Aquarium World
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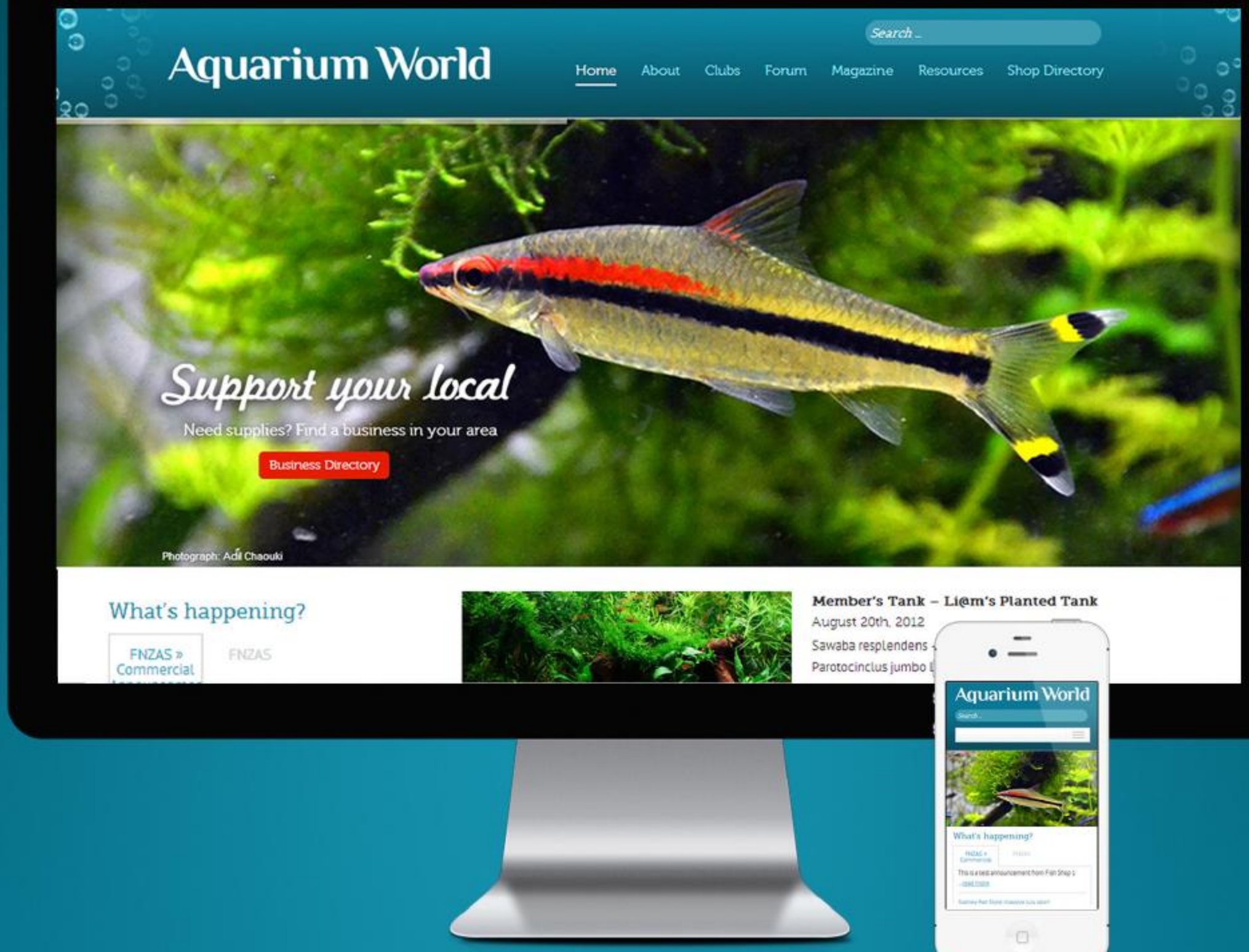
Volume 61 Issue 2 2015



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Aquarium World

www.fnzas.org.nz - new website coming soon

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COVER
Siamese Fighting Fish
Betta splendens
Photo: Andrew Williams

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EDITORIAL

Hello all,

Welcome to another issue of Aquarium World.

I hope you have all had a great Christmas and for those in the southern hemisphere, I hope you are enjoying some great weather and a BBQ or two outdoors. Summer is also a great time to do some maintenance on your pond and make sure it's safe for small children or set up a tank or two for that long awaited breeding project

Our new look Aquarium World website is now up and running and it looks great (http://aquariumworld.nz). A big thankyou to all those who were involved with creating the new website and forums: in particular Daniel Hampton for developing the website, Dena Emanuel for graphic design, and Mark Paterson, Jennifer Hamlin, Adrienne Dodge, and others who spent a huge amount of their own time developing content and testing the new site.

In this issue we feature the increasingly popular Siamese fighting fish *Betta splendens*, a great option for a small display tank. Over the last few years, the quality of New Zealand Betta's has improved significantly thanks to the importers bringing in better quality fish and some very keen Betta breeders refining these lines and developing new ones. In this issue we are fortunate to feature an article by accomplished Betta breeder Joep H.M. van Esch on the development of the modern show Betta and the state of the hobby in Europe. Joep is the founder of the Bettas4all Show Standard©, and co-founder and owner of the International Bettas4all forum and facebook group.

We also conclude Geoff Haglund's epic 500 km fish room move.

I hope you have an enjoyable and safe festive season.

Darren Stevens
FNZAS Editor

Photo: Caryl simpson

CONTRIBUTORS

Joep van Esch

Joep is a breeder of show bettas from the Netherlands. He studied biology and has a PhD in physiology/pharmacology. He has been breeding show bettas since 2003. His breeding program is mainly dedicated to shortfinned show bettas of the variety halfmoon plakat. He is co-founder and owner of the International Bettas4all forum (including the Bettas4all facebook group), organiser of the annual Holland Betta Show & founder of the Bettas4all Show Standard©.

Alex Flemming

Alex has been keeping fish and aquatic plants for several years. She is constantly working to increase her knowledge about all things fish-related. Alex keeps several tanks including dwarf puffers, Siamese fighters, killifish, a Southeast Asian biotope and a South American biotope. Interests include Photography, Biology/Ecology and more recently Microscopy. She hopes to pursue a career in Freshwater ecology researching our native fish.

Trevor Collins

Trevor is a Senior Manager for a Steel Tube Manufacturing Business in Hamilton. He started his interest in Fishkeeping back in 2009 as a hobby to enjoy with his youngest son Cheyden. Trevor keeps a large well planted community tank at home and is actively involved with the Waikato Aquarium Society working with their committee to keep the hobby of Fishkeeping alive and well in the Waikato.

Will Hewett

Will is a student with a keen interest and passion for fishkeeping. This has developed in the short space of a year from keeping a small tropical freshwater tank, to a nano reef. Fishkeeping is a stem from his interest in science and engineering subjects which he hopes to work in some day. His other hobbies include electronics and making things.

Geoff Haglund

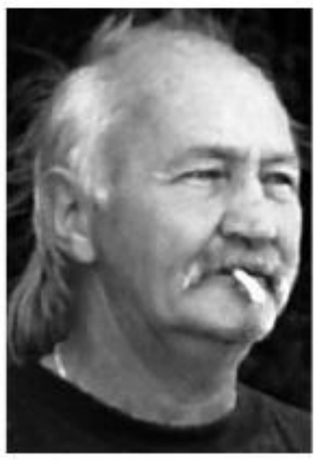
Geoff began keeping tropical fish in 2006. Since then his obsession with plecos has grown and he now has 54 tanks and 15 species. He constantly strives to create an environment for them to reproduce and he has successfully bred a number of desirable species. Geoff is vice-president of the FNZAS and an active forum member and contributor to the FNZAS website, Planet Catfish, and Pleco Planet

Caryl Simpson

Caryl has held various offices in the Marlborough Aquarium Club over 24 years. She was involved with the FNZAS as editor for 16 years, and archivist for 8, and is a founding member and global moderator in the FNZAS Fishroom forum. She currently has one tropical community 4ft tank and a pond.

Adrienne Dodge

Adrienne has been in the hobby for 32 years. She has bred betta splendens and currently has a high tech planted rainbow tank. She recently spent seven months working for a specialist fish shop which she says has increased her knowledge and has given her valuable insight into the wholesale/retail industry and the challenges faced. Adrienne is the FNZAS Secretary and MAC member.



Mark Paterson

Mark began fish keeping when he was a child, keeping live bearers and siamese fighters. He has worked for circus and zoo parks in NZ and overseas. For the last 28 years he has kept many species of aquatic life but NZ local marine is his keenest interest. Mark loves to share this passion & knowledge with fellow hobbyists and is currently running the marine systems at a local university & is also FNZAS President.

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BACK ISSUES Caryl Simpson caryl@simtronics.co.nz

Show bettas, also popular in Europe!

by Joep H.M. van Esch

Since its first description in 1849, the Siamese fighting fish has gone through a huge development. This article gives an overview of the development of the various fin varieties we know today, the organisation of the betta hobby in Europe and a short introduction of the Bettas4all forum and their main event the Holland Betta Show.

Best of Show Female - Holland Betta Show 2015
Breeder: Boris Weber-Schwartz (Germany)
Photographer: Ralf Loch (Germany)

Result: Best of Show Male - Holland Betta Show 2011
Breeder: Jiri Bosina (Czech Republic)
Photographer: Thomas Chuda (Czech Republic)

Development of the modern show Betta

The Siamese fighting fish was first described by Dr. Theodor Cantor in 1849, who initially classified the fish as a variety of the Penang betta (*Macropodus pugnax*, now known as *Betta pugnax*). The first Siamese fighting fish were successfully imported into Europe in 1872, with the first successful spawn reported in France in 1894. Around 1910, they also reached the United States of America (USA). In 1909 C. Tate Regan realized that Cantor made a mistake in naming the species and renamed Cantor's fighting fish to *Betta splendens*. For ages, Siamese fighting fish were bred by the people in Asia with the main objective to develop its fighting nature, hardiness, size, colour and fighting style. Selection of breeders was made by organizing fights with bettas from other breeders. The winner became the model for the next generation of fighters. This practice of selective breeding stood at the base of the various colour and fin varieties we know today.

Although their exact origin is unknown, the first longfin bettas were developed in Asia and arrived in the USA around 1927. Around 1960 two important developments were made: (1) Breeders from India developed the doubletail, a betta with a caudal fin consisting of two lobes and an extremely broad dorsal

Result: Best of Show Female - Holland Betta Show 2012
Breeder: Alberto Montalbetti (Italy)
Photographer: Thomas Chuda (Czech Republic)

fin, and (2) The German breeder Dr. Eduard Schmidt-Focke developed the first delta, a betta with a symmetrical, triangular shaped caudal fin. In 1980 some well known American betta breeders, like Peter Goettner and Paris Jones, developed the superdelta, a variety characterized by an increased spread of the triangular shaped caudal fin and enormous fins.

In 1984, Guy Delaval imported several superdeltas into France and aimed his breeding program at breeding fish with an even bigger angle of the caudal fin. Three years later he succeeded to breed fishes with a 180 degrees spread of the caudal fin. At a show in France, Rajiv Massilamoni (Sri Lanka/Switzerland) realized that Delaval had managed to do what had been thought to be impossible and started to cooperate with the French breeder Laurent Chenot in order to maintain and further develop this variety. Initial attempts to breed the fish from Delaval failed as they were too inbred but outcrossing these fish to several other lines, finally resulted in some fish with the characteristic 180 degree spread of the caudal fin. The American breeder, Jeff Wilson called them “halfmoons” and joined the partnership. In 1993, Chenot, Massilamoni and Wilson showed some of their halfmoon fishes at the IBC show in Tampa

Result: Best of Show Male - Holland Betta Show 2012
Breeder: Thomas Chuda (Czech Republic)
Photographer: Thomas Chuda (Czech Republic)

Florida under the name CHENMASWIL and became the "Best of show". This was the start of a true halfmoon fever which had a huge impact on the betta hobby worldwide. In 1998 the Indonesian breeder Ahmad Yusuf developed a fin variety in which the webbing between the rays is reduced resulting in a "comb-like" appearance. When Henry Yin showed these fish in the USA, they were given the name crowntail.

The shortfin bettas have also gained much popularity in the betta world because of their compact, vital appearance. Up to the year 2000, traditional plakats were the only shortfin variety seen at shows but the halfmoon fever also led to the evolution of the shortfinned tailtype. Crossing longfinned halfmoons to traditional plakats led to the development of the halfmoon plakat. Latest developments of the shortfin variety are the doubletail plakat and crowntail plakat.

Show bettas in Europe

It is clear that the Betta hobby in Europe has played an important role in the development of the modern show Betta and their popularity is still growing. With the coming of the internet it is very easy to exchange information and experiences on specialized websites,

Result: Best of Show Male - Holland Betta Show 2013
Breeder: Salvatore Unali (Germany)
Photographer: Thomas Chuda (Czech Republic)

forums, and on social media like facebook. In addition, Europe has several Betta clubs and breeder communities, some familiar examples are the Associazione Italiana Betta (AIB; Italy), Communauté Internationale pour les Labyrinthidés - International Betta splendens Club (CIL-IBSC; France), Kampffischfreunde (Germany), Betta Freaks (Germany), Swiss Betta Club (SBC; Switzerland), Bettas4all (the Netherlands), and more. Each year these organizations are responsible for various international Betta shows all over Europe which are judged according to the show standards of the International Betta Congres (IBC), CIL-IBSC or Bettas4all.

