

Tilapia invade the Kikori River PNG

Prof. Arthur Georges



Four year old, Adam John, with a Tilapia that he speared for himself from the Kikori

Invasive species are a problem in Papua New Guinea as they are in most parts of the world. Many of these species are exotic, that is, brought in from other countries. They establish in the new environment and some wreak havoc, eating native species unaccustomed to new predators, sometimes to extinction. In other cases, they eat the foods of native species, and their sheer numbers lead to the decline in the native species through competition for food.

The Piku Team from the PNG Institute for Biological Research and the University of Canberra has seen the advance of a new introduced species; the fish, Tilapia (*Oreochromis* sp.). Largely unknown from the Kikori catchment as few as three years ago, the species has spread so that it is now found in the uppermost streams right down to the coast. In our recent trip in October 2013, we found it in Wau Creek in the Kikori lowland headwaters, and indeed, it was the only fish the locals with us caught; seven large Tilapia. Local landowner, Frank John, believes that Tilapia has “chased out” the barramundi and black bream that used to be the main fish caught. They were a “new fish” when we were at Wau Creek with Frank in February of 2012.

Down on the coast in Apeowa lands on Banana and Turuvio Islands, the catch was more diverse: salmon, mullet, eel tailed catfish, shark, stingray. However, among them was also a large Tilapia. Here they do not do so well according to the local landowner Elaro Biara, “because they are favoured by sharks, which take off their heads”. Nevertheless they persist.

AUSTRALIA NEW GUINEA FISHES ASSOCIATION

Working together to promote the aquarium keeping, conservation, study and propagation of the native fish species of Australia and New Guinea.

ANGFA DIRECTORY

Postal Address:

ANGFA INC.
P.O. BOX 1040
RICHMOND NORTH, 3121,
VICTORIA, AUSTRALIA

President Ian Baddock president@angfa.org.au
Vice Pres. Michael Jones vp@angfa.org.au
Secretary Gerard Carmody secretary@angfa.org.au
Treasurer John Lenegan treasurer@angfa.org.au
Membership Keith Martin membership@angfa.org.au

ANGFA (NSW) Liaison Officer
Lorraine Girkin misterg1@exemail.com.au

ANGFA (QLD) Liaison Officer
Heidy Rubin 1nddwnunder@hotmail.com

ANGFA (VIC) Liaison Officer
Kwai Chang-Kum kwaiandjanelle1@bigpond.com

ANGFA (NT) Liaison Officer
Dave Wilson aqua.green@bigpond.com

ANGFA (WA) Liaison Officer
Graeme White whitegm@optusnet.com.au

ANGFA (SA) Liaison Officer
Graham Walker gwal0948@bigpond.net.au

ANGFA (ACT) Liaison Officer
Andy Wattam awattam@pcug.org.au

ANGFA (North America) Liaison Officer
Ken Boorman 1tsas_lair_bookstore@kent.net

Fishes of Sahul:

Neil Armstrong silverbudgie@optusnet.com.au
(Co-ordinator & Photography)

Ken Smales (Editor) editor@angfa.org.au

ANGFA News:

0458 000560

Matthew Stanton (Editor) NewsEditor@angfa.org.au

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as are instructions for joining ANGFA Announce,
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Presidents Message

Ian Baddock

What can I say about the Melbourne convention? It was great! Well done to the ANGFA Victoria convention committee and all those who worked behind the scenes. We had a well-run weekend and a marvellous line up of speakers. It was so good to catch up with old friends again.

As the new committee settles in, we will continue with the good work performed by the last committee.

As of 2014 *ANGFA News* will become digital and will be available as a download from the



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web site. *Fishes of Sahul* itself will remain in its printed form for 2014. However, issues three and four of volume 28 will also be available to members as a download from the web site. This will allow us to iron out any bugs so members can have the option the following year of printed/posted or digital/downloaded *Fishes of Sahul*. There will be a considerable cost saving for those who elect to go with the download. As a result of other recent cost saving measures, members will note their renewal fees have already come down. For the 2014 renewal only, there will be no two-year renewal option. This will allow us to bring all memberships into line when we offer the new price structures for 2015, including the downloading *Fishes of Sahul* option.

