ANGFA
ABN: A0048595B

VICTORIA Inc. Regional Group

VICNEWS

Number 121 August 2016

ANGFA Victoria Inc. is a regional group member of
AUSTRALIA NEW GUINEA FISHES ASSOCIATION INC.
Published by ANGFA Victoria Inc. PO Box 298, Chirnside Park Vic. 3116
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Annual ANGFA VIC mega auction

Collage put together by John Lenagan with images from Neil Armstrong and Gunther Schmida.

ANGFA Fish Auctions are always a highlight for anyone with a strong interest in aquarium fishes native to Australia and New Guinea.

At the August 5th meeting of ANGFA Victoria, we will be holding a mega-auction to celebrate our wonderful array of indigenous aquarium subjects. There is sure to be a great representation of aquarium fishes native to Australia and New Guinea, plus perhaps even some other items of interest such as various Australian native shrimps and aquatic plants so start planning to have some tanks ready for your beautiful new fishes!

The auction fulfills several important roles: firstly, as a fund raiser for ANGFA's publications and conservation funding activities; secondly, to help disperse rare species to keen native fish enthusiasts: this is your best opportunity to source a wide array of Australian/NG fishes and other aquatic species that are rarely (or virtually never) available in the mainstream aquarium hobby.

The wide array of species presented is thanks to a network of ANGFA supporters and members from many parts of Australia.

Doors open at 7.30pm with a start time of 8.15pm, meeting (and auction) finishes approximately 10.30pm.

For anyone considering bringing goods along to be auctioned, please note the auction is primarily for Australian–New Guinea aquatic plants and aquatic livestock species. However lots that comprise non-native species will also accepted. Commission to ANGFA is 20% for non-donated goods for members, (50% for non-members.)

Some of the species currently expected/promised to be available at the August ANGFA Vic Auction include:

Blue-eyes		
Pseudomugil connieae		Popondetta Blue-eye
Pseudomugil furcatus		Fork-tail Blue-eye
Pseudomugil gertrudae	Cadell River NT	Spotted Blue-eye
Pseudomugil gertrudae	Jones Rd / Stagnant Ck	Spotted Blue-eye
Pseudomugil gertrudae	Iron Range FNQ	Spotted Blue-eye (Golden form)
Pseudomugil luminatus		Red Neon Blue-eye
Rainbowfishes		
Chilatherina campsi		Highlands Rainbow
Chilatherina fasciata	Clearwater Creek	Barred Rainbow
Chilatherina fasciata	Lake Wanam	Barred Rainbow
Glossolepis incisus		Salmon red Rainbow
Iriatherina werneri	Gulbuwangay R NT	Threadfin Rainbow
Melanotaenia affinis		Pagwi Rainbow
Melanotaenia boesemani		Boeseman's Rainbow
Melanotaenia eachamensis	Upper Barron River	Eacham Rainbow
Melanotaenia fluviatilis		Murray Rainbow
Melanotaenia gracilis		Slender Rainbow
Melanotaenia lacustris		Lake Kutubu Rainbow
Melanotaenia herbertaxelrodi		Lake Tebera Rainbow
Melanotaenia maccullochi	Bulls Crossing	McCulloch's Rainbow
Melanotaenia maccullochi	Jardine Swamp	McCulloch's Rainbow
Melanotaenia maccullochi	McIor River	McCulloch's Rainbow
Melanotaenia maccullochi	Moa Island	McCulloch's Rainbow
Melanotaenia nigrans		Black banded Rainbow
Melanotaenia oktediensis		Ok Tedi Rainbow
Melanotaenia parkinsoni		Parkinson's Rainbow (yellow)
Melanotaenia praecox		Neon Rainbow
Melanotaenia pygmaea		Pygmy Rainbow
Melanotaenia splendida splendida	Mt Poverty	Eastern Rainbow
Melanotaenia splendida splendida	Barney Springs	Eastern Rainbow
Melanotaenia species	Running River	Burdekin Rainbow
Melanotaenia synergos		Batanta Island Rainbow
Melanotaenia trifasciata	Goyder River	Banded/Regal Rainbow
Melanotaenia trifasciata	Leichardt Springs NT	Banded/Regal Rainbow
Melanotaenia trifasciata	Running Creek Cape York	Banded/Regal Rainbow
Melanotaenia trifasciata	Woomera Ck Cape York	Banded/Regal Rainbow
Rhadinocentrus ornatus	Seary's Ck Qld	Ornate Rainbow/Rhad
Other Species		
Chlamydogobius eremius		Desert Goby
Ambassis spp		Glassfish
Mogurnda adspersa	Utchee Ck golden form	Purple Spotted Gudgeon
Nannoperca australis		Southern Pygmy Perch
Nannoperca vittata		Western Pygmy Perch
Selenotoca multifasciata		Silver Scat
Leiopotherapon unicolor		Spangled Perch
		Various Australian freshwater snails
Caridina sp Gulf1		Darwin Rednose Shrimp
Caridina sp WA-4		Chameleon Shrimp
Caridina sp NTnilotica		Darwin Algae Shrimp

Contents

Editor's Note

Welcome to our August VICNews!

In this full edition we have articles on four field trip locations that we visited over two field trips: 21st May and 9th July. Our ANGFA VIC field trips are gradually becoming better attended by our members which is a great sign as we always have a great time and usually find lots of things of interest.