Longfinned show bettas like the halfmoon, crowntail and to a slightly lesser extent doubletail variety are usually well represented at betta shows throughout Europe. Although the classic longfinned variety has disappeared from the class list of many international Betta shows outside Europe, there seems to be a renewed interest of hobbyists who are dedicating their breeding program to this variety. A development we definitely applaud as one should not forget that it was this variety which was the base of the development of the modern longfinned show betta. Additionally the veiltail, is without any doubt, the most known variety of *Betta splendens* among

Result: Best of Show Male - Holland Betta Show 2014
Breeder: Josip Kevari (Austria)
Photographer: Joep van Esch (The Netherlands)

the public and it is often this variety which is responsible for people getting "infected" with the "betta-virus". In the past decade, shortfinned Bettas have become immensely popular among hobbyists in Europe and halfmoon plakats currently represent the largest classes at European shows. In the last two years new shortfin varieties like the doubletail plakat and crowntail plakat have gained a lot of interest among hobbyists in Europe and have become a valuable addition to our shows.

Bettas4all and the Holland Betta Show

The Bettas4all forum www.bettas4all.nl was founded in 2004 in order to bring betta hobbyists together from all over the world to share their knowledge and experience with respect to the keeping, breeding, maintaining and showing of (show) bettas. By now the Bettas4all forum has grown to an international community which is known for the friendly atmosphere where members respect each other's opinion. With facebook gaining popularity, in 2013 the Bettas4all Facebook group was added to our community. Currently this group has more than 10000 members.

In order to maintain this atmosphere and to continue to provide high quality information, the forum and facebook group are managed

Result: 1st place CTPK – All Colors Male class - Holland Betta Show 2015
Breeder: Stefan Leopold (Germany)
Photographer: Joep van Esch (The Netherlands)

and supervised by an international team of dedicated and experienced hobbyists. In order to promote vital, healthy, balanced show bettas we spent a lot of effort to develop a new show standard, the Bettas4all Standard©. Condition, deportment, overall balance, form of body & finnage, and colour are important aspects which are incorporated into the standard. Because the perfect fish does not exist we have developed three-dimensional models to visualize the ideal shape, balance, dimensions and proportions of the different finnage varieties. The release of the Bettas4all Standard© in 2010 resulted in both positive and negative reactions within the betta scene. Some hobbyists were open minded for development whereas others were sceptical to change. The support and developments in the past five years within the European betta scene however have shown that the Bettas4all Standard© is an excellent standard to work with and is here to stay.

Since 2010, the Bettas4all forum organizes the annual Holland Betta Show (www.hollandbettashow.nl). In the past years the Holland Betta Show has grown into an international platform for European hobbyists to show their own bred fish (no imports allowed) and has grown into one of the

biggest shows of Europe. On the 6th edition, the Holland Betta Show 2015, 308 show bettas were shown by 45 hobbyists from 14 European countries.

More information with respect to the Holland Betta Show and Bettas4all Standard© can be found on our show website:
www.hollandbettashow.com
facebook group and forum: www.bettas4all.nl - The International Betta Forum *for* Hobbyists *by* Hobbyists

BEWARE, THE "BETTA-VIRUS" IS OUT THERE!

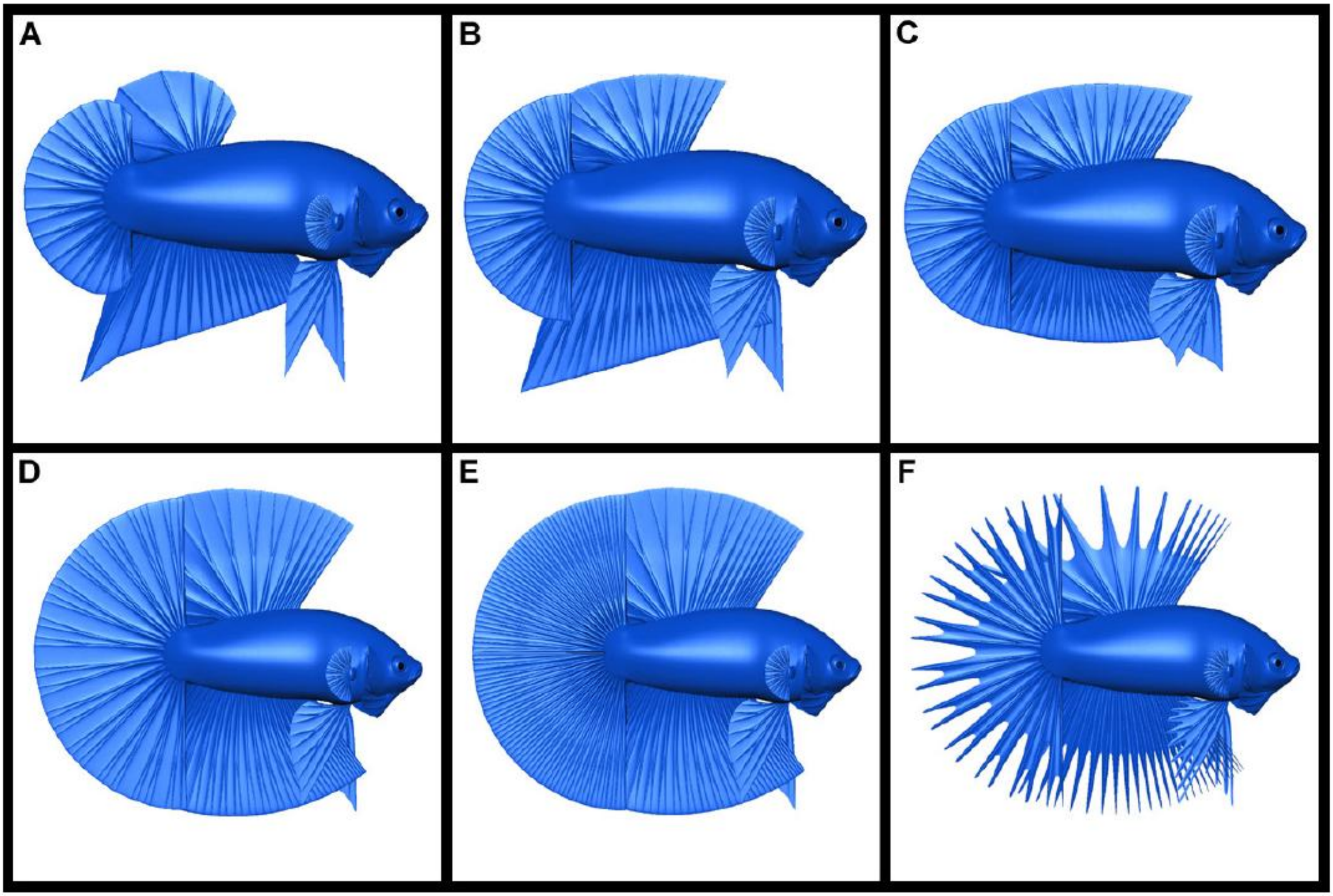
Joep H.M. van Esch
www.bettaterritory.nl

A big thankyou to Maxine Lynch for asking Joep if he was keen to write an article.

Result: Best of Show Male - Holland Betta Show 2015
Breeder: Boris Weber-Schwartz (Germany)
Photographer: Ralf Loch (Germany)

Next page - Top Right: 2D models from the Bettas4all Standard© showing the ideal dimensions of the following finnage variants:
Traditional plakat (A)
Asymmetrical halfmoon plakat (B)
Symmetrical halfmoon plakat (C)
Halfmoon (D)
Doubletail (E)
Crowntail (F)

Right: Holland Betta Show stand setup 2015
Photo: Joep van Esch


A
B
C
D
E
F


Bettas4all.nl
BETTA WORLD
www.Bettas4all.nl

THE BIG MOVE

Geoff Haglund moves 54 tanks and 350 plus fish 550km to a new fishroom

Part 2

Part 2: Pack and transport the fish to the new fish room.

It was 14 days later and time to relocate the rest of the fish. Regular updates from my friends who were looking after the fish in the new fish room, and the lack of any fish deaths, reassured me that at the very least the parts of the plan involving "fish health" were all working as intended.

8.00am and it is time to pick up the truck. After much deliberation I decided to hire a two tonne truck to transport the boxes of fish. Physically there were too many boxes for any smaller vehicle.

10.00am and the truck has not yet returned from the previous day's rental. Lucky for me the lady at the truck rental depot was less happy about this situation than I was, so the previous renter was going to get a good "telling off", but that was little comfort to my schedule. What is it with people these days?

At 11.00am I finally had possession of the truck!

By 6.30pm I had finished catching and boxing all the fish into 27 poly boxes measuring 51x42x36cm (LxWxH), and loaded them into the truck.

The catching process was as uneventful as I had

planned it to be, with two exceptions. The first being the discovery of some L046 fry that had just consumed their egg sack. Their chance of survival was exactly 0%.

The other eventful moment was the demise of one of three surviving juveniles from some particularly rare catfish. It was one of those moments that, if I was superstitious, would have caused me to stop what I was doing and rethink the whole move.

I had removed all the wood and decorations from the tank, and was doing a count of the inhabitants. In this tank I knew exactly how many fish there were supposed to be and, sure enough, I was one juvenile short. It must be in the wood.

I picked up the first piece of wood, and no fish so I put the wood on the ground. I picked up the second piece of wood and again there was no fish in it, so I leaned that piece of wood against the first one. Then I picked up the last, and biggest piece of wood. Sure enough as I turned it over there was the flick of a tail and the little guy, about 4cm long, flopped out of the wood and landed near my foot. Not wanting to stand on it, and being slightly off balance due to the large piece of wood I was holding with both hands,

I pivoted my foot away from the fish whilst keeping my heel on the ground.

This technique has worked before as lifting the foot completely off the ground can result in a squashed fish, depending on which way the fish rolls when it lands on the ground, due to your foot returning to the ground! This time however, as I pivoted my foot time seemed to slow down, which is never a good sign. My foot knocked the first piece of wood that I had placed on the ground and the second piece of wood started to roll towards the fish. The fish flopped towards the small pile of wood, as the rolling piece continued to roll towards the fish. I spotted a clear area that I could throw the piece of wood that I was still holding. As I let go of the wood I was holding the rolling piece of wood hit the ground for the first time and continued to roll towards me. By the time I managed to grab the rolling piece of wood, in my left hand, it had hit the ground a second time. I lifted up the piece of wood and the fish had gone.

Phew I thought, at least the little bugger has not been squashed.

With my right hand I lifted up the first piece of wood, but the fish was not there either. Not wanting to move my feet I looked all around for the fish, while holding the two pieces of wood. No sign of the fish.

Hmmm I thought, perhaps I had been seeing things?

I turned over the piece of wood in my left hand, the rolling piece, and sure enough there was my little guy. Not moving.

Unfortunately there had been a 3cm splinter of wood sticking out of the main piece of wood and this splinter had speared the little guy right through the head.

It was not the first, nor the last time I would swear during this fish room move!

As I write this I realise that I should have taken some photos, but I didn't!

What I did remember to do was to write the contents of the poly box, on the lid, and the time that the box was sealed.

By 6.45pm I was on the road, with a truck full of Schrodinger's fish.

Driving through the night, down the length of the North Island, gave me a greater respect for the truck drivers that do exactly that every night. I have never pulled over to the side of the road to let a truck pass me as many times in my entire life as I did that night.

About 4.00am I arrived at my destination.

Luckily I had met Chester, the neighbours' dog, on my previous trip. It would not have been fair, not that life is always fair, to be eaten by the neighbours' dog after getting this far. I was busy and did not have time to go to the hospital. I had a water change to do!

Obviously there was some "wet work" that needed doing before I was going to put the just transported "shaky shaky" fish into the 14 day old rapid cycling tanks, and I am quite glad that Taylor Swift had not yet released her "Shake it off" song because that would have driven me quite insane humming that for the 9 hours of the shaky drive down the country.

About 7.00am I had finished the water change and moved some of the fish that were already present in the set up tanks, because I did not want aggression between species to cause me problems until I would be back again.

At this point I realised that there was a flaw in the "time in box" plan. The flaw being that the first poly box that was loaded with fish was also the first box onto the truck, and therefore would be the last box off the truck. Oh well, nothing I can do about that.

It was Tuesday morning and I had already been up for over 24 hours. In another 24 hours I would be back on the road again. No time for sleep, plenty of time for that when you are dead. I grabbed a coffee and hoped that I would not make any dumb decisions due to fatigue.

Time to unpack the fish.

One of the things that I considered was that because I had just done a water change on the 25 or so tanks that were running, they would not yet be at their running temperature. However due to the water that the fish in the truck were in being without heaters for up to 20 hours, at that point, I figured they would have cooled down a bit anyway, so the temperature shock was not going to be an issue.

Previously I had tested the water for the other parameters, pH etc, and the water here was similar enough to the fish's old water, so I had no great concerns there either.

It was time to open Schrodinger's truck.

As I approached the rear of the truck I noticed that there was water leaking slowly from under the door. After an initial mild heart palpitation, I remembered the previous lesson about the poly box's not actually being water tight, so it might be ok I thought.

I opened the door and stood there with my mouth slightly open. I was glad that I was already a smoker because that gave me something to do while I looked at the carnage inside the truck. The roof was wet. The walls were wet. Everything was wet. To be fair it looked like the inside of a washing machine.

Fish transportation boxes
Photo: Geoff Haglund

Bugger, I thought.

Still, the Amazon in flood might be somewhat like a washing machine so there may be some hope.

I unloaded the extra stuff that I had crammed into the back of the truck so that I could see the poly boxes. None had moved. None were broken. Things were looking up.

I moved the first poly box into the fish room and got out my knife to cut the tape. It was time to open the first of the 27 boxes of Schrodinger's fish.

I opened the box. Zero dead fish, 100% survival.

6 hours later and the only dead fish were the L046 fry that were never going to make it anyway. I was so happy, and amazed at how resilient the fish were.

I have a theory about why there were no unexpected losses during the transportation phase. My fish are all sucker fish, and because I chose not to bag them inside the poly box then I suspect that they were able to suck onto the sides of the poly boxes and basically ride out the washing machine ride, just as they would do in the wild?

Now I am tired, and now I can sleep.

