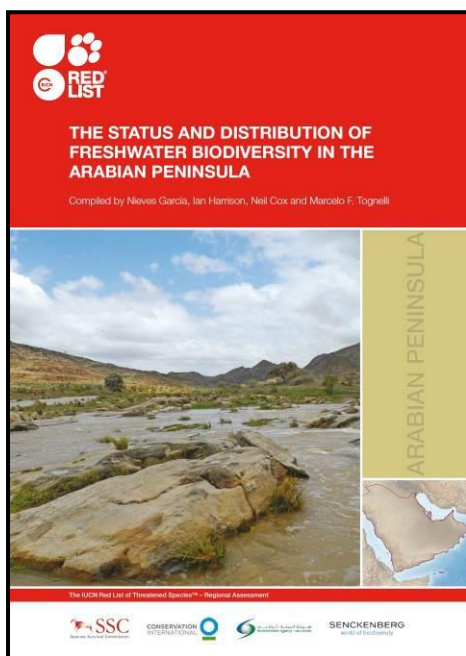
A short article on one of the species of fish assessed, *Garra dunsirei*, is given on page 34 of this Newsletter.

The full report is:

García, N., Harrison, I., Cox, N., and Tognelli, M.F. (compilers). (2015). *The Status and Distribution of Freshwater Biodiversity in the Arabian Peninsula*. Gland, Switzerland, Cambridge, UK and Arlington, USA: IUCN.

The report is available for download from:

http://www.iucn.org/about/work/programmes/species/our_work/about_freshwater/resources_freshwater/



The Arabian freshwater assessments were possible thanks to the very generous support to IUCN by the Environment Agency of Abu Dhabi. Additional support for data compilation and editing, and workshop facilitation was supplied by the Moore Centre for Science and Oceans within Conservation International.

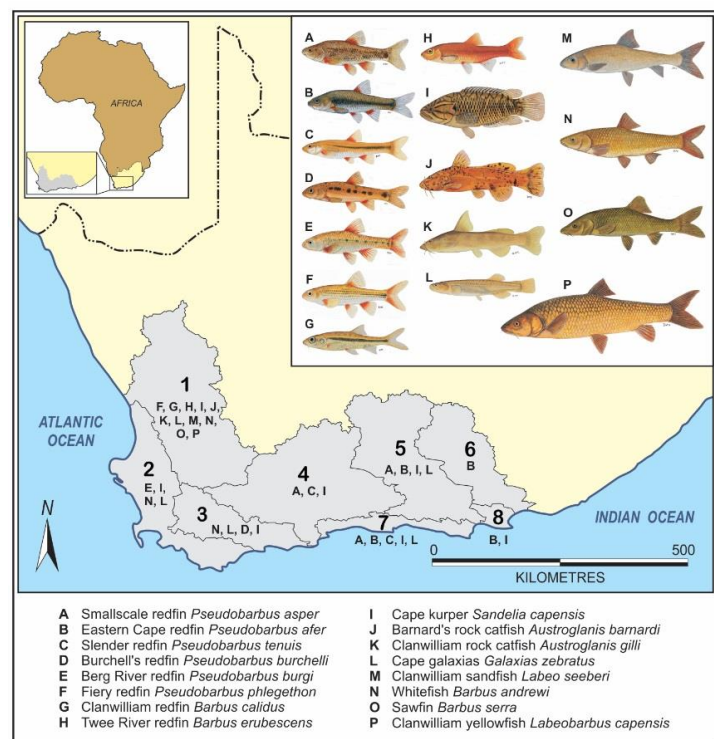
NEWS FROM AROUND THE WORLD

Endangered Native Fishes Re-Colonize a South African River after the Removal of Smallmouth Bass

Olaf Weyl

South African Institute for Aquatic Biodiversity

The Cape Floristic Region (CFR) of South Africa is a global biodiversity hotspot with an exceptional degree of biodiversity and endemism. Better known for its rich plant communities, the region is also home to 17 species of fishes which occur nowhere else on earth. Most are restricted to a single river or tributary within individual rivers, which makes them particularly vulnerable to human impacts such as non-native fish introductions, habitat destruction, and pollution. This has caused many of the CFR native fishes to now only occur in headwater streams where these impacts are absent and of the 17 currently evaluated endemic species, 10 are listed as endangered and another three are listed as vulnerable by the International Union for Conservation of Nature (IUCN; Tweddle et al. 2009). Hence, CFR rivers are key areas for conservation of biodiversity, and in headwater refuges the main threat to the native fishes are non-native fish introductions. In the CFR predation impacts from sportfishes such as smallmouth bass *Micropterus dolomieu* and rainbow trout *Oncorhynchus mykiss* are particularly severe because these native fishes did not coevolve with native predatory fishes. This naïveté combined with heightened