I'm excited to report that Tarmo Raadik (Senior Research Sientist, Applied Aquatic Ecology, Arthur Rylah Institute for Environmental Research, Biodiversity Branch) has set ANGFA VIC up with a user name and login for the Victorian Biodiversity Atlas. As Tarmo said "All the collection data ANGFA collects in Victoria could go onto this database (as well as the ANGFA one) as it would show that ANGFA is serious about collecting useful data." Thank you Tarmo.

Speaking about field trips, we have a proposed field trip to Elster Creek (see page 24) in Elsternwick for September; yes I know it is in suburbia but I have checked it out and it is worth a look. There is also scope for finding freshwater, brackish and marine animals all in the one field trip as the creek flows down into and becomes Elster Canal. This field trip will most likely be run on Saturday the 3rd or the 10th of September 2016.

To enrich the mix of topics in this edition I have included a couple (3) of articles from elsewhere.

Greg Martin

President's Report August 2016

Firstly, Vale Neil Travis! One of ANGFA's early pioneering members Neil Travis passed away suddenly on July 5, aged 61. During his fish-keeping years, Neil was a keen hobbyist who was admired for his ability to grow beautiful *Cryptocorynes*. He was also just as enthusiastic about Rainbowfishes, travelling to Papua New Guinea with Barry Crockford to collect rainbowfishes back in 1981. Some of the fish he helped Barry introduce into the aquarium hobby in Australia included *Chilatherina fasciata* (Clearwater Ck and Lake Wanam), and *Glossolepis wanamensis*. Neil Travis wrote an article on *Chilatherina fasciata* for Fishes of Sahul Vol 2, Number 1 in 1984. ANGFA passes on our condolences to Neil's family and friends.

In our August meeting we will be having a mega auction, which we do every year that there is not an ANGFA convention (every other year). There are fish being sent from all parts of the country so it promises to be a great night. August is also that time of year where the ANGFA VIC committee stands down so that we can re-elect a new committee for the year to come, in our Annual General Meeting being held before the auction. Being on the ANGFA VIC committee is a very rewarding experience and I strongly suggest you consider joining if you feel you have something to offer.

We the ANGFA VIC committee, have been acknowledging our Friends of ANGFA VIC recently by presenting them with a framed photograph thanking them for their support (see photo below). The chosen photograph is a stunning shot of a Redfin Crested Goby *Cristagobius rubripectoralis* taken by John Lenagan.

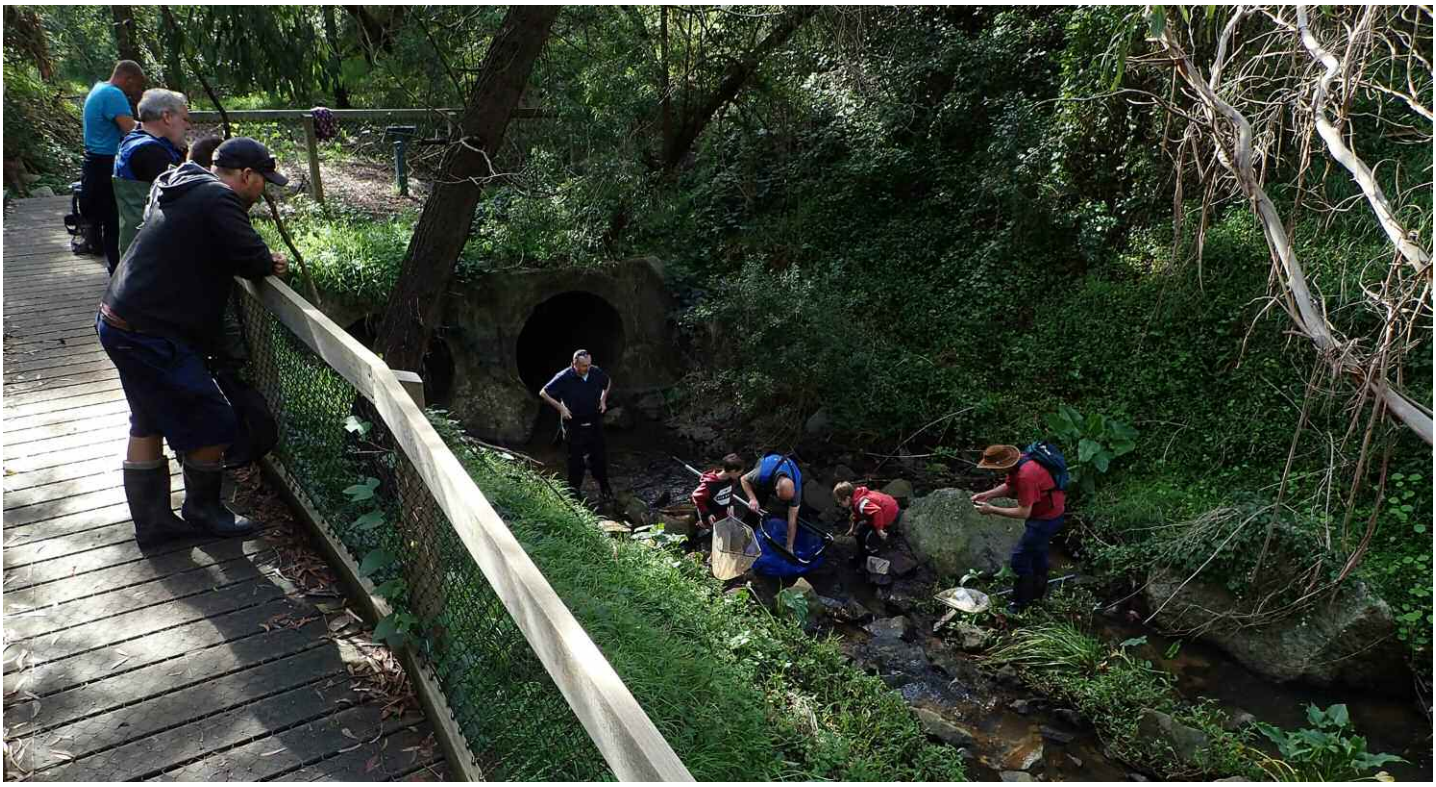
Don't forget to keep an eye on the ANGFA VIC Facebook page for upcoming field trips. FIELD TRIPS ARE FUN!

