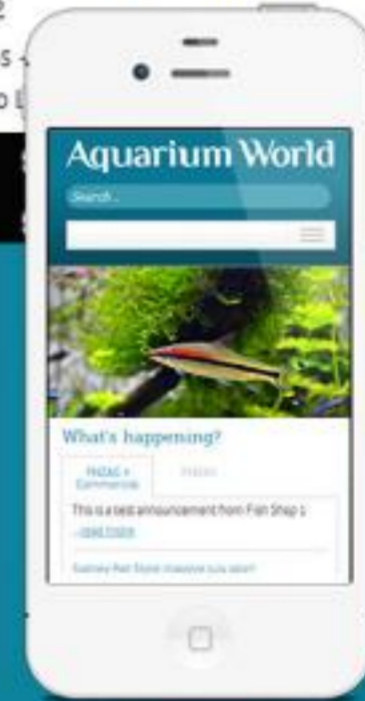


Aquarium World

magazine

Volume 61 Issue 1 2015





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Aquarium World

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Hello all,

Welcome to a new issue of Aquarium World, and thank you for your patience. Unfortunately due to heavy demands on me, and other editorial staff, this edition is long overdue. Regrettably, in order to do the magazine justice we have decided to reduce the frequency of the Aquarium World to two issues per year. However we will still aim to provide an interesting and informative read.

In our part of the world winter is just around the corner, days are getting shorter and colder, and power bills are increasing. It's a good time to think about insulating your tank or adding insulation to your fish room. Aquarium heaters are also working harder during the colder months and sometimes they can fail with disastrous results - as I found out last winter. To try and reduce the risk of heater failure this winter, I am taking a leaf out of the reef keeper's book and fitting temperature control units to my tanks. This also has the added benefit of allowing me to fine tune each tank for breeding.

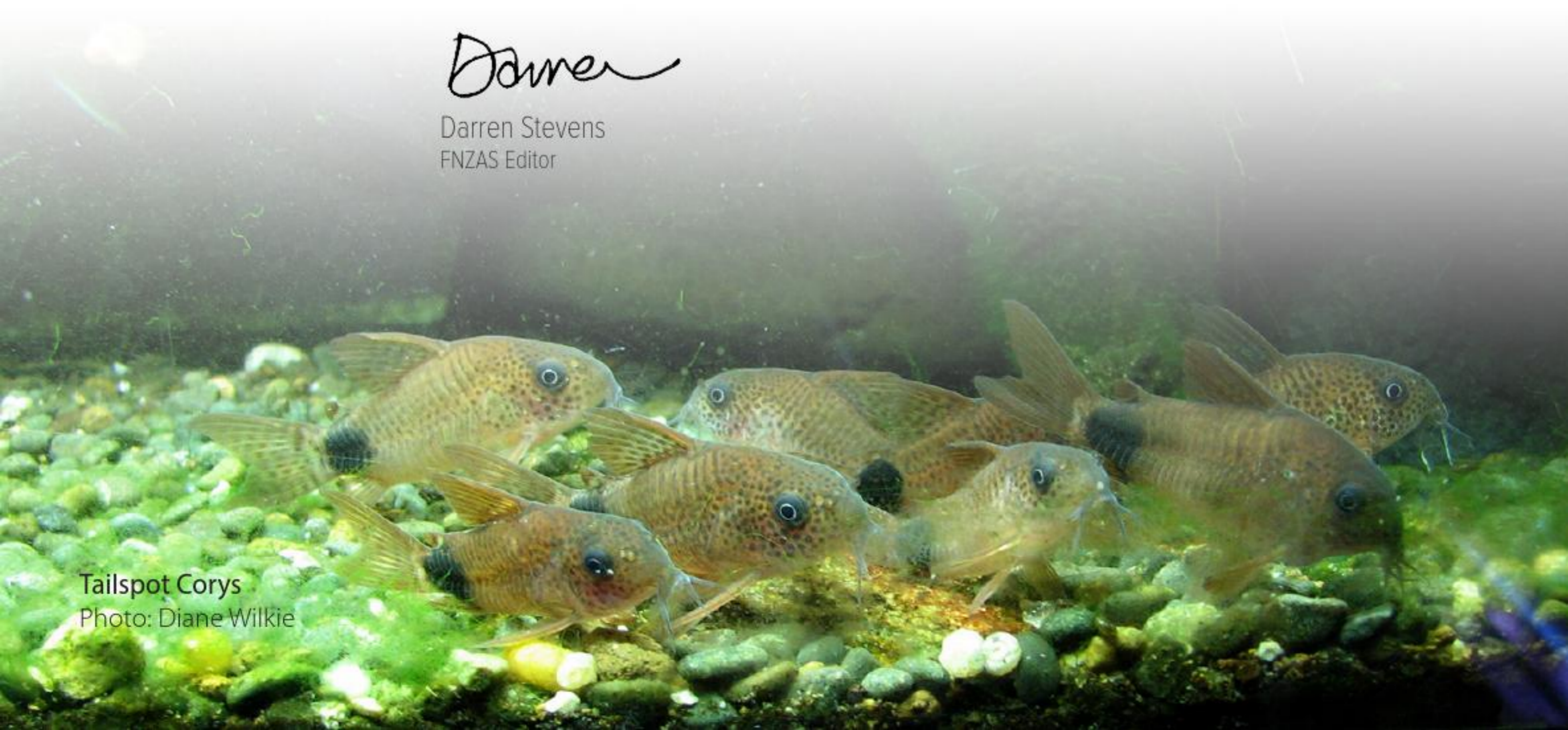
On another note, I have often wondered how good my community tank would look mounted into the lounge wall. I am unlikely to ever gain consent for such a move but I do like the concept. In this issue we feature one such inspiring installation from a fish keeping novice.