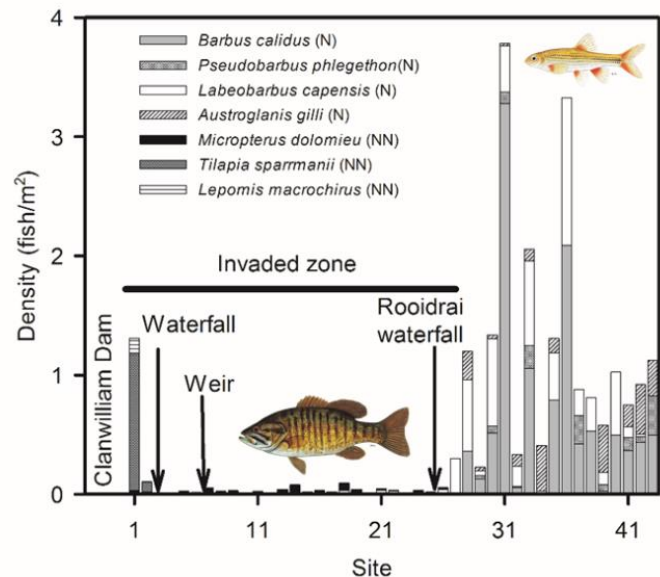
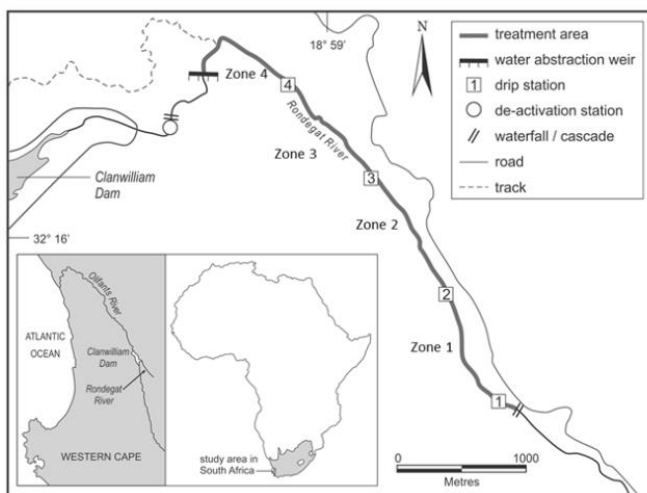


Native fishes in the Cape Floristic Region and their distribution by River Basin (after Weyl et al., 2014. Fisheries. 39: 270-279). Note that this collage does not include the recently described giant redbfin *Pseudobarbus skeltoni* and Velorenvlei redbfin *Pseudobarbus verlorenei* (see Albert Chakona's article in this newsletter "Hidden in a lost swamp"). Eight river basins in Cape Floristic Region and their endemic fishes. River basins: 1 = Olifants, 2 = Berg, 3 = Breede, 4 = Gouritz, 5 = Gamtoos, 6 = Sundays, 7 = Coastal drainages, 8 = Baakens.

feeding and attack rates of invasive predators when compared to natives results in the extirpation of native fishes from invaded river reaches (see Ellender & Weyl, 2014).

As a result, most native fishes now only occur in river reaches where non-native fishes have been unable to invade. A recent assessment by Riaan Van der of 400 km of the Olifants River for example, demonstrated that non-native black bass (largemouth bass *Micropterus salmoides*, smallmouth bass *Micropterus dolomieu* and spotted bass *Micropterus punctulatus*) now occupy more than 80% of the historical range of native cyprinids. Typically, invasions by non-native fishes are only restricted by physical barriers such as waterfalls, below which small bodied native fishes, such minnows, are typically absent.

The removal of non-native fishes is therefore necessary to preserve the unique endemic fish fauna in conservation areas. In February 2012, South Africa's first non-native fish eradication using rotenone took place in the Rondegat River, a small headwater stream that had been invaded by smallmouth bass. In the lower reaches of this river native redbfin minnows (*Pseudobarbus phlegethon* and *Barbus calidus*) and Clanwillam rock catlet (*Austroglanis gilli*) had been extirpated by smallmouth bass predation. In the smallmouth bass invaded reaches, the only native fishes that were present were Clanwillam yellowfish *Labeobarbus capensis* (to see a video of a large school in the Rondegat River follow this U-tube link <https://youtu.be/lv6TXBYNc2w>) that were too large for the invaders to prey upon. In this river a man made weir, constructed during the 1960s, effectively cut off a smallmouth bass population from a downstream source (see map). As a result, it was hoped that removing the bass from this 4 km stretch of river would result in the recovery of native fish populations which were still abundant in the stream above a small waterfall which marked the upper distribution limit of the bass.



Map (left) of the section of the Rondegat River that was treated by CapeNature using rotenone as well as the location of the drip stations (after Slabbert et al. 2014) and (right) snorkel densities of native (N) and non-native (NN) fish in the Rondegat River, South Africa, prior to removal of smallmouth bass from the invaded zone between the weir and Rooidraai waterfall.