See you at the August Meeting!

Kwai

Kwai Chang Kum and Greg Martin present Keith Stephenson, from Paky Pets, with a framed photo thanking him for becoming a Friend of ANGFA Victoria. *Photo: Lyndon Giles*

Field Trip Files: Sweetwater Creek, south Frankston 21st May 2016



Our field trip attendees at work in Sweetwater Creek in south Frankston. Even though stormwater pipes enter the creek at regular intervals, this unique waterway is home to *Galaxias maculatus* and sigificant macroinvertebrates. *Photo: Greg Wallis*

Saturday 21st May was a beautiful day – mild and with plenty of sunshine – perfect weather for being outdoors and "puddle pirating with fellow fishos". Our destination was Sweetwater Creek in south Frankston and, as ANGFA VIC had sampled the creek some 10 years ago, we were keen to see if it would again produce lots of fishes.

We organised to meet with Jenny Hattingh and other representatives from Action Sweetwater Creek Inc. so that with their local knowledge, we could understand more about this beautiful area. Pleasingly we had a good turnout of members and a new face too, with the welcome addition of two children – Gary Moores' son Jake and Phil Littlejohn's youngest son Ryan.

Gary Moores and Greg Martin dip net their way up Sweetwater Creek. *Photo: Greg Wallis*

Phil Littlejohn shows us the Pea Clams he found. *Photo: Greg Martin*

Once we had introduced ourselves to members of the local group Action Sweetwater Creek and had waited a polite amount of time for any late arrivals, we headed down to the creek to begin sampling. There was evidence of a large rain event in the recent past; vegetation along the sides of the creek had been flattened by the huge amount of water that had gone through the area. Furthermore, there were large drifts of river sand in parts of the creek hinting at the power of the recent flood waters to move the substrate around.

A Glossiphoniid leach, about 10mm long bunched up like this, found by Phil Littlejohn. *Photo: Greg Martin*

Pea Clams from the Sphaeriidae family. The snail is an introduced species *Phyta acuta. Photo: Greg Martin*

Ribbon Weed *Triglochin procerum* found just before the pipes that take Sweetwater Creek to the sea. *Photo: Greg Martin*

Donning gumboots, Phil Littlejohn and Ryan were targeting crustaceans, molluscs and other oddities. Graham Sexton, Gary Moores, Greg Wallis, and I were looking for fishes and donned our waders. Jake Moores helped us with dip netting like a pro. John Lenagan worked his way up the creek photographing interesting natural things along the way. Slowly, we all worked our way upstream.

In the section of Sweetwater Creek that we sampled (downstream of Fenton Cres) there was a lot of American Waterweed *Elodia canadensis* and

John Lenagan photographs the Pea Clams that Phil Littlejohn found. *Photo: Greg Martin*

Common Galaxias *Galaxias maculatus,* were the only fish we found this time in Sweetwater Creek. *Photo: John Lenagan*

Vietnamese Coriander *Persicaria odorata.* This made dip netting difficult work and the recent flooding had gouged deep holes in the creek bed which made wading into the water a carefully judged balancing act. Despite these challenges, we found several *Galaxias maculatus* and conceeded that we might have found more fishes if there had not been an enormous amount of water flush through the creek in the few days before the sampling day. As one would expect from Phil Littlejohn, he found some interesting Pea Clams from the Sphaeriidae family, some freshwater snails and a leach. As we were photographing our finds some very interested locals out for a walk wanted to know what we were up to, so we had the oportunity to show them the fish in the field tank and explain to them what we were doing.

Greg Martin and Jai (hidden) discuss the recent rain events in the area, and the effect it had had on the numbers of fish we found on the day, with a member of Action Sweetwater Creek. *Photo: Greg Wallis*

After we had sampled for a while in the middle section of the creek adjacent to where we had parked the cars, we walked down the gorge a little way to where the creek enters two large pipes which carry it the last 500 or so meters down to the sea. Here it was nice to find Water Ribbon *Triglochin procerum* which is an Australian native.

Finally we packed up, bid our farewells and headed to our next location.

John Lenagan photographs the *Galaxias maculatus* we caught in the creek. *Photo: Greg Wallis*

Field Trip Files: Tanti Creek, Mornington 21st May 2016

Tanti Creek adjacent to the beach showing a large build up of vegetative debris along the high water mark indicating that this area is completely inundated during high tides and storm events. *Photo: Greg Martin*

Tanti Creek at the beach is a tidal creek but about 60 meters upstream there is a natural fall of about a meter or so where the creek flows out of some under-road pipes and from this point upstream, it is freshwater. We chose this site as it had the potential for some brackish as well as freshwater fishes and I had seen shoals of fish from the bridge on an earlier scouting trip and wanted to know what they could be.

The footbridge across Tanti Creek at the beach. In these brackish shallows we found many Long-finned Gobies. *Photo: Greg Wallis*

Graham Sexton checks his net while Greg Martin and Phil Littlejohn discuss how deep the creek looks at this point! *Photo: Greg Wallis*

When we arrived we parked in the carpark by the beach as access to the creek from there is easy.