In the mean time, I'd like to wish all a very Merry Christmas and a Happy New Year

Interested in helping with fieldwork collecting fishes?

Peter Unmack

Peter Unmack is now based at the University of Canberra working on a project looking at biogeographic patterns across the Murray-Darling Basin.

Part of this work involves running around the countryside collecting fishes, turtles, shrimps and yabbies. It's not the most exciting part of the world to go collecting in, but if there are people interested in tagging along for a day, a week or longer then please feel free to contact me (peter.mail2@unmack.net). Our next trip is scheduled for mid-December in northern Victoria, but we'll have other trips in NSW and southern Qld in 2014.



Tilapia is now sold in the Kikori Markets, whereas a fish survey of the market in January 2012 revealed none. They are sold fresh or smoked and although the taste is satisfactory, they do not taste as good as barramundi, catfish or black bream, according to the locals. Last Saturday, ladies from Veiru Village were selling in the market over 30 very large Tilapia they caught in Veiru Creek. These were the only species caught; no catfish, no barramundi.



The spread of Tilapia got a major boost with the extraordinary floods of October 2012, which certainly assisted their dispersal. We have reliable reports now of Tilapia from the villages of Irimuku, Veiru, Era, Bisi, Waira as well as where we ourselves found them from lowland headwaters to coast.

The source of the Tilapia is not known. Some think it came across from Indonesia, as did climbing perch and snakehead. Others believe it escaped from fish farms in the Lake Kutubu region, supported to improve food security in

the region. Some of these farms are only metres from the water's edge, and it does not take much imagination to see them escaping during the big flood.

The presence of Tilapia in big numbers is of concern not simply because they are in a place they should not be, but because of the environmental impact they may have. They are herbivorous, and so the likely impact will be through competition with other species for

algae and plant matter, though the possibility of interference through aggressive behaviour cannot be ruled out. They may displace other fish simply by coming to occupy and defend cover – log jams and undercut banks – that may be in limited supply.

We will wait and see. In the meantime, it is so important that local communities are aware of the unexpected implications of release and establishment of exotic species. Tilapia is relatively benign, and there are some benefits from an additional source of protein for local

communities. However, release of Nile Perch or Redfin, both predatory fish, would be devastating for the local fish fauna. It is likely that they would send many of the local endemic fish species of Lake Kutubu extinct, as happened in Lake Victoria in Africa.



To increase local awareness of this issue, the Piku Team has produced a new childrens' book for circulation to schools and school children in the Lake Kutubu and Kikori Delta regions of the Gulf Province. The book "Monty and the Lake Kutubu Invasion" tells the story of Chris the Carp who finds his way to the Lake to the great concern of the many native fish species that live in Lake Kutubu and nowhere else.

At first they are all frightened, then they come to know and accept Chris the Carp, but after a while, through no real fault of his own – Chris the Carp is just being a carp – trouble brews, and the fish community work out a way to return Chris to his home country.

The book, which is also full of games and puzzles, sends the message that it is bad to bring new species into an area from other countries, because the consequences for our native species can be very bad.

The Piku Team is led by Eric Manasi and Yolarnie Amepou in Kikori where the team is working with the community to conserve the iconic Pig-nosed Turtle and its riverine habitat.

The Piku Project is a joint initiative of Esso Highlands Limited and the University of Canberra

ANGFA Victoria News

Kwai Chang-Kum

Well the convention has taken up much of our time and attention. It was well represented with over 100 people attending. From the surveys of the attendees, it was a convention with a diverse range of topics and fantastic presenters.