The rotenone treatment involved a large team from CapeNature (the local conservation agency) whom undertook the treatment as well as international advisors (Brian Finlayson and Jarle Steinkjer), researchers from the South African Institute for Aquatic Biodiversity (SAIAB) and students from the Department of Ichthyology and Fisheries Science, Rhodes University, whom collected all fish that died as a result of the treatment. In total some 470 smallmouth bass were removed during the treatment and the only native fish recovered during the first treatment were 139 Clanwilliam Yellowfish (Weyl *et al.* 2014). To ensure that all smallmouth bass were removed from the river, a follow-up treatment was conducted one year later in May 2013.

Fish community responses to the smallmouth bass eradication have been monitored by underwater video analysis, snorkel surveys and electrofishing. Results have demonstrated that the bass eradication was successful and that native fishes are colonising the lower reaches of the river from where they had been excluded for more than 50 years (check out this u-tube video of a pool where until 2012 no native fish occurred

<https://youtu.be/NyXXU13v80Y>).



A photograph of Clanwilliam redfin minnows and Clanwilliam yellowfish taken at site 22 in the Rondegat River two years after the removal of smallmouth bass.

The successful treatment culminated from a decade-long process that was facilitated through collaboration among a South African nature conservation authority (CapeNature), the South African Institute for Aquatic Biodiversity, and the American Fisheries Society Fish Management Chemicals Subcommittee.

References

Ellender BR, Weyl OLF. 2014. A review of current knowledge, risk and ecological impacts associated with non-native freshwater fish introductions in South Africa. *Aquatic Invasions* **9**(2): 117–132.

<http://dx.doi.org/10.3391/ai.2014.9.2.01>

Slabbert E, Jordaan MS, Weyl OLF. 2014. Analysis of active rotenone concentration during treatment of the Rondegat River, Cape Floristic Region, South Africa: evaluation of the Minimum Effective Dose (MED). *African Journal of Aquatic Science* **39**: 467-472. DOI: 10.2989/16085914.2014.981144

Weyl OLF, Finlayson B, Impson ND, Woodford DJ, Steinkjer J. 2014. Threatened Endemic Fishes in South Africa's Cape Floristic Region: A New Beginning for the Rondegat River. *Fisheries* **39**: 270-279.

Hidden In a Lost Swamp

Albert Chakona

South African Institute for Aquatic Biodiversity

The Cape Floristic Region (CFR), located at the southern tip of Africa, harbours a unique assemblage of stream fishes that are found nowhere else in the world. The most conspicuous stream fishes in the CFR belong to the cyprinid genus *Pseudobarbus*. Fishes of this genus are commonly referred to as “redfins” due to the distinct bright red pigmentation at the base of their fins. Despite a long history of research (the first species of *Pseudobarbus* was described by Smith in 1841), the taxonomy of redfins is still incomplete. A recent resurgence in field surveys and the use of molecular techniques has revealed that the diversity of redfins has been underestimated. In 2009, researchers from the South African Institute for Aquatic Biodiversity (SAIAB) discovered the giant redfin *Pseudobarbus skeltoni*, the largest species of redfin minnows from the CFR. This fish was formerly described as a new species in 2013, and was named after Professor Paul Skelton in recognition of his contribution to the systematics and taxonomy of African freshwater fishes. The description was published in the international journal, *Zootaxa*. The giant redfin is endemic to the Breede River system on the south coast of South Africa.



P. skeltoni. Photo: Riaan Van der Walt

Barely a year later, SAIAB scientists described yet another new redfin species that is endemic to the west coast of South Africa. Redfins from the currently isolated Langvlei, Verlorenvlei, Berg and Eerste River

systems on the west coast of South Africa were previously considered to belong to a single species, the Berg River redbfin, *Pseudobarbus burgi*. During his taxonomic revision of redbfins in 1988, Prof. Paul Skelton commented on the considerable morphological variation between the Berg and Verlorenvlei populations of *P. burgi*. Verlorenvlei is an Afrikaans name which means “lost swamp”. Recent genetic and morphological studies have confirmed that redbfin minnows from the Verlorenvlei River system are genetically and morphologically divergent from *P. burgi*. In 2014, researchers from SAIAB formerly described redbfins from the Verlorenvlei as a new species, *Pseudobarbus verloreni*, ending over a century of taxonomic misidentification. The description was published in the open access journal *ZooKeys*.

The description of the Verlorenvlei redbfin increased the number of double barbeled redbfins in the CFR from three to four. The new species can be distinguished from previously described double barbeled redbfins by possession of distinct linear speckles on the sides of the body.



The Verlorenvlei redbfin from a clear water mountain tributary of the Verlorenvlei River system showing the species' general live colour pattern. Picture: Riaan van der Walt

Recent surveys suggest that both the Eerste and Langvlei populations of redfins have gone extinct, mainly due to multiple human impacts including complete water abstraction, invasion by alien fish species and pollution. It therefore remains uncertain whether the Eerste and Langvlei populations could have been distinct species or whether they belonged to either *P. burgi* or *P. verloreani*.