Moving tanks and fish is a stressful exercise and not one that I enjoy. In the first of a two part story we feature an impressive tale from one of our regular contributors, Geoff Haglund. Geoff is a passionate pleco keeper and recently he decided to move from the big smoke to a small country town, a distance of over 500km. Not surprisingly, moving 26 tanks and their occupants 500km presented its fair share of challenges and Geoff's experiences make for a great read.

Darren

Darren Stevens
FNZAS Editor

Tailspot Corys
Photo: Diane Wilkie



Geoff Haglund



Geoff began keeping tropical fish in 2006. Since then his obsession with plecos has grown and he now has 52 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

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. After leaving school he 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 and knowledge with fellow hobbyists and is currently running the marine systems at his local university.

Darren Stevens



Darren is a marine biologist who has worked for NIWA for about 20 years. He regularly participates in sea trips for research surveys having been around much of New Zealand as well as Oman, and the Ross Sea, Antarctica. In his spare time he enjoys fishing, and is a particularly passionate pleco keeper. Darren has been an active participant in his local clubs and he is also vice president of the FNZAS.

Robert Beke



Robert was born in Serbia and moved to New Zealand where he worked in the pet industry. Although his background is in chemistry he has been working as a professional fishkeeper since 1996. He currently has one tropical fish tank at home. His interests include ichthyology and particularly fish macro photography.

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Corydoras anaeus
Photo: Liam Winterton



Conydoras

by Darren Stevens



Corydoras trilineatus
Photo: Robert Beke

Corydoras are delightful little catfish and a great addition to a planted community tank. With their short robust bodies, often striking patterning, and whisker-like barbels a group of corys is an impressive and entertaining sight whether they are searching for food along the bottom or, in the case of dwarf corys, schooling with tetras in midwater.

Bronze corys *Corydoras aeneus* and peppered corys *C. paleatus* are familiar to most aquarists and have been in the hobby for a very long time. Peppered corys were first collected by Charles Darwin on his voyage of the Beagle in 1831 - 36 and they were first bred by Parisian Piere Carbonier in 1878. Corys are also remarkably long lived with bronze corys reportedly living for up to 27 years in captivity.

There are about 160 scientifically described Corydoras species and many more awaiting a scientific name, making it the most species-rich genus of catfish (Siluriformes). Corys are closely related to *Aspidoras* (e.g. sixray Corydoras, *A. pauciradiatus*), *Brochis* (e.g. emerald green catfish, *Brochis splendens*), and *Scleromystax* (e.g. bearded cory, *S. barbatus*).

Corys are widespread across South America where they inhabit shallow slow flowing streams or small rivers. Most species are bottom-dwellers and they seem to prefer sand or sandy mud bottoms which may be covered with dead leaves and detritus.