A huge range of Native fishes were available at the auction. A big thank you to Neil Armstrong and Gunther Schmida for providing beautiful photos that were displayed on the big screen. Also thank you to John Lenegan for trying to keep up with Andy and Steve, the auctioneers.

A huge thankyou must go to all of those supporters of ANGFA who kindly donated products for the displays, the trade table and the auction. It is this generosity that makes me proud to part of this fantastic organization.

We have had a very busy year organizing the conference. Well now that it is finished you would think that we could put our feet up and relax. But there is no rest for the wicked. We have started planning for a fantastic new year next year. We plan on advertising all field trips, dates and presenters in our February edition. Hopefully this will build excitement and enable members to plan ahead in 2014.

We will be having a field trip to the Werribee River on January 11th. Meeting at 10 am at the Greaves and Watton Street car park. Please ring Kwai if you have any questions. 0430434488.

Hope to see you at the next meeting.

ANGFA Queensland News

Heidy Rubin

Our October meeting was held on Friday 18th due to the convention in Melbourne. Those Queensland members who attended the convention gave a run down on the presentations and speakers. What a fabulous weekend! Thanks to ANGFA Victoria for being the perfect hosts. Peter Johnson was guest speaker on the night and provided a talk on aquatic plants. The club also discussed the continued involvement in Threatened Species Day and becoming

involved with other environmental activities and research.

Our next meeting will be held on Friday, 13th December. Guest speaker on the night will be Gunther Schmida and we will hold our AGM. A big thank you as well to the outgoing committee for a fantastic year.

ANGFA New South Wales

Lorraine Girkin

For the final time in 2013, here is the ANGFA NSW report.

This year has seen us try a couple of new initiatives to keep members informed of what is happening within the club and at meetings and also try to entice new members to join us. The last few months has seen the rise of the ANGFA NSW Facebook page. It has had good feedback and is gaining interest from members and non-members alike. We have begun to use SMS broadcasting to remind members of meeting times and topics. The messages have been well received.

Speakers this year have been diverse with topics on e-books, brackish-water fish, natives outsmarting cane toads, plants of the Sydney region, visions from field trips and we even had a very interesting talk on cichlids. We hope to keep the trend going next year.

Members of NSW have joined other enthusiasts on field trips up north recently and, from all reports, these types of trips will continue in the New Year as there will be no convention in 2014. Images of these trips have been posted on Facebook. ANGFA NSW will be joining Peter Unmack in 2014, surveying various areas of NSW to aid in his research work on carp gudgeon.

To finish off the year, at our December meeting we will have a box of fish from Dave Wilson of Aquagreen. Our Christmas get together this year will be a Sunday lunch in China town. Previous visits have had positive comments so, as the saying goes, "when you're on a good thing, stick to it".

The ANGFA National Convention: Melbourne 2013 — A review

John Cousins
(images: Neil Armstrong)

Now that most of the dust has settled, what did you think?

The evaluation sheets have been extraordinarily positive; it was an excellent convention. Let's just have a quick look at what happened. Same venue as in the past, handy to the airport and very comfortable. The displays, coordinated by Greg from *Aquariums By Design*, were a great feature showing many of the smaller native fish as well as an absolutely spectacular blue yabby.



Many people commented on how easy it was to see and hear what the presenters were doing. And what a great job they did.

For those of us 'in the know' it was priceless watching peoples' faces when **Dr Alan D. Henningsen** (a.k.a. Graeme Bowman) was giving the opening presentation. It was surprising how many of the 'old timers' were sucked in, but imagine the disquiet of future presenters in the audience. "What have I got myself into here?" It was a great way to start off, with a bit of a laugh.

Briggsy (Glenn Briggs) was the follow-up speaker, and what a great job he did. He is contributing to the genetic classification of many species by providing specimens to the scientists. He also showed what a good hobbyist he is too. Fancy being able to comment on the relative temperaments of 20 or so races of *Mogurnda*! As happened throughout the day, his presentation was supported by excellent visuals.