Wednesday 2.00am and there are things to do. I checked all the fish and gave them a bit of a feed. They will be fed again on Friday and Sunday by my friends. In the mean time I need to get on the road again and get this truck back on time. I will bet money that the "larvae of a house fly" who had the truck before me and couldn't manage to return it on time had not been as busy, or travelled as far as me.

It was an uneventful, although faster, trip back to drop off the truck. I now had 4 days to disassemble the old fish room.

Part 2 complete.

Part 3: Break down the existing fish room and transport it to the new fish room and install the tanks.

The first time I went back into the old fish room it was quite eerie and sad.

It was colder than I ever remember that room being, and it was deathly quiet. The buzzzzz of the old compressor was gone. The drrrrrrr of the other air pumps was gone. The splashing and coughing of the canister filters was gone. The soothing syrupy sound

of the 20 or so hang on the back filters and their mini waterfalls was gone. The hum of the extractor fan and crackle of fluorescent lights was gone. It smelled different too. It didn't yet smell of dead and stagnant water, and it never would, but it didn't smell like multiple healthy mini ecosystems either. The dozens of red heater lights and surge protector indicators staring out of the darkness winking on and off randomly were gone.

I turned on the lights and the sight before me was almost shocking. Heaters hanging randomly in barren half filled tanks. Filters with their lids off, striped of their media. Breeding caves empty and prised open to get the fish out. It was like some post apocalyptic fish keeper's nightmare. If I had just returned from a holiday and discovered this I would have been devastated.

There was no time for reminiscing though as the next truck would be here in 4 days to pick up all this and the rest of my possessions and transport everything to the new location.

My friends who were looking after the fish had their instructions, "don't give me any bad news, if something doesn't look right then add no more food". I did not have the time to worry about the fish, and there was very little I would be able to do anyway.

The next 4 days were frantic. It had taken me 5 years to build the old fish room and I only had days to undo all that. Each stand was in fact two smaller stands that were bolted together, and each stand was also bolted to the one next to it. Hundreds of bolts.

Each of the 26 tanks needed to be drained and dried, each cave wrapped, each filter dried and packed, filter hoses, nets, power boards. It gave me a smile to think that if an electrician had gone into my post apocalyptic fish room they would surely have had a heart attack.

There was just so much equipment! By the time it was all on the truck there was another 102 box's.

After the truck had gone, it was time for the cleaning. The good news was that there was no damage to the walls from any moisture or anything else, so that made me sigh with relief.

Setup complete
Photo: Geoff Haglund

There was, however, no time for resting as I had to get back in the car and drive to the new fish room because, you guessed it, there was a water change that needed to be done.

It was another 20 days before the old fish room turned up at the new location, along with all my possessions. The reassembly of the old fish room took longer than part 1 (previous issue), because there was not the time pressures involved.

All the media that would be used in the tanks that had just arrived was already in mesh bags in the new tanks so it was pretty much all about filling and decorating the tanks, bringing them up to temperature, placing the media into the appropriate filters and then putting the right fish into the right tanks. In addition to the powered filters, I had set up sponge filters on all the new tanks so I was able to move all the sponge filters to the old tanks and put new sponge filters into the new tanks.

In theory, all the tanks that had just been set up would now already be cycled.

Part 3 complete.

Overall I think that the epic "moving the fish room" event was highly successful.

In total there were only 3 tanks that were broken, and I was able to fix them all myself.

There was essentially no loss of fish, although most people would regard the loss of several L046 fry to be quite a tragedy, the loss of their parents would have been a real tragedy

Would I do it again?

Hmmmm

If you would like a virtual tour of my fish room visit me on Facebook: https://www.facebook.com/GeoffsFishRoom

The paradise fish *Macropodus opercularis* is a beautiful species that is related to the Siamese fighting fish and the croaking gourami. In the wild they are found from the Korean Peninsula to northern Vietnam. They are tolerant of a wide range of conditions from 16 to 26°C but do best in a heavily planted tank of at least 100 litres. Paradise fish can grow to 10 cm and they are fairly aggressive so it is best not to keep males together and avoid small, slow moving, or long finned tank mates. They will accept a wide range of commonly available foods. An albino form is available overseas. Photo: Daniella Vereeken

NZ NATIVE

Seahorse (Manaia)

by Darren Stevens

Manaia *Hippocampus abdominalis*
All photos by Chris Wood NIWA

Seahorses are one of the most unusual and endearing fish, with a vaguely horse-shaped head and neck, an armoured body, and long prehensile tail, and they have captivated people for centuries. There are about 50 species of seahorse found in shallow temperate to tropical waters in the world's oceans. Seahorses range in size from tiny 1.5 cm pygmies to 40 cm giants. Seahorses are related to the slender and aptly named pipefish, but while pipefish swim horizontally, seahorses often swim vertically by using their pectoral (side) fins on the sides of their head. They can swim more quickly by stretching out their body and undulating their dorsal (top) fin.

The New Zealand species, the pot-bellied seahorse or simply seahorse *Hippocampus abdominalis* is one of the largest species and can grow to 35 cm. In New Zealand waters seahorses are found in sheltered bays, harbours and reefs, from the Three King Islands to Stewart Island, the Chatham Islands, and Snares Island, where they are often wrapped around sea weed. They are generally found in less than 40 m depths but they have been recorded to about 100 metres. Pot-bellied seahorses are also found in temperate waters in south-eastern Australia where they are called the large belly or big-belly seahorse, their pot-belly seahorse is a similar species *Hippocampus bleekeri*. They are more active at dusk and at night. Their bizarre shape and cryptic coloration allows them to blend into their surroundings and creep up on prey or avoid predators. They can even change colour to match their surroundings. Pot-bellied seahorses are ambush predators (as with all seahorses) and use their long slender snout to suck in small animals (mainly small crustaceans such as copepods and amphipods).

As their name suggests the Pot-bellied seahorse has a very large belly. In the male the lower part of the belly is modified into a smooth soft brood pouch to rear the young. The female deposits the eggs into the male's pouch and they are fertilised. The young brood for about 30 days and are then ejected by the male at about 16-19 mm long as miniature replicas of the adults. Males typically have about 270 young but large males can have up to 700 young and they can have more than one brood per year. The young are thought to live near the surface for several weeks.

Dried seahorses are popular in Chinese traditional medicine and it is reported that as many as 20 million seahorses may be caught each year and sold at US$600 to $3000 per kilogram. There is some concern over the impact this is having on some seahorse populations and their trade has been regulated by CITES since 15 May 2004. Seahorse populations in New Zealand are thought to be small and are unlikely to be able to handle any level of commercial harvesting. If you are planning on keeping a seahorse, do your research first, and ideally buy a captive bred seahorse through your local pet shop.

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Keeping and Breeding Black Kuhli Loach

The Black Kuhli Loach *Pangio oblonga* is a mysterious and fascinating fish which is sure to interest many fishkeepers. Black Kuhli loaches are eel-like in appearance and have no bands, unlike the more common species *Pangio kuhlii*, and instead have a plain red-brown-black body. They can be a bit more difficult to locate, but in my experience are very rewarding to keep. Like *Pangio kuhlii*, they're unlikely to be seen during the day but will readily come out of hiding to eat food, and especially after a nice cold water change. You'll likely see them out more often in larger groups, preferably 5 or more. While they aren't necessarily a shoaling fish, Kuhli loaches seem to feel safer in groups and thus are more likely to be seen out and about.

While you wouldn't expect it, like many other fish, adding more hiding places actually results in friendlier fish as they feel safer from predators! It's common experience that a favourite place to hide for Kuhli loaches is in filters, so it's important to use a pre-filter sponge if your intake strainers are big enough for young Kuhlis to swim into (especially fry!). This

Juvenile Black Kuhli Loach approximately 4 - 5cm long
Photo: Alex Flemming

fish provides some interesting behaviours, such as the "dance" they may do after a water change, or how some people even believe they can predict the weather through their behaviour!

As the paragraph above implies, these fish prefer a tank with multiple places to hide. Good examples would be the more natural river rocks and driftwood, but you can also use decorative rocks, terracotta pots, decorative 'houses', tubes and other decorations with lots of small holes and tunnels for the Kuhlis to explore and hide in. Driftwood works great for the purpose of both shelter and has the added benefit of leeching tannins into the tank. This creates a tea-stained effect and lower pH which Kuhli loaches will appreciate. Leaf litter is found in the Kuhli's natural habitat and can also add adequate cover, and provides the same tannins as driftwood. Black Kuhlis (and other fish from their genus) are scaleless fish which are easily wounded, so a soft substrate is a must. Sand is highly recommended for these guys and will give a good natural feel to the tank.

In fine sand Kuhlis display digging behaviours where they sift it through their pectoral fins as they forage for food, and may even completely bury themselves in substrate. Kuhlis are omnivorous and will happily accept prepared food, although live food is preferable for a varied diet. My Kuhli loaches get a mixture of JBL Novotab, Novopleco, flakes and Omega's shrimp pellets, along with frozen bloodworms, brine shrimp, white worms and zucchini. Even fry will happily eat prepared foods but appear to graze on the organic build up in the substrate before moving on to larger foods.

Black Kuhli loaches are very peaceful fish, coming out at night to graze on foods, and spend most of their time hidden away. Kuhlis may eat the eggs of both their own and other fish species, but are unlikely to predate on fry or small fish as long as it won't fit in their mouths. As mentioned however, they are easily wounded so while they are fast, it's best to avoid keeping them with predators as they can look quite similar to a tasty earthworm! Good fish for a Southeast Asian biotope type tank could include Gourami species, Rasbora, Danios, some Barb and other loach species. These are all soft water species that prefer the similar water conditions, such as the tannin stained, well decorated (and possibly densely planted) waters that Kuhli loaches like.

Breeding

This is the more difficult part! The breeding of Black Kuhli loaches isn't very well documented and the actual spawning is rarely observed. Kuhli loaches have rarely been bred (if at all) under controlled conditions, and the cases documented always seem to appear accidental. In my case, the breeding was quite the surprise and I didn't find out until there were small 'worm like' fish living in the lower rocks in my tank.

Setup

First you want the Kuhlis. Some sites say they need to be around 1-2 years of age before breeding, however I had mine for a few months before they spawned (actual age unknown due to being from the pet store). A group of 5 or more will give you the best chances of getting females, and males don't appear to be aggressive, so these fish will happily live in a big group. It's hard to sex them outside of breeding, however a gravid (full of eggs) female will have almost a large long lump along the bottom which may appear to be full of green eggs. Their eggs are said to be green and stick to anything, so they shouldn't be hard to spot. It seems Kuhlis also prefer to breed in groups, rather than keeping them in a single pair. Assuming you have rocks, the eggs and fry should be safe from any wandering mouths.

It appears that despite the recommended substrate being sand, large sized gravel (such as river pebbles) is reported as being the main substrate used for breeding. My theory is that the eggs are either dropped, or laid, in rock caves and the holes in pebbles. In my case, I have around 15cm of various sized river rocks stacked on top of each other, with plenty of space in between for the fry to swim around in and stay safe from the adults and other fish. Other cases have also included under-gravel filters, where owners have cleaned out the filter only to find fry swimming underneath. So it appears this space for fry to hatch and grow is essential for their breeding.

f you own fish from certain world regions which experience wet and dry seasons, you may notice that your fish respond differently to cold water changes. This is no different for Kuhli loaches, in which spawning is triggered after a good cold water change. You may notice them 'dancing' about, perhaps even 'playing' in the flow of water. I tend to do around 30%-40% weekly or bi-weekly with water straight from the hose. Fortunately my tap water is quite soft, but for those living on hard water, if you're serious about breeding them you may need to have the water buffered.

When talking about 'soft' or 'hard' water, we mean the GH (calcium and magnesium ions) and KH (carbonates) values of water. There's a bit more to it, but basically, a low GH and KH (0-4°) indicates soft water, and a high GH and KH (18-30°) indicates hard water. Your KH is your buffering capacity for pH, and typically with a low KH you will have a low pH, and with a high KH you will have a high pH. Kuhli loaches are soft water fish and it is preferable to maintain soft waters for breeding them. It is worth noting, however, that these fish have successfully been bred in fairly hard waters which

indicates that, while preferable, this may not be a necessary parameter in order to breed these fish.

Important parameters, however, are your typical water parameters (ammonia, nitrites and nitrates). It's essential to have good, clean and mature water. A sponge filter along one end would be preferable, or a hang-on-back filter with a pre-filter sponge. In my experience, Kuhlis are not bothered by flow and sometimes may even play in it. Flow will allow the eggs to drop and will allow for good circulation. While it's good to have organic film building up for the fry, it's also important in a tank with lots of rocks to have the water flowing and picking up any waste, as you'll not want to siphon where the eggs may be. For temperature, my tank tends to sit around 26° to 27°C. However, after a cold water change it may drop to around 21° to 23°C. I've found this has a very positive outcome with the Kuhlis, as they dance up and down with each other on the tank walls and then go on a hunt for food.

It doesn't look like black Kuhli loaches offer much in the way of parental care, but once big enough, juveniles will happily live alongside the parents. It's best if the fry grow up underneath the rocky substrate or grating in order to stay safe (parents don't need to be removed from the tank), but this also makes feeding a bit difficult. In my experience, the fry will grow up well simply on the organic build up on the substrate surface and, once big enough, will happily graze on prepared foods. However, it may be a good idea to give them substrate-burying live food like blackworms, or other small live foods such as microworms and brine shrimp, along with frozen bloodworms or even prawn and beef heart.

The experience of breeding these fish has been incredibly rewarding for me, and it has been fascinating to view such an uncommon spawn. I hope to be able to spawn these fish in the future under controlled conditions and compare them alongside other species, as little is currently known about the breeding habits of Kuhli loaches. I would recommend these fish to many fishkeepers due to their wide range of compatibility and ease of care, and would further recommend hobbyists and serious fishkeepers alike to attempt breeding these mysterious creatures. Few loach species are found to breed in captivity, so it is truly exciting to achieve this for any species. With good care many fish can be bred, and it is good experience for us all when we breed them!