Sampling by dip net in the shallow water just under and around the footbridge produced lots of beautiful little gobies which Michael Hammer later confirmed were the Long-finned Goby *Favonigobius lateralis*. They were everywhere and present in a variety of sizes.

Once we had given the shallow and quite salty mouth of the creek a good going over we moved along the creek, slowly moving upstream. After being fairly shallow adjacent to the beach the creek becomes very deep indeed. Both sides of the creek have reed-lined sandy banks that dropped away fairly steeply into the water so dip netting in this section of the creek was dangerous and difficult however, we worked our way

Greg Martin admires the Galaxias that Graham has in his net. *Photo: Greg Wallis*

along the sides as best we could but it was Graham Sexton who waded the furthest in who produced some Galaxias for his effort. These were Common Galaxias *Galaxias maculatus*.

A little further upstream we came to the "rapids" section, a short part of the creek between the under-road pipes and the deep part of the creek. He we found lots of *Amarinus lacustris*, a little freshwater crab that

John Lenagan photographs the Long-finned Gobies while Greg Martin helps with the wrangling stick. *Photo: Greg Wallis*

This little flat-backed freshwater crab is the False Spider Crab *Amarinus lacustris* and we found about a dozen of them in the creek just upstream of the tidal influence. *A. lacustris* only grows to about 1cm in diameter across the carapace. *Photo: Greg Wallis*

we find from time to time. *Amarinus lacustris* is fairly widespread, although cryptic and not often found. In south-eastern Australia, it occurs in the lower Murray of South Australia, and Victoria and Tasmania. It is also found in New Zealand, Lord Howe and Norfolk Islands. Phil Littlejohn mentioned to us that he had found some once that must have had eggs as, after they had been kept for a time in a small tank, he observed lots of little tiny baby crabs.

After carefully photographing all the animals we called it a day and headed home.

It was a fantastic day out and it was particularly great to see kids getting involved too.

Greg Martin

False Spider Crabs spend most of their life hiding from predators which is probably why we usually find them on the underside of rocks. *Photo: John Lenagan*

These little crabs are slow growing and often have a growth of algae on their carapace making them even harder to see. *Photo: John Lenagan*

Close up of the head of the Long-finned Goby *Favonigobius lateralis. Photo: John Lenagan*

Side-on view of the Long-finned Goby *Favonigobius lateralis. Photo: John Lenagan*

Field Trip Files: Dunns Creek, Red Hill 9th July 2016

Tim Curmi and Greg Martin sample Dunns Creek; Tim for macroinvertebrates and Greg for fish. *Photo: Greg Wallis*

Dunns Creek begins in the Red Hill area of the Mornington Peninsula, adjacent to the intersection of Arthurs Seat Road and White Hill Road, just upstream from the Cherry Orchard. It then flows down the hill in a north-easterly direction toward Merricks North. Dunns Creek road which links Dromana to Merricks North crosses the creek 4 kilometres from the bottom of White Hill Road, and this is where we sampled on our visit of 9th July 2016.

Almost the entire length of Dunns Creek flows through rural farmland, beginning with a cherry orchard at the top then down through cattle and sheep farms, however at our sample site the creek briefly passes through a Eucalypt forest, before that bush gives away again to farming country.

We had expected to find one or two species of Galaxias (*G. truttaceus* and *G. maculatus*) and possibly Eels as there is no barrier we know of to restrict the migration of these species from travelling up the creek from its mouth at Safety Beach. The creek had a nominal flow on the day but showed signs of a having had a very large volume of water pass through in the week or so before; flattened grass along the very high water mark and debris banked up against in-stream logs etc.

Tim Curmi brought along equipment for sampling macroinvertebrates: a very fine dip net, kitty litter trays, ice cube making trays, pipettes, teaspoons, ID books and even a fold-out table! Greg Wallis and I were sampling for fishes and other things of interest. We started at the road bridge and carefully worked our way upstream. Greg and I for the first part found nothing although we saw several fish shooting off upstream well ahead of us. Tim, with his finer net, was produced a good collection of macroinvertebrates and for a little while Greg and I found only glass shrimp *Parataya australiensis*.

This photo was taken a week earlier when the water level was visibly higher. *Greg Martin*

Greg Wallis photographs our Burrowing Crayfish in the field tank.
Tarmo Raadik reminded us that there are potentially three species of burrowing crayfish down on the Mornington Peninsula and to positively identify which one this was we would have to have examined it under the microscope, looking for important morphological diagnostic characters on the inside and outside of the claws, mouthparts and pores on the body between the legs. *Photo: Greg Martin*

In many places along the banks there was evidence of crayfish burrows – holes in the ground above the normal water level mark. As we were dip netting our way along the creek I saw a freshwater crayfish, well camouflaged against the rocks, sitting underwater not far from one of these holes. With Greg's help I was able to catch it for closer examination.

As we worked our way upstream we came to a place where the creek flowed out from three large under-road

This beautiful crayfish is most probably the Granular Burrowing Crayfish *Engaeus canicularius. Photo: Greg Wallis*

Head detail of the Granular Burrowing Crayfish *Engaeus canicularius.* Often one claw is bigger than the other as in this specimen. *Photo: Greg Martin*

Close up of the crayfish's left claw showing quite a lot of "fur". *Photo: Greg Martin*

pipes, having just passed under the side road that we were parked on. It was hoped that this area might form a natural collection point for fish to wait in before continuing on upstream through the pipes (I understand that fish don't like the dark and unnatural habitat that pipes provide and avoid being in them for long if possible), but no fish were to be caught in these pools on this day.