Part of the tradition at Conventions is the enormous raffles, so thanks to all of those who bought tickets. There were seven mega-affles in all.

For those of us who didn't win anything, there were compensations a plenty in the continuing excellent quality of the speakers. The next up was **Phil Littlejohn** whose aim is to photograph every animal in Victoria's streams. I liked his slide of his dog: "If you're going to do this sort of thing, there's no-one else who'll go with you!" Just a few of the remarkable things he showed us were: mobile algae; freshwater sponges; freshwater jellyfish, crabs, slaters etc. Phil was also able to show us microscopic animals hunting: Stunning stuff.



Peter Unmack (above) was next with a very interesting and challenging look at the genetics of Rainbowfish. The DNA sequencing that is being done suggests, among other things, that rainbows have been hybridising in the wild in the past; that there is a strong possibility that there are 15 more species in Australia and heaps more to be described in New Guinea.

Mark Bachmann had a largely positive review for us of what is happening on the

South Australia-Victoria border at 8 Mile Creek, Piccaninnie Ponds and Long Swamp. There have been changes in the landscape that have repaired some of the damage of the past, so that the endangered aquatic species of the area have a much better chance of survival. Mark's explanation of the geology of the area was interesting too, particularly in the light of subsequent speakers commenting on the importance of aquifers and springs in different contexts.

The basic premise of **Mike Hammer's** first presentation was the need to be able to identify what species you have, before you attempt to preserve them. To this end he showed us 'Bush Blitz' trips to some remote sites in the Northern Territory including the Daly River, the Roper River and Arnhem Land. 'Bush Blitz' is supported by the Australian Government, BHP and Earthwatch. Our own Dave Wilson and the traditional owners were also part of the expeditions. One trip to Henbury Station on the Finke River was interesting in that results were being discussed via Skype with students back in their classrooms.

Doug McColl (below) gave us a brief review of the Species Maintenance Group and the valuable work they are performing. A testament to their success was that the auction later in the day had at least one bag of every species of New Guinea fish that was known to be in the country. The SMG is focussing on New Guinea species. If you would like to be involved then contact your local state group or Doug on: doug@dougmccoll.com.au



The Auction is always a highlight of any Convention, or indeed the local meetings too. We had plenty of variety, plenty of humour



and speed of operation. What else could you wish for? You would expect most of the New Guinea fish to go for good prices and most of them did, although I couldn't resist a bag of five *Chilatherina campsi* for \$15. There were at least ten bags of seven Honey Blue-eyes and each went for \$50! However the star of the show would have to have been the *Melanotaenia eachamensis* (the ones from Lake Eacham, now extinct in the wild). It was so great to see them being made available as they were nearly lost. Just to mention a few other items: Spiny snails, crabs, fishing lures, gobies, a container of Goyder River water and even some *M. catherinae* eggs. Andy and Steve did a great job with the auctioneering, Briggsy and Tony with the back-up organisation and the runners who did the hard work of getting purchases to the purchasers.

After dinner was the first of **Heiko's** talks. The theme was that fish show off at their best if they are in a tank that reflects the conditions of their origin. For example discus and angels are found near the banks of rivers in among the tree roots, Corydoras like areas of sand, etc. He supported

these ideas with great slides and videos: A most convincing presentation.

Adam Kereszy started us off on Sunday morning with what was a really positive look at the work being done to preserve the Red-finned Blue-eye. (You don't expect me to be able to spell the Latin name do you? I had enough trouble with Kereszy.) This little fish has to really battle the odds. It lives in very shallow water in temperatures that range from 40°C to 0°C in springs fed from the Great Artesian Basin. They have been threatened by *Gambusia*, trampled on by cattle and may be in danger because of the by-products of fracking. However, when Bush Heritage bought the property that includes their habitat in 2008, their luck began to change and through the work of Adam and his colleagues, the populations are starting to increase. It is however a constant and ongoing battle.