Adult Black Kuhli Loach
Photo: Alex Flemming

Alex Flemming

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FISH FAMILY PROFILE

Hatchetfish

by Adrienne Dodge

The name Hatchetfish belongs to two unrelated groups of fish – marine hatchetfish, which are small deep-sea fish from the Sternoptychidae family, and freshwater hatchetfish which are tropical characins of the large Gasteropelecidae family. This article is on the freshwater hatchetfish family and the specific information which follows is on the genera of hatchetfish which are on the MPI list of fish allowed to be imported in to NZ

The freshwater hatchetfishes are a family, Gasteropelecidae, of ray-finned fish. The Common hatchetfish *Gasteropelecus sternica* is the most popular member among fish keeping hobbyists. Hatchetfish are among the more uniquely shaped species of fish. They have a slender body with a deep belly and pectoral fins that are set high on their body. These fish leap from the water and fly through the air, flapping their large pectoral fins to catch flying insects. Hatchetfish are generally accepted as being the only true 'flying fish'. Like all true surface dwellers, hatchetfish have upturned mouths.

Cargnegiella strigata - Marbled Hatchetfish
Photo: nanjenchan

The family includes three genera - *Carnegiella* (four species), *Gasteropelecus* (three species) and *Thoracocharax* (two species).

Cargnegiella hatchetfish are found in the Amazon and Orinoco Basins in South America and consist of the following species – *C. marthae* (Blackwing hatchetfish), *C. myersi* (Pygmy hatchetfish), *C. schereri* (Dwarf hatchetfish) and *C. strigata* (Marbled hatchetfish).

Hatchetfish of the *Gasteropelecus* genera are found in Central and South America. The three species of the genera are – *G. levis* (Silver hatchetfish), *G. maculatus* (Spotted hatchetfish) and *G. sternicia* (River hatchetfish).

Found in the Amazon, Orinoco and Parana basins in South America are hatchetfish of the *Thoracocharax* genus. The two species are – *T. secures* (Giant hatchetfish) and *T. stellatus* (Spotfin hatchetfish).

Cargnegiella meyersi - Pygmy Hatchetfish
Photo: Robert Beke

Carnegiella marthae Blackwing hatchetfish

Originating from Venezuela the marthae is an exclusive inhabitant of backwater environments where it feeds upon terrestrial and aquatic invertebrates and other zooplankton on the water surface. This specie is brightly silver at the lowest point of the belly, progressively becoming darker towards the midline of the body, which is marked in a darker, less defined bronze-gold midline bar that is typical of all hatchetfish species. Once in captivity this specie prefers a heavily planted aquarium, preferably with dark substrate and floating vegetation under which it can hide. Driftwood and dried leaf litter can also be added. Decomposition of the latter will provide a valuable secondary food source for any fry. Gentle to moderate water current is preferred. A schooling fish, the Mathae Hatchet is best kept in a group of six or more. Because of its small size – max. 2.8cm – it does not make an ideal community fish but if kept this way preferable tank mates are similarly sized, peaceful characids and small catfish. In captivity C marthae Hatchetfish will eat floating foods such as freeze-dried bloodworms and tubifex, high quality flake food, mosquito larvae, small flies and some other meaty live or frozen foods. Requirements are - minimum tank size 40 litres; temperature 20 – 28°C, pH 5.8 – 6.9; Hardness 18 – 179ppm. There is no record of *C. marthae* reproducing.

Carnegiella myersi Pygmy hatchetfish

Originating in the Amazon River basin in Peru, the Pygmy hatchetfish can be found in small, shaded and shallow woodland streams. It is of note however that a second population of these fish is known from Bolivia. As the name suggests, this fish has a maximum length of 2.2cm and is the smallest and most delicate of the normal hatchetfish. When compared with other species the rounded keel on this fish is noticeably

Cargnegiella strigata - Marbled Hatchetfish
Photo: Robert Beke

shallower, giving an elongated profile. As with most hatchetfish, the Pygmy hatchetfish prefers a well-matured aquarium with floating plants and a clear area for swimming. The minimum recommended tank size for this small fish is one with a surface area of 50 x 30 cm. Water movement at the surface should be minimal and the lighting not too bright. The preferred water conditions for *C. myersi* are; pH 5.5 – 6.5, temperature 23 – 26°C and hardness of 18 – 108ppm. Being insectivore by nature, eating small insects on the surface of the water, this fish will take flake and micro pellets, small dried insects and bloodworms. Due to its small size and timid nature the best tank mates for the Pygmy hatchetfish are similarly sized, and peaceful, characids and smaller loricarlid catfish. This fish should also be kept in a group with a minimum of six in the tank. There is no record of the *Carnegiella myersi* being bred.

Carnegiella strigata Marbled hatchetfish

These are River Hatchetfish and common in the aquarium industry. This fish has a distinctive marbled colouring and is sometimes confused with *C. marthae*. In the wild they have adapted to life in the Amazon rivers, in blackwater environments, resembling a leaf floating on its side. This camouflage protects them against potential predators. Their marble-like pattern resembles the sun's rays breaking the water's surface and reflecting on a leaf. Reaching only 3 – 3.5cm in length, their body is burnished silver with random black stripes or blotches over the entire body. Marbled hatchetfish fins are clear, and the pectoral fins are long and curved. Virtually all the Marbled hatchetfish available are wild caught. Although peaceful, the Marbled hatchetfish is not an ideal community fish as it is very shy and nervous and also not quite as hardy as the Common hatchetfish. This fish is best kept in groups of 10 or more. With a reputation of being notoriously bad shippers it pays to see that these fish are feeding prior to purchasing them. Being prone to ich, it is recommended that they

be kept in a quarantine tank for a couple of weeks before being introduced to a community aquarium. While Marbled hatchetfish are small fish, they do have large mouths and eat in a 'jumping' motion. They only eat foods floating on the water and although they will eat flake food, they cannot survive solely on this as they require proteins such as mosquito larvae and bloodworms. They are best kept in schools or six or more. Good companions include cardinal tetra or phantom tetras. This fish prefers temperatures between 20 – 28°C, excellent water quality and a moderate water flow. A pH of 4.0 – 7.0 is suggested with a hardness of 18 – 179ppm. A heavily planted setup is important with dark substrate and some floating plants. The Marble hatchetfish breeds in soft water with a pH of approximately 6.0. A diet of fresh mosquito larvae and fruit flies may trigger spawning. Eggs are deposited on plants and hatch within 36 hours. Fry should be fed quality live food such as baby brine shrimp.

Gasteropelecus maculatus - Spotted Hatchetfish
Photo: Rozski

Gasteropelecus levis Silver hatchetfish

These are endemic to the southernmost reaches of the Amazon Basin and one of the most shy of the species most commonly kept in aquaria. This fish has a metallic-silver mantle. Gold/bronze and black stripes are along the midline. This fish reaches 5 – 6 cm in length when kept in an aquarium. Maintenance of the home aquarium is important and these fish are susceptible to rapid pH swings, which may sicken or kill them. These hatchetfish are also more prone to bacterial infection and stress-related ailments during ammonia spikes than other species. *G. levis* are best introduced to, and kept in, mature tanks to avoid issues related to the nitrogen cycle. Keep dGH in the range of 3.0 – 17.0, with a pH of 5.7 – 7.0, and the temperature between 23 – 28°C. The Silver hatchetfish is very nervous, being afraid of boisterous tank mates, and is easily scared when in high traffic

areas of the house. Ensure your tank has plenty of live, floating plants where the fish can hide and also provide plenty of driftwood with hiding spots. Although these fish are not known to jump as much as the Marbled hatchet they do require tanks with tightly fitted lids. Diet-wise the Silver hatchetfish is similar to other species eating bloodworm and flakes. It also enjoys wingless fruit flies.

Gasteropelecus maculatus Spotted hatchetfish

One of three known *Gasteropelecus* species, the Spotted hatchetfish is found in eastern Panama and in the Pacific and Atlantic drainages of Colombia to the Maracaibo basin of Venezuela where it inhabits stagnant lakes, ponds and swamps. They are popular aquarium fishes but their known like for jumping makes a well-covered tank a must. This hatchetfish can leave the water and 'fly' for up to 3.7 metres. Prone to ich, the Spotted hatchetfish has difficulty adapting to a new tank, however once established it is fairly hardy. The coloration of *Gasteropelecus maculatus* is silver and the back is olive brown. Depending on the light the colours can change from iridescent green to iridescent blue. This species is one of the larger hatchetfish generally reaching a length of around 6.4cm, although a length of 9cm has been recorded for aquarium kept Spotted hatchetfish. The recommended minimum tank size is 80cm with the surface area, like all other hatchetfish, being more important than the actual volume of the tank. This fish's diet consists of live mosquito larvae, bloodworms, daphnia and brine shrimp, however it will also accept flake foods and dried tubifex. Spawning is very similar to that of *Carnegiella strigata* however it is more difficult to achieve.

Gasteropelecus sternica Common hatchetfish or River hatchetfish

The Common hatchetfish originates in South America in the Peruvian and Middle Amazon, the Guianas and Venezuela where it is found in the tropical streams, in areas with an abundance of surface vegetation. This fish grows to approximately 6.5cm. The Common Hatchetfish is a white or silvery looking colour with a pronounced brown to black horizontal line running through the center of the body. Growing to slightly less than 7.5cm, this hatchetfish is one of the least active of the hatchets. In a tank the Common hatchetfish is best kept in groups of five or more as it is a schooling species. Spending most of its time in the top-level or water where it searches for food, these fish are peaceful towards other fish but will often fight with other Common hatchetfish. In captivity the typical lifespan is around five years. Preferred water conditions are a pH of 6 – 7, hardness of up to 15dGH and a temperature range of 23 – 27°C. They require a well-maintained aquarium, as they are prone to ich and benefit from twice weekly water changes. A devout carnivore, the Silver hatchetfish will eat many types of small live foods and they will also eat flake foods. Due to their tendency to jump when spooked, a tight fitting fully sealed lid is a must, or the water level of the tank should be lowered to a depth where the fish is incapable of jumping out. Adding floating plants to the tank will provide security for the fish giving hiding places, and reduce the tendency to jump. NB – these fish can fly over 1.3 metres in a single jump. The Common hatchetfish is an egg layer but has not been successfully bred in captivity.

Thoracocharax secures Giant hatchetfish

Found in the Central Amazon basin in rapidly flowing waters, they are also said to inhabit stagnant, well-planted waters and swamps. The Giant hatchetfish is a convex silvery fish with straight a khaki coloured back and lateral compression. The ventral fin is small but the pectoral fins are very long and transparent and work like wings for gliding purposes. A yellowish stripe appears from the caudal to the peduncle. This fish grows up to 6.8cm in the wild and 9cm in the aquarium but is rarely seen in the aquarium hobby. Nervous in an aquarium, *Thoracocharax* secures prefers a tank size of at least 120 litres, temperatures between 23 – 30°C and a pH of 6 – 7.5. These fish can be acclimatized to almost any range of hardness. In a tank, the Giant hatchetfish can be fed on live food such as bloodworm, brine shrimp and fruit flies although it will also accept floating dried foods. Suitable tank mates include peaceful tetras, cardinals, corydoras and discus. Being a shoaling fish, it is best kept in a group of six or more. Breeding has not been recorded in aquarium and all Giant hatchetfish in captivity have been wild caught. It is important to note that these are one of four or five freshwater hatchetfish which are commonly called the Silver Hatchetfish.

Thoracocharax stellatus - SpotfinHatchetfish
Photo: Brian Gratwicke

Thoracocharax stellatus Spotfin hatchetfish

Recorded throughout much of South America, the Spotfin hatchetfish is found in several major river systems, including the Orinoco and Amazon and their tributaries, where it inhabits both black and clear water streams and floodplains in areas of abundant surface vegetation. Very similar to the only other hatchetfish in this genus, it can be identified by the absence of a prominent dark spot in the dorsal fin. With a maximum standard length of 7cm the recommended tank surface area for these fish is 120cm x 45cm. This is a very flighty species of hatchetfish therefore covering a good portion of the water surface with plants will help the fish to become less skittish. Unlike its relatives from the *Carnegiella* or *Thoracocharax* species, the Spotfin hatchetfish tends to descend from the surface to spend time in the upper third of the water column where it either hangs motionless or actively interacts within the species group. *Thoracocharax stellatus* prefer a water temperature between 20 – 28°C, a pH of 5 – 7.5 and a hardness of 18 – 21ppm. While this fish is often reluctant at the beginning to accept dried foods, over time it will adapt to being fed them. A large proportion of the diet however, should consist of frozen and live foods such as bloodworms and daphnia. Spotfin hatchetfish eat from the surface but will readily descend to eat sinking foods. Best kept in a group with a minimum number of six fish, as it will not settle in a group of less. In the aquarium this fish is very peaceful and will not compete well with boisterous species. Good tank mates include fish that inhabit different parts of the tank, such as tetras, bottom dwellers like *Geophagus sp*. and catfish such as *Corydoras* and Loricariids. Reproduction is unrecorded in the aquarium but in the wild the Spotfin hatchetfish is an egg scatterer.