The banks and margins of these waterways are often covered with dense vegetation and corys are often found among it.

With such a wide distributional (and altitudinal) range, not surprisingly corys vary in their requirements, although most species will do well in 21-26°C and soft, slightly acidic water. Good filtration and regular partial water changes are recommended.

Corys are best kept in heavily planted aquaria but leave an open area for feeding and swimming. They can be quite timid and appreciate some cover, such as bogwood, and are best kept with small peaceful tank mates. They are a shoaling species and are best kept in small groups of at least six. Different species will shoal together, particularly those with a similar shape or pattern.

Corydoras have three pairs of whisker-like barbels at the front of their head: two pairs at the tip of the upper jaw, and another pair at the tip of the lower jaw. Barbels are sensory organs covered in taste buds and are used to help locate food. Corys will often bury their snout into the substrate, particularly the longer snouted forms. For this reason the substrate needs to be fine and without sharp edges as these will damage their delicate barbels. High nitrate levels can also lead to barbel damage.

Corys have a reputation for keeping an aquarium clean as they will search out food that sinks to the bottom, and they will pick at dead fish. However



Corydoras caudimaculatus
Photo: Diane Wilkie

they do not eat fish droppings and they shouldn't be reliant on leftovers. Corys will readily take a wide range of aquarium foods and should be fed a varied diet. Make sure their food gets to the bottom and is not eaten by other tank mates. They are particularly fond of live and frozen 'worms' such as bloodworms or black worms.

Occasionally corys may dart up to the surface, draw air in through their mouth, and go back to the bottom. This is normal and is simply an alternative method of breathing. Aerial breathing is an adaptation for low oxygen environments and is common to corys and related catfish. If the frequency of aerial breathing increases significantly it may indicate poor water conditions.



Corydoras paleatus
Photo: Przemysław Malkowski

Some cory species such as bronze and peppered corys are relatively easy to breed while other species are much more challenging and require extra

aquarists recommend at least two males to every female (female corys generally grow larger and are more heavily built than males). Spawning can be



Corydoras aeneus
Photo: Quatermass

research. Under good conditions many cory species will spawn in community tanks, although the eggs will likely be eaten by other tank mates. If you want to try and breed your corys it is worth moving them to a separate spawning tank and conditioning them on high protein foods such as live and frozen blood worms, black worms, or chopped earthworms. Most

triggered by a number of factors including regular water changes and temperature manipulation. Spawning is usually preceded by a courtship period involving lots of chasing and then cleaning of potential spawning sites such as leaves, driftwood or aquarium glass. During spawning parents often



Corydoras aeneus
Photo: Happy Birthdays to You



Corydoras sterbai
Photo: Hovmoller

assume a classic 'T' position with the female nudging at the side of the male near his vent. Eggs and sperm are released and the female generally holds a batch of eggs on her ventral fins until she is able to attach the adhesive eggs on to a suitable site. Some parents may eat their eggs or fry so it is often best to rear the young separately either by removing the eggs or the parents. Depending on temperature and species the eggs will take 2 to 10 days to hatch and 2 to 3 days later the fry will absorb their yolk sac. The fry can be fed on liquid fry food, microworms, newly hatched brine shrimp, and pre-wetted powdered flake. Rearing the fry can be tricky and it is worth doing some additional research first. There are several excellent articles on the internet on how to breed corys and rear the fry.

Corys should be handled with care as their strong spines can get caught in a net, cause damage to each other, or when shipped they can puncture plastic bags. In common with many catfish, some corys (e.g. *Corydoras aeneus*, *C. habrosus*, and *C. sterbai*) can produce painful 'stings' if the skin is punctured by the pectoral spines when handling. The venom appears to be secreted by glands at the base of the pectoral fin spine and is reportedly similar in pain to a bee sting. These secretions can prove lethal to fish if released by stressed fish in the confines of a shipping bag.

Seventy eight corys are approved for importation into New Zealand although only around 20 of the more colourful species are usually imported. The

following are some of the more commonly imported species.

First up are two very popular and hardy species, which are perfect for new cory keepers.

Bronze cory *Corydoras aeneus*

The bronze cory is a hardy and adaptable cory and one of the most common species in the hobby. They grow to about 75 mm and are farmed in large quantities in Singapore, Europe, and Florida. Bronze corys do well at temperatures of 21-27°C and pH of 6.5-7.5. An albino variety is also commonly kept and a long-finned variety is available overseas. Bronze corys, or similar looking varieties/species, are widespread in South America.