The newly described species face a number of threats including proposed mining activities, excessive water withdrawal and invasion by alien species. An understanding of the biology, ecology and conservation status is required to expedite development of appropriate management strategies to protect the species. Aspects of the new species' ecology and conservation status are currently being studied by researchers from SAIAB and CapeNature (the regional conservation authority in the Western Cape Province of South Africa) through research funds from the Rufford Small Grants for Nature Conservation and the Mohamed bin Zayed Species Conservation Fund.



A series of turbid isolated pools in the lower Verlorenvlei provide important refugia for redfins during the dry season. Photo: Albert Chakona



The research team that is currently assessing the conservation status of the Verlorenvlei redfin. Left to right: Nkosinathi Mazungula, Bosupeng Motshegoa, Wilbert Kadye, Martine Jordaan, Albert Chakona. Photo: Albert Chakona

References

Chakona A & Swartz E (2013). A new redfin species, *Pseudobarbus skeltoni* (Cyprinidae, Teleostei) from the Cape Floristic Region, South Africa. *Zootaxa* **3686**, 565-577.

Chakona A, Swartz ER & Skelton PH (2014). A new species of redfin (Teleostei, Cyprinidae, *Pseudobarbus*) from the Verlorenvlei River system, South Africa. *ZooKeys* **453**, 121–137.

Between a Rock and a Hard Place: The Plight of the Border Barb

Bruce R. Ellender

South African Institute for Aquatic Biodiversity

It was as early as 1966 in his book “Freshwater Fishes of Southern Africa” that Dr Rex Jubb, a doyen of ichthyology in southern Africa predicted the extinction of a little known barb species, the border barb *Barbus trevelyani*. Fortunately, 45 years later the little barb has defied Dr Jubb’s predictions and has a fairly healthy population in the upper reaches of the Keiskamma River system, Eastern Cape, South Africa. The battle is however not over yet and the odds are stacked fairly heavily against it. The border barb is a small, shoaling species that is endemic to two Eastern Cape river systems in the Amatole Mountains, the Keiskamma and Buffalo systems. The border barb favours pools and riffles in clear rocky streams, and is very habitat specific, mostly being confined to unsilted, pristine areas of the stream. It is currently IUCN redlisted as Endangered and major threats to the species are a decline in habitat extent and quality as well as invasion by alien fishes.

In the 1960’s after having thought that border barbs had gone extinct in the Buffalo system, eleven specimens recovered from the stomachs of large rainbow trout confirmed their presence! In the Buffalo River system the last fish survey was undertaken in the 1980’s and the border barb was only found at a single site between Maden Dam (stocked with rainbow trout) and Rooikrans Dam (stocked with smallmouth bass and trout). The current status of Buffalo River Border barb population is unknown. As part of my PhD thesis research, studies on their distribution abundance and the distribution of genetic diversity within the



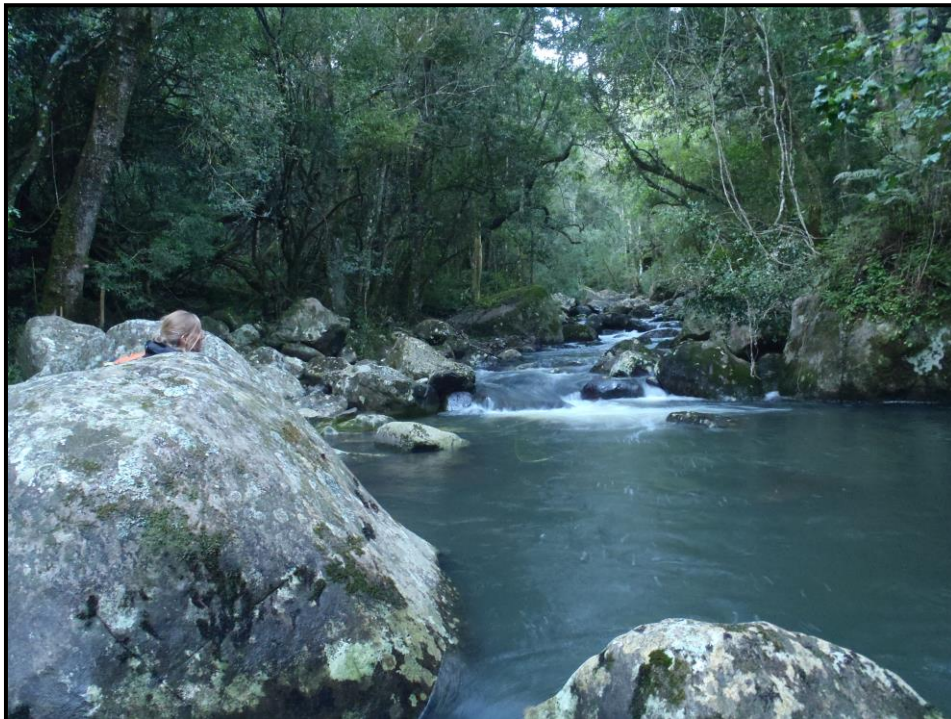
The endangered border barb is a highly localised endemic occurring only in the upper reaches of the Keiskamma and Buffalo River systems in the Eastern Cape, South Africa (photo: Craig Garrow)