Before leaving the creek to photograph the crayfish and macroinvertebrates we had found I did some last minute rock kicking upstream from my net which produced a medium sized Short-finned Eel. It didn't have the squirming fight that eels usually have and on closer inspection this poor animal had a large (probably cancerous) bleeding growth originating on its left eye and another lesion on the top of its head. Its fins were a bit raggedy and its body mass was lower than it should have been compared to its head size. We decided to bring it up to the table to examine it further and to photograph it for future reference. It is very sad to see a beautiful animal like that with such a confronting growth on its body that had grown large enough to be most likely negatively impacting the fish's ability to hunt successfully.

We also examined the crayfish closely noting that the body was lacking spines although the arms had very small spines, the claws were held in a vertically

Tim Curmi picks through the macroinvertebrates trays, sorting them into like groups. *Photo: Greg Martin*

Tim Curmi picks macroinvertebrates whilst Greg Wallis photographs the crayfish in the field tank. *Photo: Greg Martin*








Various macroinvertebrates found on the day in Dunns Creek.
Photos: Greg Martin

Tim Curmi photographs the Short-finned Eel we found. *Photo: Greg Martin*

aligned manner and were very hairy with one claw distinctly larger than the other. We suspected that it was an *Engaeus* sp. and Tarmo Raadik later confirmed that it was most likely *Engaeus canicularius*, the Granular Burrowing Crayfish.

Tim Curmi spent about 30 minutes carefully sorting the macroinvertebrate catch. He placed like animals together into separate compartments to get an idea of which families were represented here. Present were at least two species of Dragonfly larvae, two species of Damselfly larvae with beautiful leaf-like gills, a few different Caddisfly larvae including a free-swimming species and at least one Mayfly species; representative evidence of pretty good water quality.

Once we had taken the required photographs we packed up and headed off to lunch in Safety Beach before heading over to Chinamans Creek, our second sampling site for the day.

Greg Martin

Lower Dunns Creek, just upstream of the Peninsula Fwy; another location for a future field trip. *Photo: Greg Martin*

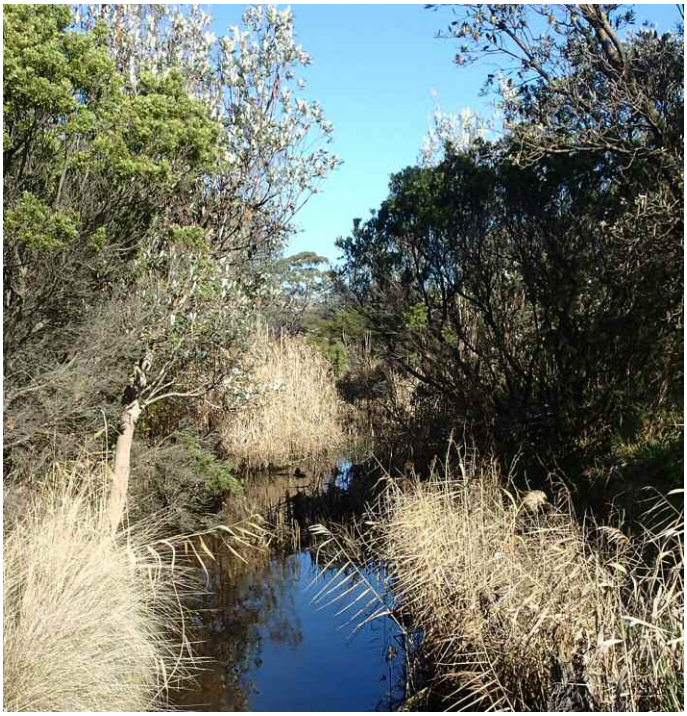
This Short-finned Eel *Anguilla australis* had an enormous cancerous growth on its head. *Photos: Greg Wallis*

Field Trip Files: Chinamans Creek, Rosebud West 9th July 2016

Chinamans Creeks looking upstream from the beach at Capel Sound (Rosebud West). Every time I have visited this creek I have noted very good flow, leading me to wonder if it is spring-fed. *Photo: Greg Martin*

Chinamans Creek that flows to the beach in Rosebud West is a place that has intrigued me for a number of years as I have noticed that its crystal clear water flows all year, even in summer time. Chinamans Creek is fed by the Tootgarook Swamp, part of the Tootgarook/Boneo wetland complex, a shallow freshwater marsh considered to be a wetland of international

Looking seaward along Chinamans creek, from the high water mark on the beach. Often there are large flocks of Black Swans feeding on the seagrass in the shallow water off the beach. *Photo: Greg Martin*



Upstream of the footbridge reeds are the predominant stream-side-vegetation. *Photo: Greg Martin*

Greg Wallis, Tim Curmi and I work our way upstream in Chinamans Creek. *Photo: Greg Martin*

significance. Once covering 800 hectares, this wetland system has suffered significant attrition since European settlement of the area and now only 450 hectares remain – much of which is in the hands of private owners and subjected to grazing and other pressures.

The majority of the remaining 300 hectares is recognised by DSE as a biosite of state significance and supports flora and fauna and EVCs (Ecological Vegetation Classes) of state and regional significance. This important type of wetland has been reduced to about 15% of its original area in the Port Phillip region.

The Tootgarook/Boneo wetland complex, being fed Drum Drum Alloc Creek which flows from the Rosebud sands to the east, acts as a retarding basin protecting low-lying residential land between it and Port Phillip Bay.

Only 2,000 years ago this swamp was under the sea due to the sea level being 1.5 meters higher for about 5,000 years before receding to its present level.