Peppered cory *Corydoras paleatus*

The peppered cory is another very popular and hardy species. They are farmed in large quantities in Asia and Florida and wild caught fish are rarely available. Peppered corys are an attractive species dappled with black and green and grow to about 7 cm. They are widely distributed from southern Brazil through to northern Argentina. Although wild caught fish prefer cooler water, captive bred fish are more tolerant and are happy at 22 - 26°C. An albino form is available overseas although by far the most common albino cory is *C. aeneus*. Albino peppered corys have a pink patch on the back in front of the dorsal fin which other albino varieties don't have.



Corydoras pygmaeus
Photo: Robert Beke

Panda cory *Corydoras panda*

The panda cory is a delightful Peruvian species which grows to about 5 cm. It is pale brown with a black blotch over the eye (hence the common name), a black dorsal fin, and a second blotch near the base of the tail. They are easy to keep at temperatures of 22 - 25°C and pH of 6.0 - 7.4.

Leopard cory *Corydoras trilineatus*

The leopard cory is often incorrectly sold under the common name Julii cory or *Corydoras julii* - names for a similar Brazilian species which is rarely available in the hobby. True *C. julii* have distinct spots on the head versus at least some reticulated lines on the head of *C. trilineatus*. Leopard corys are a Peruvian and Ecuadorian species that grow to about 5.5 cm and do well in a pH of 5.8 - 7.2 and temperatures of 16 - 25°C.

Gold leopard cory *Corydoras sterbai*

Gold leopards or Sterba's corys are a striking black cory with silvery white markings and orange pectoral fins. This Brazilian species grows to about 6.5 cm and does well in slightly higher temperatures than most corys (24 - 28°C) making a great subject for a community tank or even a discus tank. An albino

form is available overseas. Gold leopard corys can produce a painful 'sting' if the skin is punctured by their pectoral spines and they can quickly kill themselves or other fish if they release this toxin into a shipping bag.

Bandit cory *Corydoras metae*

The bandit cory is an attractive Colombian species which grows to about 5 cm. It prefers slightly cooler water than most tropical aquaria and does best at 21 - 24°C. Bandit corys are no longer allowed to be imported into New Zealand and are becoming rare. If you are lucky enough to own a few bandits then it is well worth trying to breed them to help ensure they stay in the country. Bandits look similar to *C. davidsandsi* and *C. melini* which are occasionally imported. All three species are found in clear waterways.

Dwarf corys

Among the many *Corydoras* there are three delightful dwarf species: the pygmy cory, *Corydoras pygmaeus*, the salt and pepper or Rio salinas cory *C. habrosus*, and the tail spot pygmy cory *C. hastatus*. These small species grow to about 3 cm and are perfect candidates for nano tanks. They are unusual

(for corys) in that they frequently swim up in the water column. The most commonly available dwarf species is the pygmy cory, a Brazilian species which is suited to temperatures of 22 -26°C and pH of 6.4 - 7.4.

Other cory species that are occasionally imported into New Zealand include: Adolfo's cory *C. adolfoi*, Agassiz's cory *C. agassizii*, skunk cory *C. arcuatus*, Axelrod's cory *C. axelrodi*, tail spot cory *C. caudimaculatus*, elegant cory *C. elegans*, blackfin cory *C. leucomelas*, slant bar cory *C. loxozonas*, spotted cory *C. melanistius*, false bandit cory *C. melini*, Schwartz's cory *C. schwartzi*, and the smudge spot cory *C. similis*. Other cory relatives that are worth trying are the emerald green cory *Brochis splendens* and the expensive but attractive bearded cory *Scleromystax barbatus*.

Good luck and remember to do your research before starting on the less common species.

Darren Stevens

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Corydoras metae
Photo: Gonzalo Valenzuela



THE BIG MOVE

Geoff Haglund moves 54 tanks and
350 plus fish 550km to a new fishroom
Part 1

Everyone who has a “wet pet” has a fish room!

It may be a fish room that has only 1 fish tank, or it may have many fish tanks and even occupy more than one physical room. But it is a fish room and most importantly it is your fish room.