Adrienne Dodge

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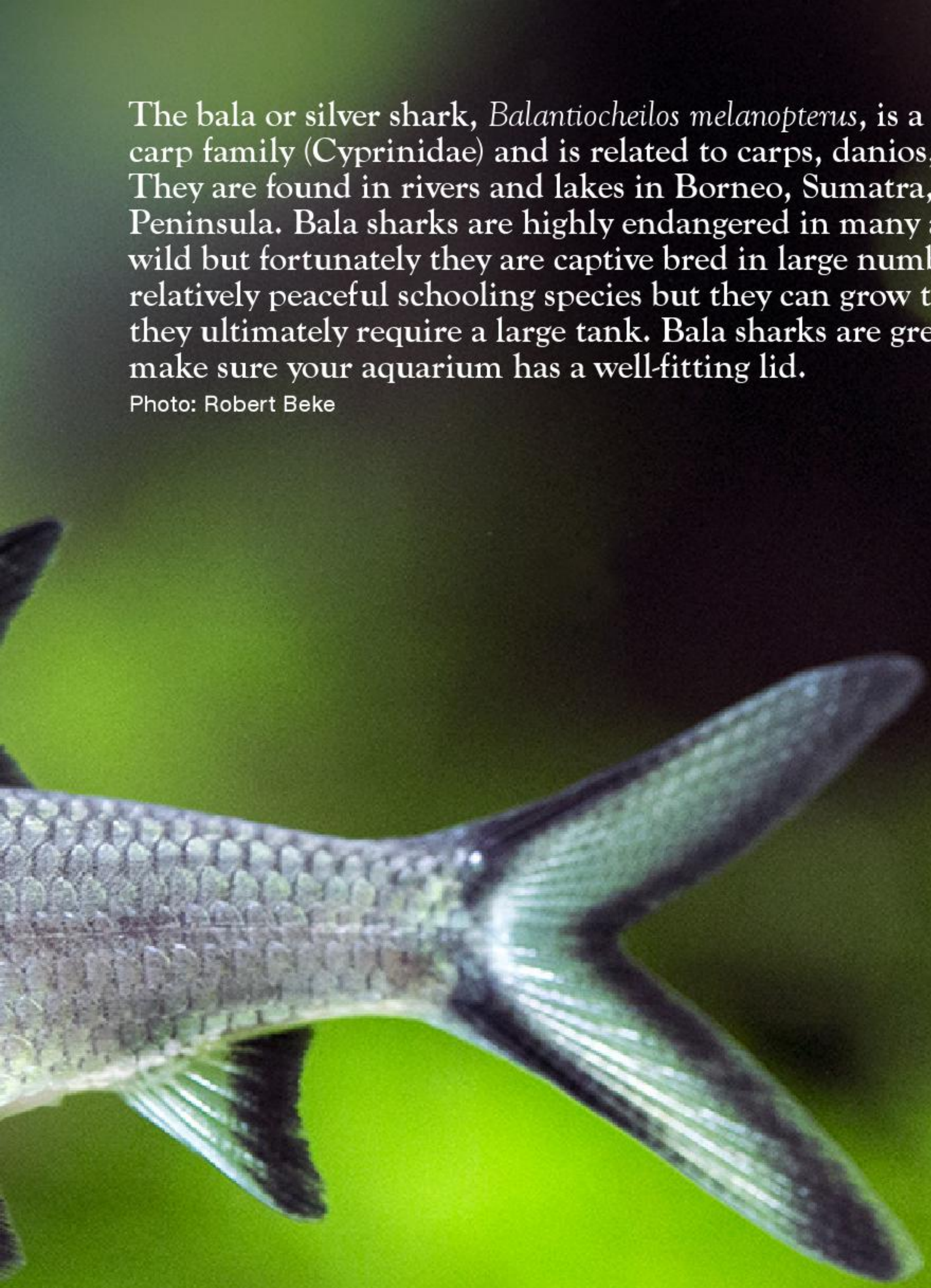
Striking in silver

The bala or silver shark, *Balantiocheilos melanopterus*, is a member of the carp family (Cyprinidae) and is related to carps, danios, and barbs. They are found in rivers and lakes in Borneo, Sumatra, and the Malay Peninsula. Bala sharks are highly endangered in many areas in the wild but fortunately they are captive bred in large numbers. They are a relatively peaceful schooling species but they can grow to 35 cm and so they ultimately require a large tank. Bala sharks are great jumpers so make sure your aquarium has a well-fitting lid.

Photo: Robert Beke



Is your Pond Child-Safe?

by Caryl Simpson

People reflected in the surface of the water in a fish pond behind the Birch Aquarium of Scripps Institution of Oceanography in San Diego, California. Photo: Johntex.

Now that the weather has warmed up and our children are playing outside, it's a good time to think about how child-safe your pond is. It is a sad fact that a number of children accidentally drown each year, some of them in fish ponds. What can you do to make your pond safer?

Local councils in NZ all have their own by-laws regarding ponds and containers. Many require all containers over a certain depth of water (often over 180mm) to be fenced. This is why the prefabricated ponds are as shallow as they are, to keep them under the legal depth requirements. This law also covers those of you who have old baths or mussel floats strategically placed in your garden, either as ponds, growing on containers, or live food hatcheries. Having said this, my own council only seems to be concerned with swimming pools. When I checked with them before building my own pond, I was told if people were not swimming in it then the bylaw did not apply.

This does not mean I do not want my pond to be safe! We live up a long drive and our whole section is surrounded by high, solid, fences. Now I have a grandson, I will be extra vigilant when he visits and he will never be left on his own in the front yard where the pond is situated.

Here are a few ideas to help make your pond safer. Bear in mind most of these will not make the pond childproof, just a bit harder for children to access, and young children must be taught pond safety and should be supervised at all times. Between 1 – 2 years, a child's mobility increases at a fast, but irregular rate, so they can escape

parents' supervision and get into difficulties very quickly. Although their mobility may increase, their stability and co-ordination is not as good and it isn't until they are 4 or 5 that children begin to understand the concept of danger and begin to listen to the warnings given to them. Even the shallowest of ponds can be lethal. From a child's perspective, a 500mm deep pond (roughly knee deep on an adult) is equivalent to an adult falling into 1800mm of water – the child being unable to climb out of the water. If possible, consider not building a pond until your youngest is at least 6 years old. If this is not an option, try the following;

Position the pond where it can be seen from the house so you can see if a child has got loose and is heading that way!

Enclose your pond with a childproof fence. If landscaping makes this difficult, cover the pond with a well fitted solid metal mesh (at least 6 – 8mm diameter wire) that is self supporting. Make sure a child cannot lift it, get under it, or get their leg or foot trapped in it. A grid size no more than 80mm x 80mm should ensure this. If the pond is large the mesh may require extra support underneath in the form of a pile, or perhaps create a small island in the middle. A Google search will show several types of pond safety grilles and mesh that are available for all shapes and sizes of ponds. These must be firmly secured and checked regularly for signs of deterioration.

Make sure your pond is shallow around the edges, although it is possible to drown in just a few centimetres of water if you have been knocked out. I would suggest straighter sides and shallow, flat, ledges rather than sloping sides since these get slippery with algae over time. These ledges also help local wildlife, like hedgehogs, escape.

Encircle the pond with a dense planting of marginal plants. This will help cut off easy access to the water but you do need to leave a gap to be able to access the pond for maintenance.

A pond with a raised edge will slow a child down. Don't build it too low though as it may be easier to trip over.

Does your pond have a bridge? If so, it needs to be strong enough to support several people and have a railing suitable to prevent falls by children and adults. Wooden bridges need to be regularly checked for rot or anything else that may be weakening the structure. If you have wires for lights or filters running under the bridge edge, make sure the wires are not exposed or corroded.

As you know, electricity and water do not mix. It is vital you use, and illegal if you don't, approved RCD's (residual current devices), plugs and wiring rated for outdoor use. Check these components regularly for rust and corrosion and replace when required. Make sure none of it is where it can be tripped over.If you do not have children yourself visiting, or neighbouring children, can easily get to your pond without your knowledge, maybe with devastating results. Water is so attractive to children of all ages and it only takes a moment of inattention.

So, step back and have a good look at your pond. How child-safe is it?

Bath tub fishpond
Photo: Princess Mérida

Anubias

plant profile by Adrienne Dodge

Anubias is a genus of aquatic and semi aquatic flowering plants from the Araceae family and are native to west and central Africa. This genre was named after the Egyptian god Anubis because of the often shady places where these plants grow; in rivers and streams and marshes. Their leaf structure takes many forms, all characterized by dark, thick, broad leaves. The species are easily identified by the appearance of the flowers, which are arranged on a stem.

In an aquarium setting anubias are best attached to rough rocks or bogwood using cotton or fine string, where eventually the roots will attach. They will also grow an extensive root system into your gravel, however if planted the growth will slow down a lot. Should you decide to plant, ensure you keep the rhizome above the gravel as it will grow much better when light hits the rhizome. *Anubias* prefer subdued lighting and if this plant is placed in higher light algae will develop on the edges of the leaves. Nutrient requirements are fairly low. The growth rate of all species in this genre is considered

Anubias barteri var. ***nana*** petite (left) and *Anubias barteri* var. ***nana*** showing new young emersed growth (right) Photo:

slow with one leaf being produced around every three weeks. A positive to this is that while they are slow, they are very hardy and not easy to kill off. The fastest way to encourage their growth is to raise their leaves above the water level. Most people increase their anubias by cutting up the rhizomes. The bigger the rhizome piece the more energy stored in it.

Anubias plants are commonly grown emmersed and it is important to note that the form the leaves take when grown this way can differ to a plant that is growing submersed. Propagation of this plant is normally done by cutting rhizomes and reattaching to wood or rocks - if doing this keep at least three leaves on each rhizome to ensure they have enough chlorophyll to allow them to photosynthesise. however seeds can also be grown. Because submersed growth is a lot slower than a plant growing emmersed it is not uncommon for those wanting to propagate anubias to cut the rhizomes and grow in an emmersed set up before returning the now growing plant back to the aquarium.

Anubias are great plants for the cichlid aquarium due to their tough leather-like leaves making them unpalatable for herbivorous fish, and because they are best tied to rocks or bogwood where the roots attach themselves. With no roots in the substrate, the plants are safe from the substrate digging cichlids. Coming in a variety of leaf shapes and sizes makes it possible to find the right plant for any sized cichlid set up. All anubias species are tolerant of wide ranging pH conditions, which also adds to their suitability in an African cichlid tank set up.

The most commonly available *Anubias* is *Anubias barteri* and this has several morphs, which are largely controlled by environmental conditions.

Anubias barteri* var. *barteri is a rosette plant that has lush green arrow shaped foliage and grows between 25- 45cm tall with leaves that may reach 20cm in width however leaf growth is slow with between 5 - 6 leaves being produced each year - unless placed in a high tech tank. Growing well from cuttings it is easily propagated under correct water conditions, with the round leaf propagating by side shoots on the rhizome, causing rhizome division. This species has a tendency to grow upwards like a tree rather than creep sideways along the tank. *A. barteri* var. *barteri* enjoys good water flow over its leaves. Increasing the tank phosphate level to 2ppm will induce flowering.

Anubias barteri* var. *nana is a small attractive rosette plant, composed of a creeping rhizome, which reaches up to 10cm in height and has beautiful dark green heart shaped leaves, which grow in low clumps. This plant normally has diagonal lines running from the centre vein to he perimeter of the leaf and the foliage is tall and variable, pointed to oval in appearance. The underside of the leaf is lighter in colour than the top and all veins are clearly visible. This plant often only produces one leaf per month.

Anubias barteri var *nana*
Photo: ijtan55

***Anubias barteri* var. *nana* petite** is a mutation of *A. barteri* var. *nana* and originated from a nursery in Singapore. Reaching between 3 - 5cm in height this plant has a price tag disproportionate to its size. While leaves remain smaller than the normal var. *nana* is it not

Anubias barteri var *nana* petite
Photo: Liam Winterton

uncommon for them to exceed 1cm in size. This plant can be discerned from *A. barteri* var. *nana* by its upward growing rhizome and its compact rosette like growth. In a tank *A. barteri* var. *nana* petite is best used as a feature plant in the mid tank or a foreground plant. It is not fussy about lighting and in a high tech tank will produce a leaf about every two weeks, however it is more difficult to grow than other *A. barteri* varieties. Nana Petite as it is commonly called can easily be confused with var. *nana*.

***Anubias barteri* var. *nana* gold** is a beautiful light green to gold leafed plant that reaches 5cm in height. The leaves indicate a true colour variant that is not dependent on tank conditions and will not disappear if the plant is propagated or as it ages. Leaves are thick and heart-shaped. Sharing its growth pattern with *A. bateri*


Anubias barteri var nana gold
Photo: Jennifer Hamlin

var. *nana* the leaves grow from a horizontal rhizome. Nana gold is a slower grower than any of the other anubias varieties putting out approximately one leaf per month. When placed in a tank the best effect is given if placed among dark colours like deep green.

***Anubias barteri* var. *nana* marbled/ variegated.** Reaching a height of between 5 - 12cm Nana marbled is another cultivar of the *A. bateri* var *nana*. It is characterised by its tiny, white specks on the usually green leaves. The marbled effect is due to something called transposon, a small piece that can jump in


Anubias barteri var *nana* marble
Photo: Jennifer Hamlin

and out of the DNA strands. If it jumps into the strands that make chlorophyll or pigment it prevents the gene from being expressed therefore the lack of colour in the leaves. This is unstable and can be lost.

Anubias barteri* var. *angustifolia has dark green, long, narrow and pointed leaves set on a creeping rhizome. Leaf blades are 5 - 9 times as long as wide. Reaching a height of 15cm Augustifolia is a slow growing anubias with only 6 - 10 new leaves per year. *A. barteri* var. *augustifolia* used to be known and sold as *A. barteri* var. afzelii but is now classified as a separate variety.

Anubias barteri* var. *caladiifolia or Heart-shaped *Anbuias* is one of the bigger *A. barteri*. Reaching 30cm its heart-shaped leaves can

be as long as 23cm and 5cm side and is best planted in the middle to back of a tank.

Anubias barteri* var. *glabra (previously known as var. *minima*) has slender compact leaves that add an excellent contrast to other anubias in a tank. A fairly slow grower this plant is capable of putting out one to two leaves per month.