Due to the creek's high flow rate salt water doesn't normally penetrate very far up the creek – we taste-tested the water about 50 meters upstream and it tast-

These reed beds are a perfect refuge for Galaxias and probably play a part in their breeding cycle. *Photo: Greg Martin*

Seen from above these *Galaxias maculatus* clearly show excellent body mass. *Photo: Greg Martin*

ed fresh – although during a king tide event the salt water would definitely penetrate further up and inundate the reed beds on either side of the creek. Perfect habitat for Galaxias to breed in and I was hoping to confirm that by finding them. We were not disappointed.

Greg Wallis, Tim Curmi and I entered the creek at the footbridge near the beach and carefully waded our way upstream dip netting as we went. It was slow going as the bottom of the creek is covered in a thick layer of spongy and rotten vegetation made up of centuries of decaying reed stems. As this substrate was disturbed by our feet a fine black silt was released darkening the water but this was flushed away by the strong water flow and the creek water cleared quickly. Within a short time we had our first fish.

Our Galaxias were netted in the shallow clear water amongst the reeds; I could see them swimming away from me in the centre of the creek and into the safety of the reed stalks. What we found were the fattest and most healthy common Galaxias *Galaxias maculatus* that we had ever seen. There is clearly a very good food source available to produce fish of such good body mass in such a short time as they are not a long lived fish.

We photographed several specimens in the field tanks and then released them all back into the creek. A great result for the day and a great opportunity for us to look closely at one of our most stunning and underrated fish. Thanks Greg Wallis and Tim Curmi for the great day out, and I'm sorry John Lenagan couldn't find us on the day.

Greg Martin

*Alloc meaning lagoon (Blake, 1977)

Source: The Southern Peninsula Flora and Fauna Association Inc.

Close up of the eye of a *Galaxias Maculatus. Photo: Greg Wallis*

Greg Wallis photographs the magnificent Galaxias we found. Greg also shot a short video in super macro of this fish's eye which is well worth seeing. *Photo: Greg Martin*

Very large Common Galaxias *Galaxias maculatus* from Chinamans Creek. This large individual was 160mm long and the fattest one I've ever seen. *Photo: Greg Martin*

Two intermediate sized Common Galaxias *Galaxias maculatus* from Chinamans Creek. We found about 8 or so in about 15 minutes of dip netting, and in a full range of sizes. *Photo: Greg Martin*

Tim Curmi releases the Galaxias back into Chinamans Creek. *Photo: Greg Martin*

Microplastics killing fish before they reach reproductive age, study finds

A pike (*Esox lucius*) feeds on perch that have ingested microplastic particles. *Photograph: Oona Lönnstedt/Science*

Tiny particles of plastic litter in oceans causing deaths, stunted growth and altering behaviour of some fish that feed on them, research shows

Fish are being killed, and prevented from reaching maturity, by the litter of plastic particles finding their way into the worlds oceans, new research has proved.

Some young fish have been found to prefer tiny particles of plastic to their natural food sources, effectively starving them before they can reproduce.

The growing problem of microplastics – tiny particles of polymer-type materials from modern industry – has been thought for several years to be a peril for fish, but the study published on Thursday is the first to prove the damage in trials.

Microplastics are near-indestructible in natural environments. They enter the oceans through litter, when waste such as plastic bags, packaging and other convenience materials are discarded. Vast amounts of these end up in the sea, through inadequate waste disposal systems and sewage outfall.

Another growing source is microbeads, tiny particles of hard plastics that are used in cosmetics, for instance as an abrasive in modern skin cleaners. These easily enter waterways as they are washed off as they are used, flushed down drains and forgotten, but can last for decades in our oceans.

The impact of these materials has been hard to measure, despite being a growing source of concern. Small particles of plastics have been found in seabirds, fish and whales, which swallow the materials but cannot digest them, leading to a build-up in their digestive tracts.

For the first time, scientists have demonstrated that fish exposed to such materials during their development show stunted growth and increased mortality rates, as well as changed behaviour that could endanger their survival.

Samples of perch, still in their larval state, were shown not only to take in the plastics, but to prefer them to their real food. Larval perch with access to microplastic particles ate only the plastics, ignoring their natural food source of plankton.

The study, published in Science on Thursday, found that the fish born into an environment rich in microplastics – defined as tiny pieces of less than 5mm in size – had reduced rates of hatching and development to maturity.

The perch studied also ignored the chemical signals that would normally warn them of the presence of predators, the researchers found.

These particles are now found in abundance across the world's oceans, and are often common in shallow coastal areas, where they wash in from waste dumps and sewerage systems.

"This is the first time an animal has been found to preferentially feed on plastic particles, and is cause for concern," said Peter Eklöv, co-author of the study. "Larvae exposed to microplastic particles during devel-

A perch with ingested microplastic polystyrene particles. *Photograph: Oona Lönnstedt/Science*

opment also displayed changed behaviours and were much less active than fish that had been reared in water that contained no microplastic particles."

Environmental campaigners have been calling for a reduction in the waste allowed to drift from rivers into seas and oceans, and for an end to the use of artificial microplastics in cosmetics. Greenpeace launched a campaign against microbeads early this year, and several companies have committed to phasing them out.

However, the study suggests that damage has already been done, and preventing the leakage of more microplastics into the oceans should be a matter of urgency, as once they are in our seas they are almost impossible to get rid of.

Perch exposed to microplastics in the study were eaten by pike four times more quickly than their naturally-reared relatives, when the predators were introduced into their environment. All of the plastic-exposed fish in the study were dead within 48 hours.