Eventually the time will come when you need to move your fish room.

It does not matter if moving your fish room involves moving your tank across the room, or across town, or even across the country, the principle is still the same:

You need to empty the tank.

You need to put the fish and other contents from the tank into some sort of transportation device.

You need to transport the tank and the fish to the new location.

You need to set up the tank.

You need to put the fish and other contents into the newly set up tank.

Well that was a short article, job done!

Life, of course is never quite that simple.....



I have come up with a simple 10 step process to move a fish room.

- Step 1: Plan the move.
- Step 2: Evaluate the plan.
- Step 3: Revise the plan.
- Step 4: Repeat steps 2-3.
- Step 5: Repeat steps 2-4.
- Step 6: Repeat steps 2-5.
- Step 7: Repeat steps 2-6.

Step 8: Repeat steps 2-7.

Step 9: Execute the plan.

Step 10: Deal with all the stuff that was not in the plan.

Most fish rooms that consist of more than one tank are a result of evolution, rather than planning.

I know that when my fish room had six tanks the tanks were located in three separate rooms. The tank sizes were quite random depending on what I could afford and what the initial intention for the tank was at the time of purchase. By the time I

reached 15 tanks I was down to two rooms and in one I had two rows of tanks.

By the time there were 26 tanks I was still only using two rooms, but now there were three rows of tanks in one of the rooms, and things were not ideal.

There were hang on the back (HOB) filters against the wall, so maintenance involved leaning over the tank and trying to "work", which was ok most of the time and would have been easier if the tanks were only 200mm deep (front to back), but some of the tanks were 600mm deep. Other HOB filters encroached into the 700mm gap between the rows of tanks so that they were often knocked when walking around the fish room, especially if there were visitors in the room.

The tanks were stacked three high. Some tanks had 150mm of space between the lid of the tank and the bottom of the shelf for the tank above that one, which is ok if I am wafer thin or a gymnast, but unfortunately I am neither of those things.

There were 26 air pumps! Not only did this air supply have a large setup and running cost, but once these air pumps started to age there was an unforeseen maintenance cost and quite an amount of time involved in checking that everything was working every day.

There were a couple of solutions to resolve some of these issues:

One would have been to cut holes in the walls so that I could get to the HOB filters, become wafer thin or learn gymnastics, and never allow anyone into the fish room.

The other obvious solution was to move or reorganise the fish room.

In the fullness of time the opportunity to move presented itself, so I put away the "hole in the wall" cutting device, grabbed a mince and cheese pie and started on step 1: plan the move.

First of course was to find somewhere to go that had a suitable space for my "large" collection of tanks. Luckily the place I selected had such a space, and even better I could expand my number of tanks. Being able to expand became essential in the end because I was about to transport my fish room 550 km from its current location. Logistically there were going to be more moving parts than a transformer movie, and to keep things really exciting I was essentially going to do it by myself.

Now that I had a location I could design the layout of the new setup, ensuring that all the things that were flawed about my current setup were corrected. Initially I used graph paper and drew "scale" layouts of my grand ideas. This proved futile due to making

changes all the time, so eventually I invested in a CAD drawing program for the computer so that I could accurately represent the scale and make alterations easily. This part of the process was possibly the most complicated as I wanted the following constraints:

1: 1000mm space between each row of tanks, to make manoeuvring around the room easier.

2: 240mm space between the top of one tank and the bottom of the shelf above it, to make it easier to work in the tanks and catch the fish.

3: No HOB filters against the wall, for ease on maintenance.

4: Minimum numbers of air pumps, for cost and noise pollution.

Once I had decided on the dimensions of the tanks that I wanted and taking into consideration the tanks that I already had, the use of the CAD software made it quite easy to find the optimum layout so that I could make the most efficient use of the space available.

Now that that part of the planning process was complete I set about planning which fish to move. Initially I was having a "Noah" complex as I was just going to relocate the breeding fish stock. In the end I couldn't bear to part with any of my fishy friends so I decided to move all 350 plus fish.

The last part of the plan was planning the actual logistics of the move, the execution phase.

After much consideration I decided on a three part move;

Part 1: Acquire and transport the new equipment to the new fish room and install the tanks, ready for the fish.

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

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

The reason for the three part move was the amount of time that would be required to perform each part of the move. Adding to that the transportation time I decided it would not be viable to complete the move in one part.