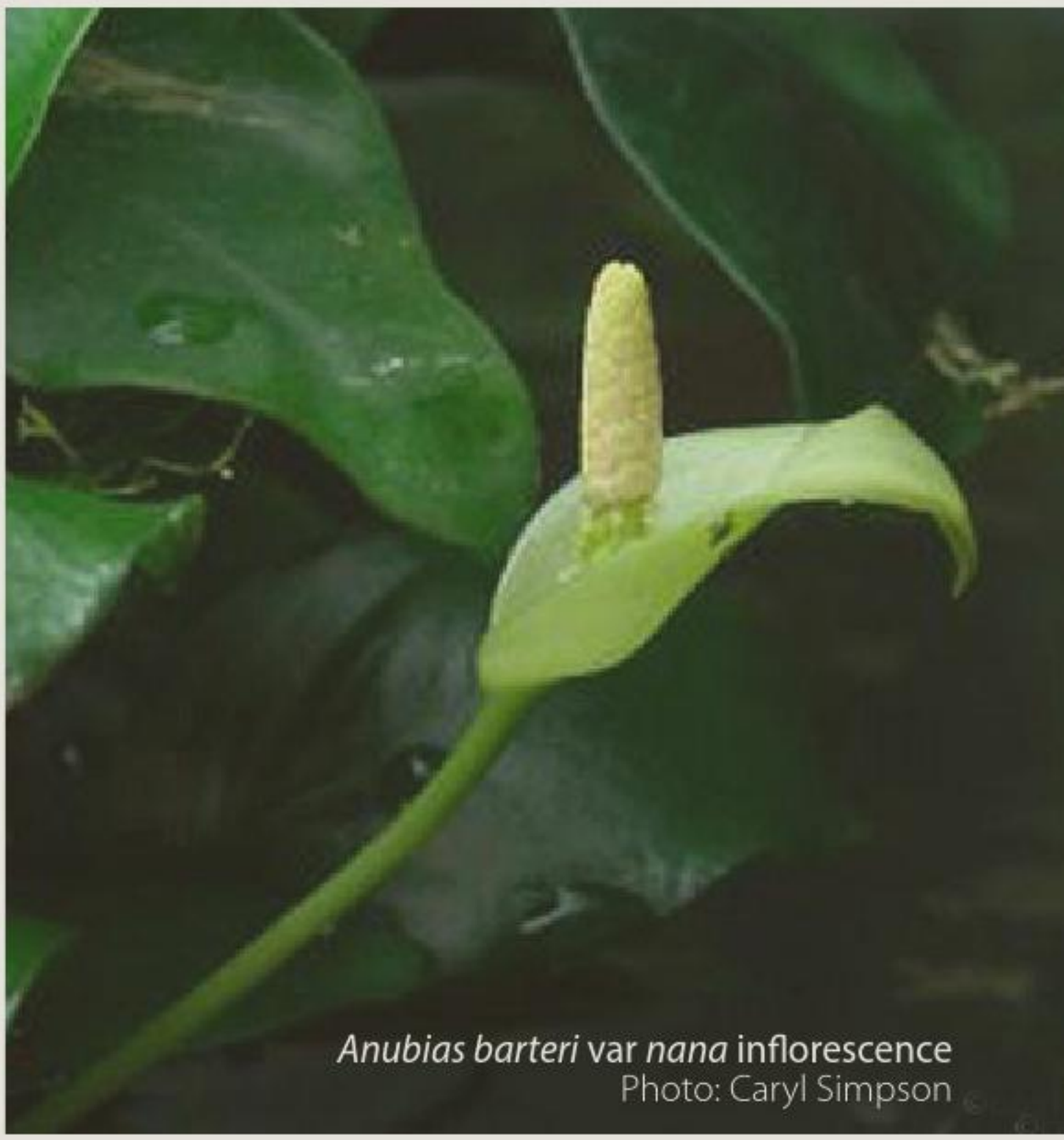
Anubias barteri var *glabra*
Photo: Liam Winterton

Anubias hastifolia has distinct arrowhead-shaped leaves and longer stalks than smaller members of the *Anubias* genus. One of the large anubias reaching 40cm this combination gives the plant a more distinct look when placed among other plants in the mid-ground area of the aquarium.

Anubias afzelii, the first species placed in the genus *Anubias*, is rapidly becoming a favourite in cichlid setups. A long reddish-brown or green-stemmed plant with lance shaped leaves 13 - 35cm long and 3 - 4cm wide this plant reaches 55cm in height and has a rhizome that is 4cm thick.

Anubias gigantea has long stems, which can grow up to 83cm and large arrow shaped bottle green leaves that can be up to 30cm in length and 14cm wide. These leaves are set on a creeping rhizome that is 1-3cm thick. This plant grows best when not fully submersed.

Anubias gigantea
Photo: Simon Check



Anubias barteri var *nana* inflorescence
Photo: Caryl Simpson

NZ Aquatic Plant Society https://www.facebook.com/groups/1553815981525038/

https://en.wikipedia.org/wiki/Anubias

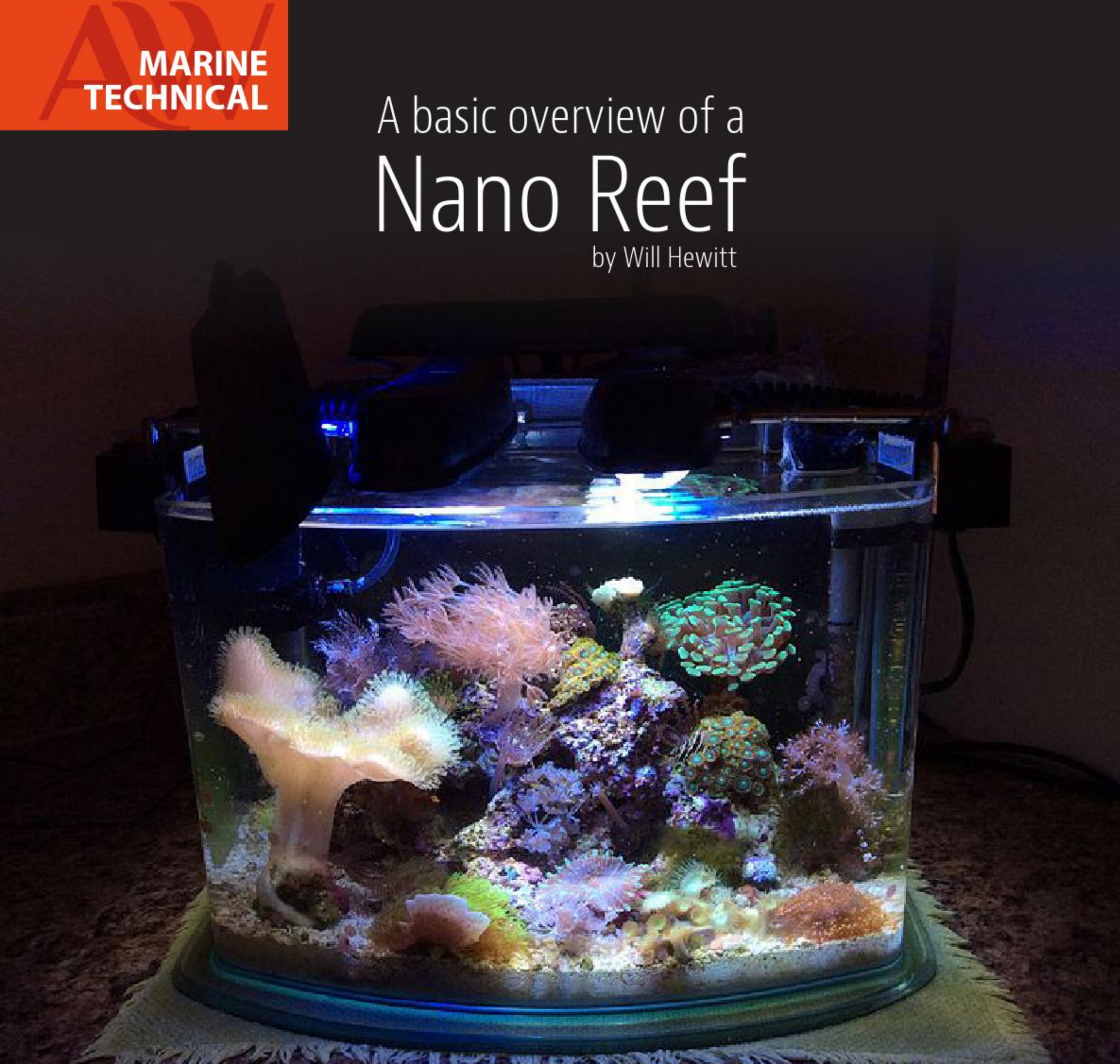
http://www.aquahobby.com/garden/e_anubias.php

http://toptropicals.com/html/toptropicals/articles/aqua/anubias_en.htm

www.fnzas.org.nz

A basic overview of a Nano Reef

by Will Hewitt



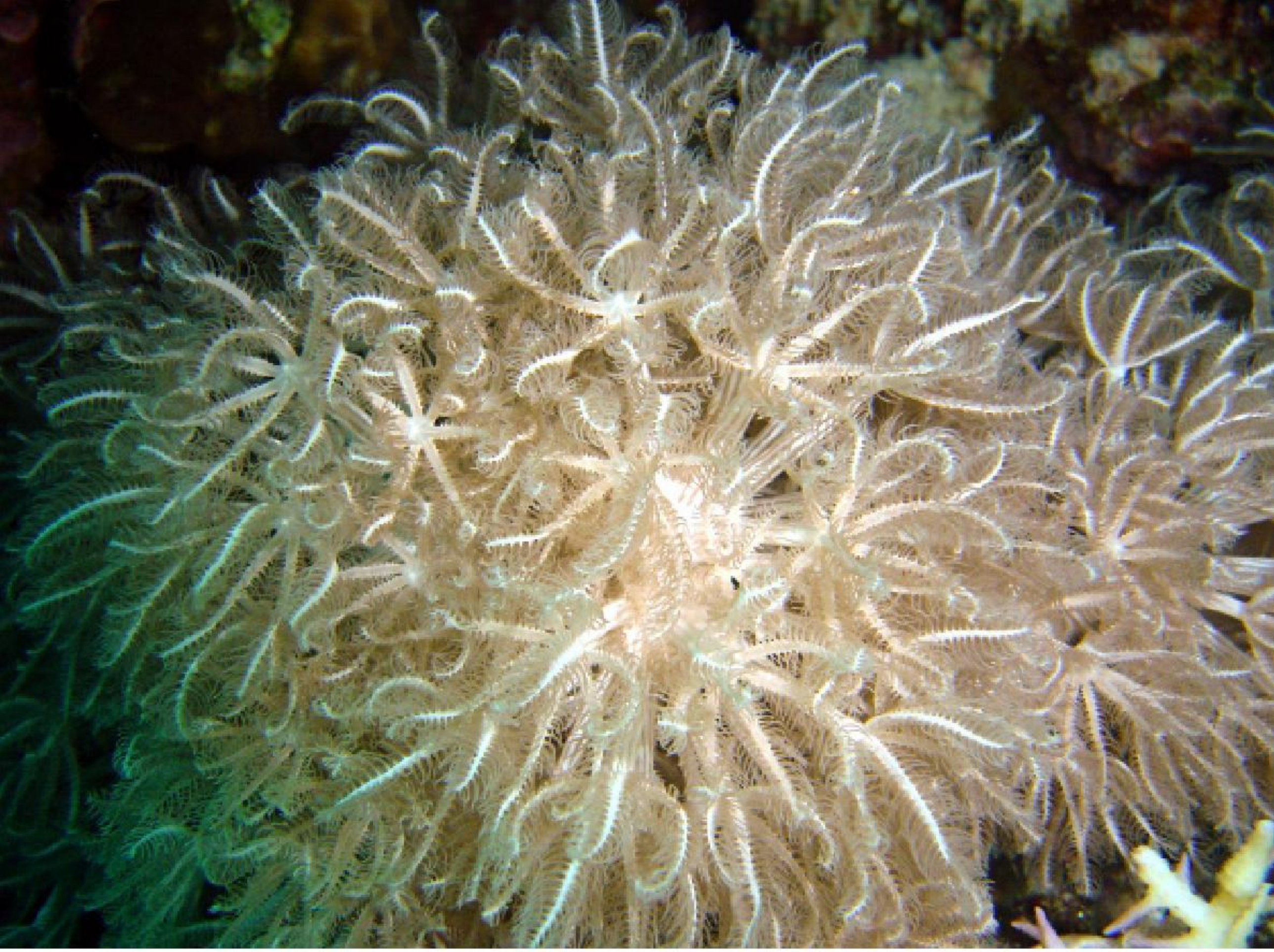
Martin Guerre's 14 litre nano reef tank
Photo: Martin Guerre

For many a 5,000L giant marine tank is simply unattainable, and the hefty price tag attached to smaller marine systems like a 250L setup is hard to justify. This makes smaller "nano" reef tanks more attractive. Generally a reef tank is considered a nano reef if it is 75L or less. Some people also consider tanks 20L or smaller "pico" reefs. This article is a basic overview on the keeping of nano reefs and does not go into some of the finer aspects such as clean-up crews or keeping of finer corals.

A large number of people in the hobby heavily discourage people starting with a nano reef. They state how difficult they are to keep and that it is nearly impossible to have a successful nano tank without huge amounts of experience. In my experience, and the experience of a multitude of others a tank which is 50L plus is attainable for many beginners. Many people have had success with smaller tanks, but I would recommend starting with a 50L tank because at this size you do not have too many restrictions on stocking. For many people the ultimate goal is a pair of clownfish, hosting in an anemone and this is pretty much the smallest tank you can do this with.