Sometimes there are ideas presented at ANGFA conferences that are totally new, and to me at least, **Ian Morris's** description of Lake Carpentaria and its influence on the distribution of all sorts of flora and fauna was just such a notion. It turns out that we have been misleading

our membership all this time with our map of Sahul. The map shows a coastal plain in what is now the Gulf of Carpentaria. In fact, in the middle of the Gulf was a huge lake, fed by the Fly River. This lake was the habitat for many species of fish and when the sea levels rose again, these fish retreated up the streams that flowed into the lake. Therefore, you have populations of *Melanotaenia maccullochi*, *Iriatherina werneri* and *Saratoga* in southern New Guinea and the Northern Territory and Cape York. Ian paid tribute to the work of Alfred Russell Wallace too, perhaps one of the most important biogeographers of the 19th century. A final note on Ian's talk: we learned that the aquifers from the slopes of New Guinea feed the streams of northern Australia, explaining their unusually high flows in the dry!

This convention was certainly notable for its variety. Our next speaker was **Brian Andrews** (right) who is a fish breeder and author who gave us some really important insights into the breeding of Rainbowfish. His book '*Ornamental*

Fish Farming' was available at the Convention and is highly recommended. I think a more detailed summary of his talk would have practical value to many.



Nick Romanowski gave us some insights into what can be achieved in nano-tanks. He pointed out that fish produce a lot more waste than invertebrates, so invertebrates can be a lot less work to keep. His photographs were amazing and we saw a tremendous variety of things that were being kept in a tiny \$2 plastic tank. There were copepods, crustaceans, shrimps, prawns and crayfish, damselflies and dragonflies. The list went on and on. All through, Nick was interspersing secrets of his photographic techniques. Look out for his next book "Living waters: The ecology of animals in swamps, rivers, lakes and dams".

Next was **John Sinclair** whose topic was 'No More Beating About the Bush'. John has been taking tours around Australia New Guinea and even parts of South-East Asia for the last 45 years. His talk looked at aspects of the environment in the Kimberley (where have the emus gone?); Kakadu; Tasmania; the Great Barrier Reef; Lord Howe Island; Fraser Island etc. One statistic I like was that the south-west of WA is an area of enormous biodiversity: 11,000 species. We all think that rainforests



are very diverse (and they are), but the wet tropics of Australia has 5000 species! Change is happening in our environment at an alarming rate via climate change increased population pressure and reduction of water quality. A salutary warning.

Mike Hammer also mentioned A.R. Wallace as his next talk was about an area that Wallace would have been around. In a way he was doing similar work, collecting and identifying specimens that were often new to science. The specific area of Mike's work was the Hindenberg Wall, an area of amazing steepness roughly in the middle of the PNG-Irian Jaya boundary. This area has a rainfall of about nine metres per annum, so Mike was working in mud for most of this trip. He was collecting fish and even got a 15cm *M. oktediensis*. However, there were other species as well, many previously unknown to science, although the locals knew what they were. There were damselfishes, giant rats, bats, prawns, frogs grasshoppers, skinks, geckoes, highland catfish and even a 'magic fish' (a giant gudgeon).

Heiko was the last speaker and his explorations are always thrilling, in part because of the dangers involved and in part because of the things he finds. This time most of his talk was about Aru Island, an area of spectacular limestone (karst) scenery. The tropical rainforest and the fish in the streams were amazing. The range of species in a small area was significant. As usual, the photography was marvellous and it was hard not to feel just a little jealous of those European aquarists that have access to the fish Heiko has brought back with him. Two of his stories evoked quite different responses. One was of a Japanese family that was just recently discovered living in a cave. They thought World War 2 was still going on!