Keiskamma River system headwater were undertaken. In recent surveys (2011-2015) on the distribution and abundance of fishes from the upper Keiskamma River system the Border barb was fairly widespread in the upper catchment streams and upper reaches of the mainstream Keiskamma River. Although this may be the case, the border barb was still limited to those sites that were fairly pristine, and were not found in stream reaches that were heavily silted and eroded, with little stream bank integrity or in stream reaches invaded by trout. Another striking finding was that of the 75 surveyed sites only a single site was found where rainbow trout and the Border barb co-occurred. This site had a single large border barb of approximately 10cm,

probably larger than the gape size of the trout with which it co-habited. Genetic research has also suggested that in fact the Buffalo and Keiskamma Border barb populations may actually be different enough to be split into two species.

Due to the lack of suitable angling species in the Eastern Cape Rivers, over the last century a variety of alien fishes have been stocked into rivers and dams. In the late 1890's and early 1900's, trout (rainbow and brown trout) were stocked into the upper reaches of both the Keiskamma and Buffalo River systems and subsequently spread downstream. Trout have since established self sustaining populations in five of the seven Keiskamma River tributary streams. Anecdotal and current evidence suggests that the current border barb distribution does not reflect its historical range and that trout have eradicated the border barb from the upper reaches of five Keiskamma River tributary streams. Survey data suggest that the trout have resulted in a loss of approximately 30% of border barb habitat. However, it's not all doom and gloom.

A series of impoundments were constructed on the upper Keiskamma River system starting with Mnyameni Dam in 1975, Cata Dam in 1980, Sandile Dam in 1983 and Binfield Dam in 1987. Before the construction of these impoundments, trout were distributed fairly widely in the upper reaches of the Keiskamma River and its tributaries. From current surveys it was however evident, that the range of trout in the Keiskamma River system has been restricted. Evidence suggests that impoundment construction seems to be the cause of this range restriction for trout, which are currently limited to areas above these impoundments. This seems to be related to the temperature regime shift as a result of warm surface water released from the dams creating unfavourable conditions for trout in the streams below the dams. The border barb seems to have relished this range restriction of trout and are now abundant in the trout free stream reaches below the dams.



Typical near pristine border barb habitat characterised by rocky runs and riffles

Unfortunately, African sharptooth catfish *Clarias gariepinus* were recently found in the mainstream Keiskamma River below the Sandile Dam. Sharptooth catfish were first recorded from the Tyume River in the early 1980's where they were thought to have escaped from experimental ponds at Fort Hare University after floods. The mainstream Keiskamma River has been extensively surveyed below Sandile Dam and only a single catfish was found. There seems to have been a lag in their establishment success and spread from the Tyume River to other reaches of the Keiskamma River. Although they are not yet abundant or widespread, sharptooth catfish have been moved extensively around South Africa both accidentally and intentionally, and are now found in every major river system in the country. This is a major threat for the border barb as sharptooth catfish are aggressive predators and have been implicated in the decline of other small barb species in other systems in South Africa where they have invaded.

The management/conservation recommendations emanating from the studies on the border barb are currently being implemented by a conservation NGO, the Endangered Wildlife Trust that recently initiated a project for the conservation of five endangered aquatic organisms endemic to the Amatole region. As Part of this project they aim to promote sustainable utilisation of water sources through education programs, catchment rehabilitation, alien tree removals and long-term monitoring of endangered species. This project is in its infancy but these conservation interventions will hopefully benefit the border barb in the longer-term. The border barb is wedged between trout in the upper reaches, and the looming threat of sharptooth catfish which is spreading upstream from the lower reaches of the Keiskamma River. We can only hope that increasing the knowledge base and awareness on the status of the border barb will aid future conservation of the species.