This suggests that the impacts of microplastics are likely to be far-reaching and long-lasting, beyond the immediate effects on the fish's digestive systems, which was previously the main cause of concern. Plastics may be causing differing behaviour in the fish, and inhibiting their evolved responses to danger, through mechanisms not yet fully understood.

The study adds to research that has found coastal fish species suffering marked declines in recent years, while the amount of plastic litter in the oceans has increased.

"If early life-history stages of other species are similarly affected by microplastics, and this translates to increased mortality rates, the effects on aquatic ecosystems could be profound," warned Oona Lönnstedt, another of the report's authors.

Fiona Harvey from The Guardian

Friday 3 June 2016

Microplastics visible in a pike. *Photograph: Oona Lönnstedt/Science*

Crayfish and their worms evolve in unison

Light microscope image of a pair of two-tentacled temnocephalans, *Diceratocephala boschmai*, from cultured redclaw crayfish.
Photo: Katherine Thompson and David Blair from the School of Integrated Biology, James Cook University.

Climate change could be affecting Australian spiny mountain crayfish and the animals that live on them, according to an international study that includes University of Queensland research.

UQ Centre for Microscopy and Microanalysis researcher Dr Kim Sewell said the study reconstructed the evolutionary history of 37 species of *Euastacus* crayfish and 33 species of temnocephalans, which are their flatworm passengers. "These worms, often mistaken as leeches, have been known to science for more than 100 years," Dr Sewell said.

"Australia is now recognised as the centre of world diversity for the group."

Dr Sewell said fishers often mistook the worms for parasites that could mean the crayfish are unsuitable to eat.

"The worms are actually ectosymbionts, which means they occupy their hosts without causing harm and could even play a role in cleaning the crayfish.

Dr Sewell has studied the worms for almost 30 years, and has collected DNA tissue samples from most of the known species of Australian Euastacus spiny mountain crayfish and their temnocephalan ectosymbionts.

He said the study revealed co-evolutionary patterns and host-shifts during a period of extensive environmental change covering at least 80 million years.

"Euastacus crayfish are cool-climate specialists, and are most distinct in tropical northern Australia where they are now restricted to high mountain streams," he said.

"Protection of these vulnerable crayfish is critical for

Temnocephalans clearly visable on a Gippsland Spiny Crayfish *Euastacus kershawi*. *Photo: John Lenagan*

their survival and the survival of their unique symbionts, which together provide an exceptional insight into the phenomenon of co-evolution through space and time."

The study, published in the Proceedings of the Royal Society B, involved a collaboration of genetics and biology experts from the University of Cambridge and the Natural History Museum in the United Kingdom and from (The University of Queensland, the Queensland Museum, James Cook University, and Latrobe University, Wodonga.

Light microscope image of a typical five-tentacled temnocephalan, *Temnosewellia c.f rouxi,* about 5mm in length from a cultured Redclaw crayfish.
Photo: Katherine Thompson and David Blair from the School of Integrated Biology, James Cook University.

A short video showing temnocephalan worms attached to a spiny mountain crayfish (*Euastacus spinifer*) from Sydney can be viewed here. Credit: Jasper Montana and David Blair from James Cook University.

Kim Sewell, k.sewell2@uq.edu.au
The University of Queensland
25th May 2016

Proposed Field Trip: Elster Creek, Elsternwick

Our proposed September field trip is to Elster Creek Elsternwick. Elster Creek becomes the Elster Canal just downstream of Glen Huntley Road. We will start in Elsternwick Park. Check our Facebook page and your email for the date and meeting time.

Elster Creek looking upstream from the St Kilda Street bridge, Elsternwick. *Photo: Greg Martin*

Elster Creek looking downstream from the St Kilda Street bridge, Elsternwick. *Photo: Greg Martin*

Murray Cod numbers grow in Gunbower Creek

Returned: a young Murray Cod *Maccullochella peelii* netted during a fish survey in Gunbower Creek. *Photographer unknown.*

Murray cod are making a comeback in the north of the state.

A century of regulation of Gunbower Creek diminished the number of young Murray cod, but a management plan implemented three years ago appears to be working.

The long-term plan uses Commonwealth environmental water to stabilise creek levels and provide better breeding conditions for the fish.

"Regulation and modernisation of the creek means water levels rise and fall dramatically, and the male Murray cod whose job it is to protect the nest of eggs don't like that," North Central Catchment Management Authority project manager Anna Parker said.

"They feel under threat and abandon their eggs, leaving the eggs exposed to predators.

"The end result is there aren't enough juvenile cod in the system, which is dangerous to the species' long-term survival in the creek."

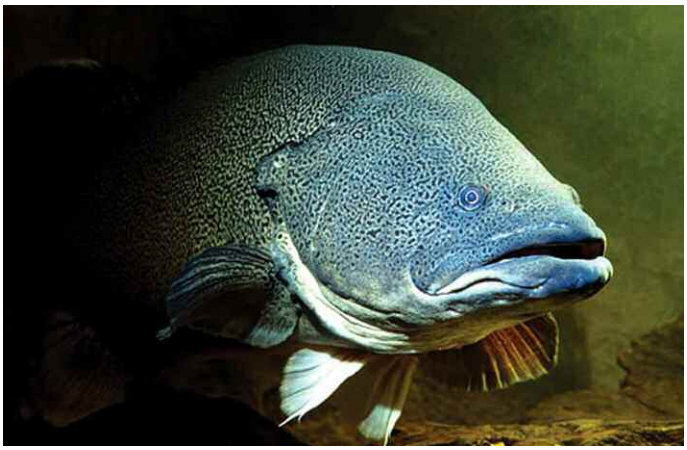
The plan also delivers water outside of irrigation season, a time when creek levels dropped and left only residual pools, which the fish struggled to survive in.