The second was of a permit that has been granted for a sugar cane plantation to replace the pristine rainforest on most of Aru Island. The island is 650,000 ha. The plantation is proposed to be 500,000 ha! There is just so much wrong with this, it is incomprehensible.

To come back to the Convention though, everything worked well, the presentations were of an excellent standard and the atmosphere



was very friendly and positive. Comments were made about the newness of the material. Others, reluctant to single out any one thing, liked the variety.

So well done to all of the organisers, the presenters, the sponsors and to the participants.

Roll on Sydney 2015. A very grateful — Cuz

Book review (Glenn Briggs)

TITLE: *Ecology of Australian Freshwater Fishes*

AUTHORS: Numerous (Edited by Paul Humpheries and Keith Walker)

ISBN: 9780643097438

PUBLISHER: CSIRO Publishing

PAGES: 440

PRICE: \$130

COVER: Hard 27 x 21 cm

ARTWORK: Monochrome photographs and line drawings.

This book is not really subject to your "standard" *ANGFA News* book review, as this is certainly not a new book of more typically reviewed subjects such as identifying fish of Australia or New Guinea, or how to keep natives in aquaria etc.

This book is probably primarily aimed at science students, no doubt aquarists or natural history buffs were not even considered as

potential target readers. But nevertheless any native fish enthusiast will find a huge amount of interesting information in this book, particularly as it covers many aspects of our fishes' natural history and the influence of the Australian environment on our fishes, aspects that we often don't stop to contemplate.

You will also find out why did the Spangled Perch cross the road (i.e. swim across a flooded road) – who said scientists don't have a sense of humour!

With 423 pages in total, this book comprises 13 chapters, each chapter done by separate contributors. Many of these chapter authors are well known to *ANGFA* members because of past contributions to *ANGFA* and our publications or have contributed many scientific papers (eg Mike Hammer, Peter Unmack, John Koehn, Angela Arthington etc.).

A list of the chapters is listed below, this gives some indication of what sort of topics are discussed in this book. You will not find a lot of "pretty pictures" in this book (in fact, no colour photos at all), but you will find a lot of intriguing information on the ecology of our native fishes, with many black and white photographs, diagrams and tables, to help explain significant points of each chapter. But readers with non-scientific backgrounds are warned – a dictionary of scientific terms is a great help when reading this book!

Chapter 1 The ecology of Australian freshwater fishes: an introduction

Chapter 2 Biogeography

Chapter 3 Evolutionary processes and biodiversity

Chapter 4 Habitats

Chapter 5 Movements and migration

Chapter 6 Trophic ecology

Chapter 7 Reproduction and early life history

Chapter 8 Age and growth

Chapter 9 Dynamics of population

Chapter 10 Assemblages

Ecology of Australian Freshwater Fishes



Editors: Paul Humphries and Keith Walker

Chapter 11 Fishes from elsewhere

Chapter 12 Conservation and management

Chapter 13 Looking ahead

"Spangled Perch crossing the road" answer: It is in their genes! (It has a very strong urge to disperse far and wide as soon as flood waters arrive.)

The New ANGFA Committee: In their own words...

President: Ian Baddock



Located: New South Wales

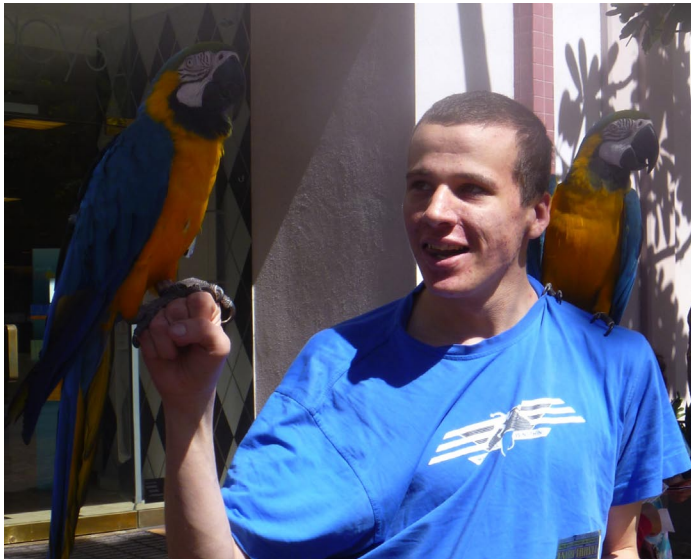
Areas of expertise: Sports Administration,
Print Industry, Sales