An example of a highly degraded and modified section of a Keiskamma River headwater tributary where border barbs were absent

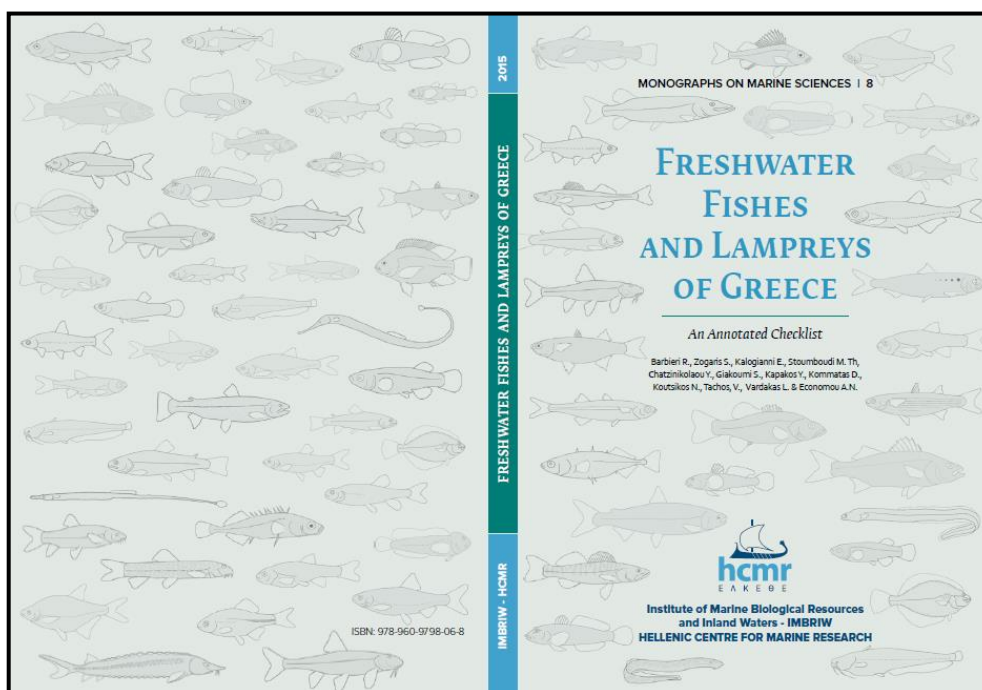
Freshwater Fishes and Lampreys of Greece : A Brand New Annotated Checklist

Stamatis Zogaris

Institute of Marine Biological Resources and Inland Waters - HCMR

A new annotated checklist of Greece's freshwater fishes was recently published, the latest such booklet since Economidis's 1991 seminal popularized checklist. The 134 page book features a brief introduction and carefully coded annotated accounts for 160 species. Particular emphasis is given to the interpretation of recent name changes and taxonomic validity. The book stresses the conservation value of Greece's freshwater fishes; 47 taxa are noted as exclusively endemic to Greece and there are still important knowledge gaps on the taxonomy of several taxa. Many species are threatened at a global scale and there are fears that some may already be close to extinction; a notable example being the Vistonis Shad (*Alosa vistonica*) endemic to Lake Vistonis, a large wetland system which has suffered from extreme water abstraction, salinization and pollution. This book's compilation is based on a group effort; it is authored by 12 members of the Hellenic Center for Marine Research and is illustrated with fine line drawings made by Roberta Barbieri. Professor Konstantinos I. Stergiou provides a forward and lends support to initiatives that strive to scientifically compile and maintain national fish checklists.

The book is available free-of-charge as a PDF download at http://imbriw.hcmr.gr/en/wp-content/uploads/2015/05/FINAL_MARCH_2015_FreshwaterFishlist-1.pdf and hardcopies may be ordered for libraries and scientific institutions from info@fishlist.gr



Wetlands International Releases its 10-year Strategy to Safeguard and Restore Wetlands

Paul Brotherton

Wetlands International

Wetlands International released its 10-year strategy to safeguard and restore wetlands for 2015 - 2025. *Wetland Solutions for People and Nature* sets out the ambitions of Wetlands International to prevent and reverse the loss of wetlands around the world over the next ten years. It highlights where they plan to go about that work together with their partners and stakeholders. Around the world, wetlands are under growing pressure. Implementing this strategy will help prevent and reverse the loss of wetlands and make a significant contribution to sustainable development.

Wetlands have the greatest value of any ecosystem for human well-being, yet they are the most rapidly degrading. Wetlands are the sources, sinks and purifiers of water, and they support abundant and unique nature. But so many wetlands have been lost, and those that remain are under growing pressure. Global losses of wetlands are at least 64% since 1900 and around 87% since 1700. This makes people and nature vulnerable. This Strategy aims to reverse this negative trend.



Djoudj National Park, Senegal. Photo: Merijn van Leeuwen

According to Wetlands International CEO Jane Madgwick, “Wetlands need much more attention. Efforts to end poverty and boost local and global economies will go to waste if we don’t start safeguarding and managing wetlands better. It’s not a choice between environmental care and development gains. Healthy wetlands are part of the bottom line for healthy economies. Action is needed urgently by governments, the private sector and civil society from the Arctic to the tropics. As the global NGO working worldwide, we share knowledge and catalyse positive action for wetlands. We work with hundreds of partners and our work benefits millions of people. With this Strategic Intent as our guide, we aim to inspire others and add momentum to scale up wetland solutions.”