The biggest concern when keeping a small marine tank is stable water parameters. The only real answer for this is patience. Although you may be tempted to add corals or fish before the cycle has properly finished, this is the most critical stage and cannot be rushed. If you are able to resist this temptation then you have already jumped one of your biggest hurdles. The main parameters you need to watch during cycling is Ammonia, Nitrite, pH (not quite as difficult to maintain) and Nitrate. Once these have all indicated you are cycled you are free to add some basic corals. Before you start

Ocellaris Clownfish
Photo: Andy von der Wurm



Anthelia glauca
Photo: Fernando Herranz Martin

getting into small and large polyped stoney corals (SPS and LPS) you'll need to start watching your Calcium, Magnesium and kH. Once you've ascertained that your tank is running smoothly you'll be able to add one or two SMALL fish, such as clownfish, blennies etc. For a tank of ~50L you wouldn't want to add any more than three fish total. A perfect combo would be a pair of Clownfish and a firefish.

Long term maintenance of nano reefs is simple enough as long as you stick to a regular schedule. You need to top off daily with fresh RODI water. Weekly you need to do a small water change with (usually preheated) saltwater. Depending on your fish you need to feed daily or every second day.

Depending on what corals you keep and what state your tank is in you need to dose with additives (only if you are keeping LPS or SPS) and you need to test weekly, if not more often. So the short hand version of it all is this, if you have the cash to setup a bigger reef tank, then definitely go for that. If you are on a tight budget, or like me, a student, then a nano reef can be the perfect option.

Will Hewitt

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MARINE

Breeding Seahorses

by Mark Paterson

Hippocampus abdominalis
Photo: DJSurfs

I started keeping our native seahorse, *Hippocampus abdominalis*, in 1984. We were out fishing and I pulled in an old fan belt with a pair of seahorses attached. They went into a bucket of water and I went straight home to set up a fish tank. Not much information was available in those days, so I set a tank up with undergravel filter plates and uplifts and covered it with 8cm of crushed shell, then did 2 x weekly water changes. About 3 weeks later the male produced about 200 fry. Panic stations! I was rearing lots of tropical fish at the time so had brine shrimp on tap. I kept about 30 fry and put the rest back where I had caught the pair from, this would be considered a no-no nowadays.

The current lot of fry I have been rearing have been raised differently than I did back in the early days. A lot more science is involved but the basics are still the same, clean water and live food.

After a 23 day gestation period the male gave birth to approx 120 fry between 12 - 15mm

long. Approximately 30 lived after going through the sump and the sump pump. The fry were transferred to a 40litre rearing tank with light aeration and filtered seawater. The Natural Salt Water (NSW) is filtered by running the water through an upended 3 litre juice bottle and paper coffee filters placed in the mouth of the bottle.

The rearing tank is a 1.8m x .55 x .55 tank divided with glass panes into 3 separate compartments.

The fry will remain pelagic (surface swimming) for first 4-6 weeks, so have floating plastic plants for them to hang onto. If they hang onto each other this can cause stress and slow their growth rate. An air stone is placed in the tank for light movement of water. Any

stronger and they tend to cling to each other more.I started daily feeding ¼ litre of rotifers and *Tetraselmis* (phytoplankton). This phyto is free swimming, or motile, and the predatory fry are activated to feed by movement. 20% water changes are done daily, after siphoning the floor of the holding tank.

At 3 days old the fry started feeding newly hatched brine shrimp nauplii, and water changes were increased to 30% daily, but still feeding the phyto enriched rotifers as well. In the first week we lost around 30 fry which may have been the ones that survived going through the sump or sump pump.

At the end of the first week we started feeding 24 hour old phyto enriched artemia. In the

second week the fry were fed 48 hour old artemia that were enriched with *Tetraselmis* and *Nanochropsis* phyto. The *Nanochropsis* has a different nutritional value that the *Tetraselmis*.

The second week also saw a few fry dying. After examination under a microscope it was found they were suffering from a fungal infection. This may have started from the older artemia clasping on the fry and continual rubbing by the fry aggravating their skin. Treatment has been 1 drop of methylene blue per litre. This hasn't affected the lives of the brine shrimp naupli.

At 3 weeks the fry are up to 50mm in length and starting to show marking and colouration. They are now separated to 30 per tank and eating week old enriched brine shrimp.

Originally published in Aquarium World November 2010

Mark Paterson

Zebrasoma desjardinii
Photo: Hectonichus

Sailfin Tangs

Zebrasoma desjardini and Z. velifer

Classification Order: Perciformes

Sailfin tangs are attractive and popular but they can grow to 40 cm and as adults they require a large aquarium. They are named after their very large dorsal and anal fins which they can raise and dramatically alter their appearance.

The name sailfin tang is used for two very similar looking species: Desjardin's or the Red Sea sailfin tang *Zebrasoma desjardinii* and the Pacific Sailfin Tang *Zebrasoma velifer.* As juveniles both sailfin species look virtually identical but as they mature Desjardinii sailfins become lighter in colour and develop more spots. Desjardinii sailfins have more prominent white spots at the front of the body and more dots at the base of the body.

Distribution: *Z. desjardinii* is found in the Indian Ocean from the southern Red Sea to South Africa and east through to India, Java, and the Cocos-Keeling Islands. It has not been found in the waters around Christmas Island.

Z. velifer is found is widespread in the Pacific Ocean from southern Japan to Indonesia and east to the Great Barrier Reef, New Caledonia, the Tuamoto Islands and Hawaii. It is also found in the western Indian Ocean off Mozambique.

Habitat: Sailfin tangs are found in shallow reefs and lagoons down to about 30 metres. The juveniles are solitary and are found in shallow water where they often hide among rocks and coral. Adults are often found in pairs and sometimes in small schools.

Maximum Length: Both species are reported to grow to 40 cm.

Life Span: at least 5 – 7 years

Aquarium Size: Due to their large adult size an aquarium of at least 400 litres is recommended but juveniles can be kept in a 275 litre aquarium.

Maintenance: Sailfin tangs are regarded as moderately difficult to keep and require good water flow, high dissolved oxygen levels and very stable water conditions. To flourish they need to be put in an established tank (at least 6 months old). Sailfin tangs need plenty of open space for swimming and places to hide among rocks and corals.

Sailfin tangs are fairly resistant to skin parasites but it is good idea to reduce the risk by adding a cleaner shrimp or neon goby. As with most marine fish, sailfin tangs can be susceptible to ich so it is worth quarantining a new sailfin before introducing it to your tank. Be careful when handling your sailfin. As with other surgeon fish, they have a blade-like spine at the base of the tail that can inflict painful wounds, which are prone to becoming infected.

Water Conditions

Temperature: 23 – 28°C

pH: 8.1 – 8.4

Specific Gravity: 1.020 – 1.025

dKH: 8 – 12

Diet: In the wild both sailfin tang species feed mainly on marine macroalgae, and they will graze on live rock and natural algae in your aquarium. In the aquarium feed them on a varied but largely vegetarian diet. Dried seaweed (available from Asian supply shops), blanched leafy vegetables, and boiled carrots are good options, along with high quality vitamin enriched flake food or pellets, and the occasional meaty treat, such as brine shrimps or mysid shrimps. Sailfin tangs should be fed small quantities several times a day. It is also worth providing them with something to snack on, such as nori or blanched lettuce which can be held in place with a veggie clip or clothes peg.If your sailfin stops eating, test the water and carry out a water change, and try tempt it with fresh algae.

Behaviour and Compatibility: Sailfin tangs are semi aggressive particularly towards their own kind or with other tangs. Unless your tank is very large it is not recommended keeping them with other tangs. To reduce the chances of aggression, add your sailfin tang to the tank last.

Desjardinii sailfin tangs are considered to be reef safe but Pacific sailfin tangs are not considered to be generally reef safe as they may pick at or eat some invertebrates (such as clam mantles or soft tissued LPS corals (large polyp stony corals)).

Reproduction: Both sailfins are very hard to sex and they are not thought to have been bred in captivity.

Darren Stevens

http://www.aquaticcommunity.com
http://www.fishbase.org
http://www.fishlore.com

Zebrasoma desjardinii
Photo: H Dell

Zebrasoma velifer
Photo: Shizhao

HOW TO

MAKE A CATFISH FEEDER

by Chris Downs

I have quite a few catfish in my collection and I feed a lot of zucchini to them. The way I used to feed was by sticking a fork or a lump of lead through the zucchini to sink it to the bottom. I got sick and tired of retrieving all the bits of lead and forks and spoons that I used as some of the tanks are quite deep. I put my thinking cap on and thought there's got to be a better way of doing it, meaning less work for me. I came up with my retrievable cat fish feeder. All you require is:

- Stainless steel knife
- Length of nylon cord
- A float

I picked up half a dozen stainless steel knives from a garage sale for $2 but you can get them from the Salvation Army too (don't

go acquiring the best cutlery as you won't be very popular!!).

Start by drilling a 4mm hole in the end of the knife handle and de-bur on both sides to take off the sharp edges. I used a drill press in which I could clamp the knife so that it would not move. I de-burred the hole by using an 8mm drill bit. I then made a loop in the end of the nylon cord (I used nylon cord because it won't rot and it was out of an old venetian blind I had lying around) and poked the loop through and pulled it to the other side. On the other

end I attached an old float that had come off a fishing net I found while beach combing in Otaki but you can use anything else that will float e.g. cork or a small plastic sealed bottle. Depending on the depth of your tank, allow enough cord so that the float will be at the surface or as I do, long enough so that the float hangs over the edge of the tank.

The next step is to skewer the zucchini from one end and drop it in the tank. The Plecos will be on to it in no time and in the morning it's all gone.

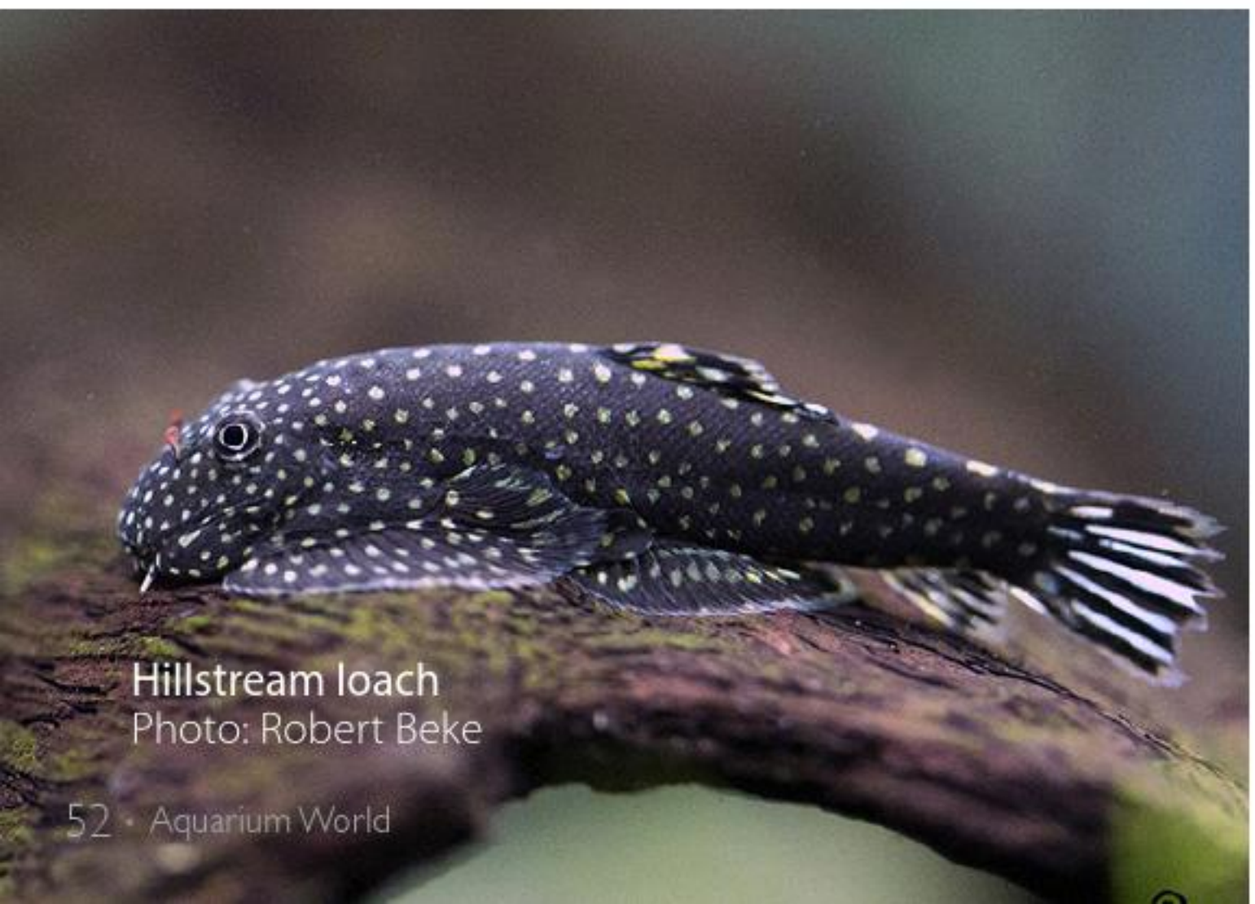
The tank is 2.1m x 780mm x 780mm. In this tank there are 11 *Cochliodon/Hypostomus* sp. L137 also known as Rusty Plecs, Velvet Plecs or Bruno Plecs.

Chris Downs

INTERESTING IMPORTS

Arowana
Photo: Henward

Not surprisingly, we often stock our tanks with small, attractive, peaceful, and more typical looking fish. However, if you are after something a little different then there are several species on the importers' lists that are worth considering. Some of these fish are peaceful while others have an attitude so careful consideration needs to be given to prospective tank mates, and some species grow quite large so they ultimately require a large tank. As with any new species it pays to do your research before buying.



Hillstream loach
Photo: Robert Beke

If you are inspired to get a surface feeding freshwater hatchetfish, then silver and marble hatchetfish are available, as is the bizarre surface feeding pantodon butterfly fish.