"Now, we can deliver flow to connect the pools, providing fish with greater habitat for shelter and areas to feed," Ms Parker said.

Ms Parker said local anglers had reported more Murray cod were being caught in the creek than they could remember, and the North Central CMA's own monitoring backed this up, showing greater numbers of fish.

The monitoring also indicated a more diverse range of ages among Murray cod, she said, "which points to fish surviving longer and benefitting from consecutive and constant environmental flows".

Bendigo Advertiser, 19th May 2016



Our magnificent Murray Cod *Maccullochella peelii.*
Photo: Gunther Schmida

Club Meeting Details

General Meetings:
ANGFA Victoria's meeting are held on the first Friday of every second month starting the year in Feb, at The Field Naturalists Club of Victoria which is situated at 1 Gardenia Street Blackburn. (Melways map 47 K11). Doors open at 7:30pm. Meetings start at 8.15pm sharp and aim to be finished by 10pm, followed by supper.

Next Meeting Date: Friday 5th August 2016

ANGFA Vic Committee Meetings:
Venues: to be announced. Contact Kwai Chang Kum if you would like to be further involved (0430 434 488).

Trading Table
Any financial ANGFA member who has fish, plants or live food that they would like to sell is invited to bring their goods to the trade table. All items being presented for sale must be clearly marked: fish showing species name and location if applicable and plants identified by species. Goods will be accepted prior to 7.45pm and the Trading Table will operate between 7.45 and 8.15pm.

Other Fish Groups in VIC

EDAS
Meets last Friday of the month starting Jan.
Contact: Daryl Maddock (03) 9874 1850

EDAS Plant Study Group
Meets Second Friday of the month (at various members' homes).
Contact: Eddie Tootell (03) 9337 6435 (a.h.)

Aquarium Society of Victoria (AS of V)
Meets last Friday of the month, alternating with EDAS.
Contact: Daryl Maddock (03) 9874 1850

Marine Aquarium Society of Victoria
Contact: MASOV (03) 9830 6073.

Victorian Cichlid Society
Meets first Wednesday of the month.
Contact: Graham Rowe (03) 9560 7472.

ANGFA Vic key contacts

President: Kwai Chang Kum
Phone: 0430 434 488

Treasurer: John Lenagan
Phone: 0413 730 414

Secretary: Glenn Briggs
Phone: 0408 771 544

Vice President and Membership Officer: Gary Moores
email: kathmoores@yahoo.com.au

VICNews: Greg Martin
Phone: 0407 094 313
email: greg@aquariumsbydesign.com.au

ANGFA Vic Website: Lyndon Giles
email: webmaster@angfavic.org

Contribute to ANGFA Vic on Facebook

ANGFA Vic Website: www.angfavic.org
ANGFA National Website: www.angfa.org.au
Postal mail: ANGFA Victoria
P.O. Box 298 Chirnside Park, Victoria. 3116.

Join ANGFA now!!! New expanded membership package now applies

To join ANGFA or to renew your membership online, follow these 4 easy steps:

1. Go to www.angfavic.org
2. Click on membership
3. Select membership renewal tab for ANGFA then ...
4. Click the Paypal icon to pay with Paypal.

To pay with your Debit Card or your Credit Card talk to the Treasurer John Lenagan at a meeting.

If you want to use snail mail and pay by cheque, print out the form below, fill out your details and send it to: ANGFA Victoria, P.O.Box 298, Chirnside Park. Vic. 3116

Join ANGFA now and enjoy benefits including regular meetings, digital versions of two regional club magazines and buyer discounts.

To the Treasurer, ANGFA Victoria, Please accept my application for membership to ANGFA.

(Please print)

NAME.....

.....

ADDRESS .....

.....

.....

Postcode.....

Phone Bus .....

A/H:.....

1. I enclose $45 for my ANGFA Membership which includes digital copies of Fishes of Sahul (FOS), VICNews and the ANGFA NSW magazine.
2. I enclose $65 (in total) to get a printed copy (at the end of the year) of the four editions of FOS for this subscription year, as well as the above items.

Forward application and cheque to: ANGFA Victoria, P.O.Box 298, Chirnside Park. Vic. 3116.

Businesses who support ANGFA Victoria

The businesses listed below actively promote Australian Native Fishes by making native fishes available in the aquarium trade.
ANGFA suggests that members show their appreciation by supporting these businesses.

Amazing Amazon
Paul and Ben
365 Springvale Road, Glen Waverley
Phone: (03) 9545 0000
www.amazingamazon.com.au

Aquagreen
Dave Wilson
Phone: (08) 8983 1483
aqua.green@bigpond.com

Aquariums By Design
Greg Martin
Phone: 0407 094 313
greg@aquariumsbydesign.com.au

Coburg Aquarium
Greg Kirby
Phone: (03) 9354 5843
232-236 Bell Street, Coburg
www.coburgaquarium.com.au

Paky Pets
Keith
Phone: (03) 5940 1091
Shop 2/114 Princes Highway, Packenham

Subscape Aquarium
Justin and Kim
Phone: (03) 9427 0050
310/312 Victoria Street, Richmond

Upmarket Aquarium
Greg Kirby
Phone: (03) 9600 9051
442 Queen Street, Melbourne

Victorian Reptile Supplies
Adam
Phone: (03) 8742 1283
6/75-85 Elm Park Drive, Hoppers Crossing