Let's assume if I was going to move one tank across the room then I could reasonably expect the following time to be used:

Catch and "bag" the fish (1 minute per fish), say 30 fish, is 30 minutes.

Drain tank and prepare for transport, say 60 minutes.



Move the tank to the new location, say 60 minutes.

Fill tank and decorate etc, say 60 minutes.

Return the fish to the tank, say 0 minutes for the purpose of this example.

This gives us 150 minutes of “variable” time (catching the fish, draining and refilling the tank) and 60 minutes of “fixed” time (physically moving the tank) the total time is 210 minutes. This is also the amount of time that the first fish that was caught will be “in the bag”, which is what I call “bag time”.

“Bag time” is an important consideration for the health of the fish.

We all know that when we buy our fish from the fish store and pick it up in person the fish store employee may ask, or deduce from conversation, how long it will be before you get your fish home. If this is going to be more than a couple of hours then your fish may get boxed, with a heat pack.

If your fish is going to be delivered overnight, then it will certainly be boxed with a heat pack, but in this case it more than likely has also not been fed for 24 hours to reduce the amount of waste that the fish produces during transport, which in turn assists in reducing the toxicity of the transportation water.

Seedfish waiting for tanks to arrive
Photo: Geoff Haglund

For my move there are about 350 fish being transported, therefore assume 350 minutes to catch them, 480 minutes to transport them, and 180 minutes to unpack them. Therefore the longest possible “bag time” would be 1010 minutes (16 hours and 50 minutes) assuming that the tanks they are going into have already been set up.

That is as long as a “posted fish” (overnight delivery) would be in the bag, so I should be ok, perhaps there will be a 5-10% loss rate.

Obviously the breaking down of 26 tanks and the reassembling of those tanks will also take time, so it becomes quite apparent that this move will need to be done in more than one part.

The day came for the start of the fish room move;

Part 1: Acquire and transport the new equipment to the new fish room and install the tanks, ready for the fish.

The new equipment had already been acquired so part 1, phase 1 was transporting the equipment to the new fish room.



Booking the movers almost proved problematic. It took some time for them to understand that the pick up date did not matter, it was the delivery date that was important. For insurance purposes it was decided that it would be better if the moving company did the packing and wrapping of the new equipment.

The truck was booked for 1pm. By 2:30pm when there was no sign of the truck I was already at "Step 10: Deal with all the stuff that was not in the plan." And it was only day 1, part 1, phase 1!

By 5pm it was "agreed" that the truck would be there at 10am the next day.

Day 2, 10am. Yeah the truck is here, with two likely lads and a large supply of wrapping products.

Day 2, 4pm and the last package was loaded onto the truck. 108 packages in total, entrusted to the moving company.

What I was to learn later, was that when you engage a transport company you are paying for a cubic meterage of space, and they will do everything they can to ensure that your goods will fit into that space,

Airline installation
Photo: Geoff Haglund

and if you are a little over then usually there is some collapsibility in the box's.

I also learnt that the folks who uplift your packages, are not necessarily the same folks who will load your packages into the actual transportation container, so when you say "oooooh careful with that one" you could also have said "can you smash that one up a bit please," for all the good it does.

The last thing I learnt about transport companies is that a lot of the staff can't read and also have no real picture / word association skills. For example a (really good) drawing of a cocktail glass and the words FRAGILE and GLASS in big red letters does not necessarily indicate that there is something fragile and made of glass which does not bend or compact, contained within the package.

Nevertheless the packages were on their way.

Phase 2 was to install the new tanks which would arrive at the new fish room in 15 days time.

14 Days later it was time for me to go and meet my packages and install the new equipment. I decided that I would also take some "seed" fish to help cycle the tanks, and this would also be a test run for when I move all the fish. There were going to be 26 tanks that would be installed, so I would need at least 2 fish per tank. (The tank sizes were from 54-180 litres)

Due to the fact that I have an endless supply of bristlenose and because they are excellent tank cyclers I was going to take 50-70 x 6cm bristlenose with me.

It took 6 hours to load my car with tools and other things that I thought I may need, along with 3 large poly box's each containing 16 liters of water, 20 fish and battery powered air supply. It was not acceptable for these fish to die in transport as they had a job to do the next day.