Loaches come in a variety of shapes and sizes. Why not try an eel-like banded or giant black kuhli loach, a zodiac loach, or a horse-faced loach? Hillstream loaches are bizarre, flattened, fast water specialists that like plenty of current, and clean oxygen rich water. They are related to true loaches and go under a number of common names but Borneo suckers, butterfly suckers, and Myers hillstream loaches are available.

On the catfish front, why not try a moth catfish *Hara hara*, banjo catfish, glass catfish, striped glass catfish *Kryptopterus microcephalus*, red whiptail, or a royal whiptail?

If you have a large tank with plenty of cover (bogwood and plants), slender hemiodus *Hemiodus gracilis* is a nice peaceful schooling species that is rarely imported. Striped headstanders and the bizarre looking elephant-nose fish are also good

Barred Spiny Eel
Photo: Haplochromis via gbif.org

Fire Eel
Photo: Llandor

Kuhli loach
Photo: Robert Beke

options but they can be quite stroppy, and striped headstanders can sometimes nip fins and scales.

If you have a large tank, and are after something different with plenty of personality, then why not try a spiny eel? There are a few different models on the importers' lists. Fire eels and tyre-track eels are beautiful but very territorial (they don't like other fire eels) and grow to over 60 cm in aquaria. Barred spiny eels and peacock spiny eels are more sociable (they generally don't mind other fire eels) and they don't grow as large. Black ghost knifefish and clown knifefish are spectacular fish for a large display tank, however both species can grow to over 40 cm and, as with the spiny eels, they may have a fondness for small fish when large.

And finally, for owners of monster tanks, silver arowanas are on the importers' lists, and if you really want to splash out, redtail gold arowanas and saphire blue highback golden arowanas are also available.

The editorial team

Striped Headstander
Photo: Robert Beke

Glass catfish
Photo: Robert Beke

FNZAS

2015 Conference Report

This year's FNZAS conference was hosted by the KapiMana Aquarium Club (KMAC). Thanks to Dominique, Vinnie and Amy, Darren, Maxine, Geoff, and Sarah for helping organise and run an enjoyable and successful conference and to those club members who offered up their beds to attendees.

Conference kicked off on Friday night with an Executive meeting at Dominique's house, followed by the AGM the next morning. Both meetings were productive and well attended, with a number of members joining via Skype.

After the AGM, we all reconvened to the Tawa Community Centre for a general catch up and some great fish related talks. Highlights of the day included:

- Jack Fenaughty gave a very interesting presentation on his experiences in the Ross Sea, Antarctica. Jack has been going to the Ross Sea for over 10 years aboard a commercial longline vessel fishing for toothfish.
- Nik Hannam is team leader of the fish department at Kelly Tarlton's Sea Life Aquarium and is responsible for the health and wellbeing

AGM at Domique's house

Socialising at the Tawa Community Centre

Nik Hannam from Kelly Tarlton's Sea Life Aquarium

of their marine species. Nik gave an engaging and informative talk sharing his experiences working at Kelly Tarltonís, including capturing spiny sea dragons in Milford Sound and elephant fish in Wellington Harbour.

- Greg van der Poel of fish2water gave an impressive presentation on Hamburg Matten Filters and LED lighting, both areas which are relatively new to fishkeeping in New Zealand.
- Geoff Haglund gave an entertaining talk about his journey towards using and importing Repashy Superfoods, a range of gel-based speciality foods for fish reptiles, and amphibians.

The talks were followed by takeaways at the venue and a quiz night hosted by Geoff and Darren. Congratulations to VWDC, the Hawinkels family, and team Xtreme. Geoff very generously supplied most of the prizes.

Greg van der Poel from fish2water

The next morning we met at Te Papa to view the thought provoking Gallipoli: The scale of our War followed by a visit to the Island Bay Marine Education Centre's Bait House Aquarium. The Bait House, was a good treat and time to relax and even touch some of the marine life that is living in and around the Wellington Area. The afternoon was left free for attendees to visit Wellington and that evening we gathered at the 888 Sports Bar in Tawa for a meal and final catch up.

Thanks to the guest speakers for providing a number of very interesting talks, in some cases at very short notice, and the club representatives who came from far and wide to be a part of the conference. It was a very enjoyable weekend devoted to reigniting old friendships and creating new ones. It was great to see old stalwarts from conferences past, attending, and mixing with the new guard of today.

Darren Stevens

Photos by Domique Harwinkels

Some of the quiz subjects

Bait House Aquarium at the
Island Bay Marine Education Centre

David Cooper awarded the Assisi Medal

for work in the area of ornamental fish and in freshwater fish conservation and in particular conservation of New Zealand native freshwater fish

On October 4 David Cooper, aquatics tutor at Mahurangi Technical Institute and long-time NZ fish keeper (and member of several FNZAS affiliated clubs in the past) was awarded an Assisi Medal by the New Zealand Companion Animal Council.

The NZCAC is an umbrella organisation for animal welfare groups in NZ and it awards Assisi Medals yearly to recognise significant contributions to animal welfare.

David was awarded the medal for work in the area of ornamental fish and in freshwater fish conservation and in particular conservation of New Zealand native freshwater fish. This is the first time this award has ever been made to a "fish guy" and the first ever to mention the word "conservation". This is particularly pleasing to David given his oft repeated mantra that "conservation is simply animal welfare on a grand scale".

Above: David Cooper at the award ceremony
Right: with Dr Arnja Dale, NZCAC Chair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Located in the Hamilton Suburb of Fairfield, Pure Aquatics (formerly known as Goldfish Bowl Aquariums) is a retail shop that exclusively sells aquarium supplies and livestock. The company Goldfish Bowl Aquariums had been in business for over 30 years in the same building. When the neighboring tenants moved out, the owner Cliff Frankis took the opportunity to expand the business and rebrand at the same time with a new name and fresh look.

When you drive past the shop you cannot miss the well-designed standout shop frontage and upon entering you are met by owner Cliff proud of his large, spacious and neat shop. I was quite impressed by his shop counter with the front having bubbles coming up. Definitely a lot of thought went into the shop branding. Also at the shop entrance you find a display tank with a large arowana well over a foot long.

Heading over to the tropical freshwater tanks you will find a huge variety of tropical fish and all the

Arowana display

tanks were well stocked. Angels, swordtail, various corydoras, and tetras to name a few. Also some interesting fish including cuckoo Synodontis, *Geophagus surinamensis* and black ghost knife fish. Cliff can also order in other vaieties on request. I was tempted to buy some Pakistani loaches as I needed to control my snail population in my community tank at home. Prices were reasonable and all the tanks were clear, clean, free of algae, and well presented. There was also a sale on with 20% off all fish. Information labels on the tanks were all up to date.

The shop also had a couple of marine tanks both with corals, anemones and some marine fish including clown fish.

There were no African cichlids but talking to Cliff he hopes in the future to expand his display tanks and have them in store. Definitely need them for sale in the Waikato as I know of many fish keepers keeping Africans.

Pure Aquatics also boasts a large variety of food in including Aqua One, JBL and Hikari. Aqua One products are the main brand available for

filters, pumps, aquariums, plant requirements, medications and other accessories. There is also a freezer with frozen food for sale.

For the outdoor pond enthusiasts, Pure Aquatics has a good variety of pond accessories including filters and food. At the back left of the stores there are 12 coldwater display tanks well stocked with gold fish including lion heads, globe eyes, fantails, comets, and shubunkins. If you want to set up a pond this is the place to go.

Pure Aquatics also offer financial FNZAS members who produce their membership card a 10% discount.

In summary, for the Waikato aquarist Pure Aquatics is a shop is visit with a good variety and owner Cliff is always happy to assist you.

Trevor Collins

Interesting species

Pakistani loach $19.30

Geophagus surinamensis $28.90

Kribensis $14.90

Opaline gourami $14.30

Cuckoo Synodontis $87.30

Penguin tetra $5.00

Golden harlequin rasbora $5.30

Peppered corydoras $10.00

Albino red tiger oscar $29.90

Black phantom tetra $7.50

Silver shark $17.20

Shubunkin goldfish $17.80

Globe eye goldfish $12.10

Marine display tank

Rank	
Tropical fish	★ ★ ★ ★ ★
Catfish	★
Cichlids	★
Oddballs	★ ★
Coldwater fish	★ ★ ★ ★ ★
Marine fish	★
Marine inverts	N/A
Marine corals	★
Display tanks	★ ★ ★ ★
Pond plants	N/A
Tropical plants	★ ★ ★ ★
Dry goods	★ ★ ★ ★
Pond supplies	★ ★ ★

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The Federation of New Zealand Aquatic Societies is a group of aquarium societies/clubs that are dedicated to the improvement of the aquarium and...

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The Federation of New Zealand Aquatic Societies is a group of aquarists dedicated to supporting and promoting fishkeeping as a hobby, both in our local communities and globally with regard to conservation of aquatic species and their environments. The organisation is dedicated to the improvement of the aquarium and fishkeeping hobby and it has a 60 year history of representing aquarium societies in New Zealand.
There are currently 12 affiliated aquarium clubs around New Zealand:

AUCKLAND FISHKEEPERS ASSOCIATION
Contact: Liam Winterton aucklandfishkeepers@hotmail.com

BAY FISH & REPTILE CLUB
Contact: Jim Sytema sytema@vodafone.co.nz

CHRISTCHURCH TOTALLY TANKED
Contact: James Butler muh47_6@hotmail.com

DUNEDIN AQUARIUM AND POND SOCIETY
CONTACT: William Gibson william.gibson@live.co.uk

HAWKE'S BAY AQUARIUM SOCIETY INCORPORATED
Contact: Chris Drake cdrake@paradise.net.nz

KAPI-MANA AQUARIUM CLUB
Contact: Dominique Hawinkels kmacnz@yahoo.co.nz

MARLBOROUGH AQUARIUM CLUB
Contact: Deidre Wells deeken@xtra.co.nz

SOUTH AUCKLAND AQUARIUM & WATERGARDEN SOCIETY
Contact: Paul Munckhof monkie@orcon.net.nz

TARANAKI AQUARIUM & POND SOCIETY - IN RECESS
Contact: Mitch Minchington & Debbie McKenzie, 21 Maire St. Inglewood 4330

TASMAN AQUARIUM CLUB
Contact: Glen George hellcazy@hotmail.com

UPPER HUTT AQUARIUM SOCIETY
Contact: Amy Curtis ayglitch@gmail.com

WAIKATO AQUARIUM SOCIETY
Contact: Trevor Collins trevorjoshcollins@gmail.com

FNZAS DISCOUNT

The following businesses offer discounts to our members, remember to ask politely, this is a privilege not a right. You must show your current FNZAS Membersip card at the time of purchase.

AUCKLAND

Hollywood Fish Farm - **10% discount on selected non-sale items**

36 Frost Rd. Mt. Roskill Ph 09 620 5249
10/2 Tawa Drive, Albany Ph 09 415 4157
www.hollywoodfishfarm.co.nz

The Bird Barn - **10% discount on fish and accessories**

158 Lincoln Rd. Henderson. Ph 09 838 8748.

New Pupuke Aquarium Centre - **10% Discount**

1 Lydia Ave, Birkenhead Ph 09 480 6846

CHRISTCHURCH

Organism - **10% discount on all dry goods.**

Cnr Ilam & Clyde Rd, Ilam, Christchurch. Ph 03 351 3001 Fax 03 351 4001

GISBOURNE

Eastland Aquariums - **10% discount as well as great in-store specials.**

Grey St, Gisborne Ph/Fax 06 868 6760

HAMILTON

Pet World - **10% discount on fish products**

Cnr Anglesea & Liverpool Sts. Hamilton. Ph 07 834 3426 Fax 07 834 3424

Goldfish Bowl Aquariums - **10% discount on everything.**

966 Heaphy Tce. Hamilton. Ph: 07 855 2176

World of Water

7 Kaimiro St, Te Rapa, Hamilton Ph 07 849 1117 email: info@worldofwater.co.nz

HAWERA

Wholesale & Industrial Supplies - **trade price, equating between 15 - 40% off retail prices**

49 Glover Rd, Hawera Ph 06 278 7525

MT MAUNGANUI

Animal Antics - **10% discount**

3 Owens Pl. Bayfair, Mt Maunganui. Ph 07 928 9663 www.animalantics.co.nz

NAPIER

Carevets N Pets - **10% discount on fish & fish related products**

120 Taradale Rd, Onekawa, Napier Phone 06 842 2033

NELSON

Pet Essentials - **5% Discount**

11 Croucher St. Richmond, Nelson Ph 03 544 4379

TAURANGA

KiwiPetz - **10% discount**

Shop T30, Fraser Cove Shopping Centre, Tauranga Ph 07 578 8623
email kiwipetz@xtra.co.nz

Carine Garden Centre & Water World - **10% discount on fish, fish related products & aquatic plants**

Cnr SH2 & Te Karaka Drive, Te Puna Ph. 07 552 4949 www.carine.co.nz

WELLINGTON (and Greater Wellington area):

Animalz Petone - **15% off all fish and fish related products**

376 Jackson St. Petone. Ph 04 380 9827 www.animalz.co.nz

CareVets@Johnsonville Pet Centre - **10% discount**

31 Johnsonville Rd. Johnsonville Ph 04 478 3709

CareVets 'N' Pets - **10% discount**

Porirua Mega Centre, 2 - 10 Semple St. Porirua Ph 04 237 9600

Paws and Claws - **10% discount on all fish & fish keeping items**

Logan Plaza, 207 Main St. Upper Hutt. (opp. McDonalds) Ph 04 528 5548

The Pet Centre - **10% discount on all fish and aquatic products**

Lower Hutt, Harvey Norman Centre, 28 Rutherford St. Lower Hutt. Ph 04 569 8861
Upper Hutt, 82 Queen St, Upper Hutt Ph 04 974 5474
Porirua, 3/16 Parumoana St. Porirua Ph 04 237 5270

The Pet House - **10% discount**

Coastlands Mall, Paraparaumu Ph 04 296 1131

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