Favourite fish: All Natives

Native fish fan since: 1972

Vision of ANGFA: A collection of likeminded hobbyist sharing information and experiences but most of all making and forming long lasting friendships with people in the group.

Vision for ANGFA: To continue to accumulate knowledge and educate people about our fresh water habitats and the wonderful fish and plants that live within.



Vice President: Michael Jones

Located: Canberra

Areas of expertise: Business Studies/
Marketing, Keen photographer, Shrimp enthusiast

Favourite fish: I love the weird and wonderful oddballs, though it is hard to go past the first Rainbow I caught, the Deepwater Creek Splendida. My favourite shrimp is the Chameleon shrimp *Caridina_sp_WA_4*

Native fish fan since: 2006

Vision of ANGFA: My vision of ANGFA is of a group of like minded enthusiasts with a passion for native fish and conservation, as well as other native animals and plants. A group of people with an expansive amount of knowledge as well as a group with a keen sense of adventure (that has taken me to some wonderful places!)

Vision for ANGFA: My vision for ANGFA heavily revolves around the information technology side of things. ANGFA members have an incredible amount of knowledge in many areas of expertise. I am passionate about making our website a place where this vast array of knowledge can be made accessible to everyone.

I believe creating a strong web presence with a website that is easy to navigate, user friendly and full of information will help ANGFA attract new members and be a powerful tool and resource for us into the future.

National Secretary: Gerard Carmody.



On the National Committee since 2012,
member of ANGFA since 1994.

Located: Melbourne, Victoria

Areas of expertise: Chemistry and Water
Science (also Technical and Market
Management)

Favourite fish: Too Many! Usually they have in common some special significance related to habitats I have visited and loved (such as *Rhads* from Searys Creek, *Tris* from

Running Creek, or Pygmy Perch from Ewens Pond & Eight Mile Creek).

Native fish fan since: 1978. I grew up in the South-West Victorian coastal town of Warrnambool (the local aboriginal word meaning place between two rivers; the mighty Hopkins and Merri Rivers). I was a tropical fish keeper early on, and I remember reading Gerry Allen's first articles of discovery of Australian and PNG fish species in *TFH magazine* and being greatly amazed of what we had here in this country. While these fish were not available to me then, I kept local indigenous species such as Southern Pygmy perch, galaxias, hardy heads and other small creatures from the local creeks.

Vision of ANGFA: ANGFA is an association of peoples with very broad interests in the study, keeping and sharing of information on the care of freshwater fish of Australia and New Guinea.

Vision for ANGFA: An association that remains relevant to its members in rapidly changing times. The majority of the large fish rooms kept by members have declined for reasons of age, time space, cost and purpose. Information is available electronically and readily accessible to everyone at low or zero cost. So ANGFA has to change and connect with our members in different ways. It has to produce better focussed and more interesting publications. It has to communicate with its members regularly. It has to maintain a sense of purpose and co-operate with other learned societies and organisations with like purposes to promote conservation of fish habitats. In short, we need to review and abide by our constitutional purpose.

Treasurer: John Lenagan

Located: Victoria

Areas of expertise: Architect, aquarist and avid nature photographer

Favourite fish: Coen River Tri and the Honey Blue-eye (*Pseudomugil mellis*)

Native fish fan since: 1968 when I first caught various Gobies and Galaxias in the Swan River Perth WA

Vision of ANGFA: A great group of fun people, full of a natural inquisitiveness, deep insight, with a drive to share and care for the many wonders within our water ways.