The battery powered air supply was connected to several large sponge filters that I had been conditioning for several months, and I also had an amount of cycled media that was traveling with the fish.

The next 7 or 8 hours were uneventful and I arrived at my destination about 11pm. I unpacked the car and set up small HOB filters on the poly box's. I replaced the battery powered air pumps with mains powered air pumps, checked out the fish and gave them a water change.

100% Survival. Things were going good.

I learnt some things too.

The modern poly box is not water tight, as was

Setup of Part 1 complete

Photo: Geoff Haglund



evidenced by the pools of water in the back of my car! It is good that I was smart enough to put the poly box's onto a plastic sheet in the car, in case of splashing.

Due to the dimensions of the poly box I could only fit 16 liters of water in the poly box, before I was unable to carry it. This was going to effect the "fish per liter" ratio for the major fish move.

It takes longer than the estimated amount of time to catch the fish, as all these fish came from one tank and it took about 1.5 minutes per fish, on average, to catch them.

I also learnt that there may be more fish to transport than I had originally anticipated, as the tank where the 60 seed fish came from was not supposed to have 60 fish in it. Just imagine if my estimated 350 fish becomes 600!

It was 1am and the truck would be here in a few hours with my stuff, so it was time to get some rest.

8am and the truck is here, all 108 packages. Only 26 of the packages are tanks, so it's a good thing I can read and direct the placing of the tanks in the right area, and the rest of the equipment in the appropriate area.

After 30 or so packages the first tank package comes out of the truck.

When moving fish tanks there is a sound that you don't really want to hear. That sound is not the silence, nor the grunting of the person lifting it, that you expect. It is the very distinctive rattling sound of broken glass.

Hmmm "Step 10: Deal with all the stuff that was not in the plan."

The plan did not have any entries about broken tanks. In fact I was pretty sure that I had paid real money to ensure that that did not happen. Oh well "any packages that rattle can go over there", I said. Whilst pointing to the other corner of the room.

Luckily that was the only package that rattled, and it was not one of the 180 liter tanks so I could worry about that one later.

It was not until 12pm that the truck was unloaded and the packages were all unwrapped. Things were definitely taking a lot longer than they were supposed to!

There was no way that I was going to be able to lift the 180 liter tanks up into their stands, so at this point I required assistance and a couple of my friends arrived to assist me, luckily the unloading of the truck took longer than expected so even though my friends had been delayed in getting to my house they were actually just in time.

All the tanks needed to be wrapped in black polythene, for heat retention and also to black out the sides and bottom of the tanks. One of my friends did this while the other two of us started to assemble the large stands.

Just after we mounted the first tank into the new stands I realised I had forgotten to install the centralised air system. Duh.

By 3pm I had installed enough air lines for the central system behind the big stands and now we could load up the big stands with their tanks.

By 2am, the next morning, the rest of the stands had been built and all the other boxes had been opened to locate the power cords, extension boards, substrate, filters, air line 4mm, Neta irrigation parts (these are used to connect the 4mm air hose to the main 13mm central system), air stones, air pumps, caves, food, poly sheets, heaters, etc etc etc.

By 12pm the rest of the tanks had been loaded into their stands, and everything was looking good. In fact it was looking just like the plan!

At 2:30am the tanks were all filled and the heaters were running to bring the temperature up to the range required for the fish, which were still happily in their temporary home even though they were expected to be in their new homes several hours earlier.

By 5pm (57 hours after the truck arrived) I was finished.

The tanks were all running with filters, substrate, air, wood, caves and fish, and I was back on the road again. I had a water change to do, back in the original fish room.

At this point I know the old saying "How do you eat an elephant? One bite at a time" is very true, and I am also thankful that I had a great plan, albeit a flexible plan.

In 14 days I would be back with the fish and there was nothing more I could do for the fish that I was leaving in their new homes. My friends had the care instructions, and all I could do was leave it in their hands. Worst case, a dead fish was still going to cycle the tank.

Part 1 complete.