To focus the work on the issues and places where wetlands matter the most to people and nature around the world, Wetlands International has chosen five landscape scale outcomes or “Streams” for their work and developed a vision for each one. These priorities reflect their global and regional analyses of the linked environmental and development challenges, and build on their track record of success to bring about change.

The five Streams are:

- Healthy Wetland Nature
- Vibrant Coasts and Deltas
- Blue Lifelines in the Desert
- Replenished Water Stores from Mountains to Sea
- Peatland Treasures Safeguarded and Restored

More information, download the Strategic Intent document from <http://www.wetlands.org/WatchRead/>.



Successful Reintroduction of the “Carpita de Morelos” *Notropis boucardi* in Chapultepec Protected Area in Morelos, Mexico.

Topiltzin Contreras-MacBeath

Chair, IUCN-SSC Freshwater Conservation Subcommittee); Mesoamerica Regional Chair for Freshwater Fish Specialist Group

The “Carpita de Morelos” *Notropis boucardi* (Figure 1), is restricted to a small system of streams located to the west of Cuernavaca in central Mexico, as well as in an endoreic spring (Hueyapan) of the neighboring municipality of Jiutepec, within a state protected area called “El Texcal”. Three main threats to *N. boucardi* have been identified, water pollution, water management/use and invasive species. In the first case, a consequence of the growth of the city of Cuernavaca in the last 50 years, and the lack of appropriate wastewater treatment, is that most of the streams within the urban area of the city are polluted to a degree that *N. boucardi* can’t survive (Contreras-MacBeath & Rivas, 2007). A distribution study (Preciado, 2012) demonstrated that in a period of about 50 years, the species has lost 49% of its original distribution.



Figure 1. *Notropis boucardi*.

Our reintroduction project followed the guidelines for reintroductions and other conservation translocations developed by the Reintroduction and Invasive Species Specialist Groups’ Task Force (IUCN/SSC 2013), so biological feasibility was taken into account, thus prior knowledge of the species life history was included (Contreras-MacBeath & Rivas, 2007), and a study describing the genetic variations of each known population was conducted, in order to define the founding population (Rosas-Flores, 2013).

Implementation consisted on the eradication of invasive fish species (*Oncorhynchus mykiss* and *Cyprinus carpio*) from the stream, due to the fact that these predate and/or compete with *N. boucardi*. This was successfully carried out by means of a combination of electrofishing, and the use of nets with the aid of the workers of the Park.

For this first reintroduction event, founders were obtained from “Barranca La Primavera” stream, which is about 2 miles from the Park. Most of this stream has been heavily impacted by polluted effluents from surrounding urban area (Figure 2), but there is a residual population of *N. boucardi*, that is highly threatened. Due to small population size, only 72 specimens were captured and transported for their immediate release in “Barranca de Chapultepec” stream (Figure 3).



Figure 2. Evaluating water chemistry in the source population site (Barranca La Primavera)



Figure 3. Reintroducing specimens of *N. boucardi* to Chapultepec protected Area

A post-release monitoring program was established in order to follow the introduced specimens. Preliminary data showed that a population had not yet been established, but recently we found evidence of a relatively large population, some 300 specimens, swimming near the release site. Many of these are fingerlings that were born this spring. This is the first successful documented reintroduction of a freshwater fish species in Mexico, so there is hope for this species, which will now become a flagship for our state conservation program.

References

- Contreras-MacBeath, T. and M Rivas G. (2007). Threatened fishes of the world: *Notropis boucardi* (Günther 1868) (Cyprinidae). *Environmental Biology of Fishes* **78**:287-288.
- IUCN/SSC. (2013). *Guidelines for Reintroductions and Other Conservation Translocations*. Version 1.0. Gland, Switzerland: IUCN Species Survival Commission, viiii + 57 pp
- Preciado C. I. (2012). Análisis de la distribución y algunos aspectos poblacionales de *Notropis boucardi* (Cyprinidae) en las Barrancas de Cuernavaca, Morelos, México. Tesis Profesional Biólogo. Facultad de Ciencias Biológicas. Universidad Autónoma del Estado de Morelos. 54 p.
- Rosas-Flores C. J. (2013). Filogeografía y variación genética de las poblaciones de *Notropis boucardi* y *Notrotropis moralesi* del estado de Morelos. Tesis Profesional Biólogo. Facultad de Ciencias Biológicas. Universidad Autónoma del Estado de Morelos. 37 p.

Red List Assessment of the Freshwater Fishes of the Arabian Peninsula

Jorg Freyhof

Western Palearctic Regional Chair for the Freshwater Fish Specialist Group; Executive Director of the Group of Earth Observation – Biodiversity Observation Network (GEO BON).