Vision for ANGFA: To be an open, inviting and inspirational club, fostering a deep commitment and passion for the discovery and conservation of our native fish and their habitats. Being more connected to other like groups, where we are seen to be making a difference and bringing this knowledge to a much wider global audience and across all ages.

Membership Officer: Keith Martin

Located: Cairns, Queensland

Areas of expertise: Environmental science; Wet Tropics rainbowfish

Favourite fish: *Melanotaenia trifasciata* (in all its diverse forms).

Native fish fan since: 1976

Vision of ANGFA: A group of like-minded people willing to share experiences and information

Vision for ANGFA: To support people interested in Australian native fishes through publications, information exchange, social experience and any other practical means.

Fish Research (Ed.)

The following paper describes a method of following the gene flow of fish in a wild setting, or at least a potential method for doing so. This paper is pretty heavy going but I have included the abstract and details here because I know some ANGFA members will find this study interesting and see the potential of the methods for their own favourite fish. It also involves rainbow fish. Contact me or one of the authors if you cannot get access to the full paper!

D. Starrs, B. C. Ebner, S. M. Eggins and C. J. Fulton (2013) *Longevity in maternal transmission of isotopic marks in a tropical freshwater rainbowfish and the implications for offspring morphology*, Marine and Freshwater Research

Abstract

Transgenerational marking is increasingly being used to study the early life history, biology and ecology of fishes. However, the timeframe over which the injected enriched stable isotopes remain in the mother and are passed onto her offspring is largely unknown. Similarly, we have relatively little knowledge of the effects of isotope labelling on the morphology of offspring. In this study, we injected adult female eastern rainbowfish (*Melanotaenia splendida*) with two doses (20 mg g⁻¹ and 40 mg g⁻¹) of enriched ¹³⁷Ba or ⁸⁷Sr stable isotopes to mark the otoliths of their larvae and examine the effects of isotope labelling on larvae morphology. Isotope ratios in larval otoliths were significantly different from controls in larvae hatched up to 174 days post-injection, indicating that enriched isotopes can mark the larvae of this daily spawning species up to 6 months after a single injection. Isotope-marked larvae displayed variable, but generally increased physical size, indicating that enriched stable isotope labelling may have some unintended effects on larvae morphology. Consequently, transgenerational marking provides a long-term tool for marking the offspring of *M. splendida* to disentangle their patterns of survivorship and dispersal, with the caveat that such studies should be interpreted in light of potential isotope-related changes in offspring morphology.

A Worthy Petition (Ed.)

I seem to be signing a lot of petitions lately and I couldn't let this one go by. Aru Island is one of those wild, remote places I have sometimes dreamed of going. It lies on the shallow shelf between Australia and Papua and is actually a number of low islands separated by tidal rivers. It is kind of an orphaned part of the Australian continent. The plants and wildlife are mostly of an Australian flavour with the twists of recent isolation.

Unfortunately it seems that it is being put under sugar cane by companies that are treating it like unowned/unimportant land.

I don't know how much notice Indonesia takes of petitions, but I don't think it can hurt to try.

Save Aru Islands from Deforestation & Exploitation!

To: Maluku Provincial Government and Parliament. The Government of the Republic of Indonesia, especially the Ministry of Forestry.

The petition is really important and could use our help. Use this link to find out more and sign:

http://www.avaaz.org/en/petition/Save_Aru_Islands_from_Deforestation_Exploitation/?kdUpDdb

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Johannes Graf:

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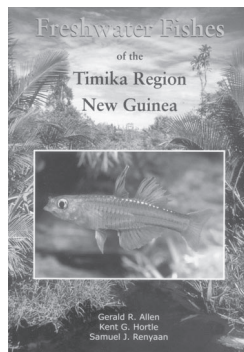
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