*The subterranean **Garra dunsirei** (EN) is known from only a single sinkhole at Tawi Atair, in the Jebel Qara (Jebel Samhan) mountains in Oman. The wild population is believed to be not larger than 250 individuals. A captive stock exist at the Breeding Centre for Endangered Arabian Wildlife (Sharjah, UAE), where this picture was taken.*

©Johannes Pfeleiderer

The huge surface of the Arabian Peninsula is almost devoid of freshwater habitats. Saudi Arabia, with a surface cover of more than two million km², is inhabited by only eight species of primary freshwater fishes, fewer than in a small catchment in adjacent Iran or Syria. According to a new study by Freyhof et. al. (2015), 21 species of freshwater fish are present in the Arabian Peninsula. From these, fifteen species are endemic to the Arabian Peninsula, and six species have a wider distribution. The new study considered the global risk of extinction for 19 species of freshwater fishes that are present in the Arabian Peninsula.

Of the 21 species evaluated, 38% (8 species) are considered threatened (assessed as Critically Endangered, Endangered, or Vulnerable), and 9.5% (2 species) are considered Near Threatened. All eight threatened species are endemic to the Arabian Peninsula. Only one species is assessed as Critically Endangered. That is *Acanthobrama hadiyahensis*, being endemic to Wadi Hadiya in Saudi Arabia. The species has a very small range and was rediscovered in 2013 after having not been found for 30 years (Hamidan & Aloufi, 2014).

The most important locality for threatened freshwater fishes in the Arabian Peninsula is Wadi Hadramaut in Yemen. Wadi Hadramaut has six species of primary freshwater fishes and is the most species rich drainage basin of the Peninsula. Several wadis in Yemen and South-west Saudi Arabia host up to five species, but most have a much lower species total.

Water extraction is a significant threat for many of the freshwater fishes in the arid and semiarid landscapes, mainly because many of the wadis are ephemeral or have periods of low flow, and any additional extraction can result in significant loss of habitat.

For more information on the full report on the *Status and Distribution of Freshwater Biodiversity in the Arabian Peninsula* see page 18 of this Newsletter.

References

- Freyhof, J., Hamidan, N.A., Feulner, G.R., and Harrison, I. (2015). The status and distribution of freshwater fishes of the Arabian Peninsula. In: *Status and Distribution of Freshwater Biodiversity in the Arabian Peninsula*, García, N., Harrison, I., Cox, N., and Tognelli, M.F. (compilers). Pp. 16-29. Gland, Switzerland, Cambridge, UK and Arlington, USA: IUCN.
- Hamidan, N., & Aloufi A. (2014). Rediscovery of *Acanthobrama hadiyahensis* (Cyprinidae) in Saudi Arabia. *Journal of Fish Biology* **84**(4):1179-84.

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World Conservation Congress 2016

Save the date for the next World Conservation Congress – 1-10 September, 2016

The next IUCN World Conservation Congress will take place in Hawai'i, USA, from 1 to 10 September 2016.

IUCN has issued a call for Contributions, inviting people to propose events for the Forum (the part of the Congress open to the wider public, 2 to 5 September). The Call will remain open until 15 October 2015 and you will have until that date to identify partners and jointly develop your proposal. (Note that some FFSG members are already developing proposals; if you are interested in further information about FFSG plans please contact Ian Harrison (harrisonffsg@gmail.com))

Events at the Forum are varied and include Workshops, training and capacity-building sessions at the Conservation Campus, Posters and Knowledge Café sessions. It is a great platform to meet and discuss with like-minded people. So if you would like to engage and inspire others, this is your opportunity to do so!

Visit the Congress Website for the latest updates and information about the Congress
<http://www.iucnworldconservationcongress.org/>.



World Fish Migration Day 2016

Save the date for the next World Fish Migration Day – 21 May, 2016

World Fish Migration Day 2016 (WFMD) is a one day global initiative, with local events worldwide, to create awareness on the importance of open rivers and migratory fish. It is a World Fish Migration Platform activity and is held to improve the public's understanding of the importance of open rivers and migratory fish and their needs.

What is World Fish Migration Day?

The concept of WFMD is that organizations from around the world volunteer to organize their own event around the common theme of: **CONNECTING FISH, RIVERS AND PEOPLE**. By working together, under one worldwide umbrella, we can improve our impact on raising awareness/ sharing ideas/ securing commitments/ building communities. In doing so, we can ultimately create a greater driving force, which will allow for easier management/ conservation/ rehabilitation of migratory fish stocks.

To find out more about WFMD 2016, including how to create and upload your own event, please visit www.worldfishmigrationday.com.

NEXT ISSUE OF 'SAVING FRESHWATER FISHES AND HABITATS'

Do you want to share news from your freshwater fish conservation project with a global audience? Are you doing fascinating research or organising an exciting event? Well, the FFSG Newsletter could be the perfect way to tell your story!

The deadline for submitting material for the next issue is 15th September 2015.

If you have any questions or if you want to submit material, please email info@iucnffsg.org

Doring River, Western Cape,
South Africa © Bruce Paxton

The Freshwater Fish Specialist Group is generously supported by the Chester Zoo, IUCN's Species Survival Commission, Wetlands International, and Zoological Society of London