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

THIS ARTICLE WILL CONCLUDE IN THE NEXT ISSUE OF AQUARIUM WORLD

Kōura



New Zealand has two species of kōura or freshwater crayfish. The northern kōura *Paranephrops planifrons* is found in the North Island and northwest of the South Island while the southern kōura *Paranephrops zealandicus* is found on the east coast of the South Island and Stewart Island. Kōura prefer areas with reduced or no water flow and are found in a wide range of freshwater habitats including streams, lakes, rivers, and swamps. They are more active at night when they often move into shallower water to feed. During daylight they often shelter under rocks, sunken logs, leaf litter, vegetation or undercut banks. Kōura eat a variety of food. Animal protein is important for growth and aquatic invertebrates such as aquatic snails and midge and mayfly larvae are often key components of their diet. Female kōura carry between 20–200 eggs under flaps under their tail. The eggs hatch after 3–4 months and the tiny juveniles hang on until they are about 4–10 mm long when they look like tiny versions of the adults.

| Kōura *Paranephrops planifrons*
| Photo: John Clayton NIWA

Kōura do not do well at high water temperatures, particularly the southern species, and they are also susceptible to pollutants.

Kōura are highly valued by Māori and were a staple food item in the past. They are also a tasty snack for larger fish such as eels and trout, mammals such as rats and stoats, and birds such as kingfishers, shags, and kiwi. They are also cannibalised by other kōura, particularly when they are moulting.

Kōura are farmed commercially for the restaurant trade by a handful of New Zealand companies. They can reach a harvestable size of 10 cm in 2–5 years. Internationally the red swamp crayfish *Procambarus clarkii* is farmed on a large scale in the USA and China, which annually consume 34,000 tonnes and 88,000 tonnes respectively.

Kōura can be legally collected in New Zealand if the area is not protected (i.e. Wildlife Refuge, National Park, etc.) and if you have permission from the landowner to access the waterway. You will also need to check with your local Iwi as they may have full, joint, or partial ownership of the waterway. Amateur fishers are allowed to collect up to 50 kōura per day under the Amateur fishing regulations and you are not allowed to sell your catch. However kōura are in decline in many areas and 50 is a lot of individuals to take from a waterway. Berried (egg laden) females are probably best left in the water to contribute to the local population.



Northern Kōura *Paranephrops planifrons*
Photo: Nativelover

In the aquarium

Kōura are hardy and easy to keep and make for interesting pets. They will do well in a reasonable sized aquarium with plenty of places to hide (rocks, sunken wood, flower pots, pipe, etc.) and a gravel substrate. Some form of filtration is also recommended but they don't like strong currents. Unless the tank is large, kōura are best kept by themselves (so they don't fight or eat each other), or with other native fish. Kōura are largely nocturnal so initially you may not see a lot of them during daylight hours although once established they are likely to become more active during this time.

Kōura prefer cooler water and high temperatures may prove fatal. The northern species needs to be kept in less than 25°C and the southern species at

even lower temperatures. So pick a cool room to set up your tank. Kōura do well on a diet of sinking fish food pellets and vegetables such as diced potato, carrot, cucumber, green beans, zucchini, or peas. Try them on a range of veggies and find out which ones they prefer. Harder veggies may need to be diced or softened first. They will also happily snack on your aquatic plants so, unless you want to keep on replacing them, use plastic plants or have a plant free tank. Earthworms and aquatic snails are readily accepted and are tasty treats.

If you are going to pick one up grab it around the back just in front of the tail. This will minimise the chance of a painful nip.

If you are keen to keep a pet kōura they are sold by some pet shops and they can be collected from the wild (see above). If you are after something a little different, New Zealand Clearwater crayfish has developed a striking red variety 'New Zealand Red Glory' (<http://www.clearwatercrayfish.co.nz/about.html>).

If you decide you don't want to keep your pet kōura it is illegal to release it back into the wild so you might want to pass it on to another aquarist. There is excellent information on how to keep kōura in Stella MacQueen's book "The New Zealand Native Freshwater Aquarium."

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Darren Stevens

Keeping and Breeding Bristlenose

The common Bristlenose is a very hardy fish that is easy to keep.

The Bristlenose is a tropical freshwater fish that can live in a wide range of temperatures (21.5–29 °C), and also a wide pH range (5.8–8). There are four main colour varieties that are available in New Zealand; Brown, Golden Black/Blue eyed (GBA), Albino and Calico. All of these are available in both long and short finned varieties.

The Bristlenose is often thought of as a detritus eater, cleaning up all the rubbish that is at the bottom of the tank, but this is incorrect. The Bristlenose is an omnivore with a preference for a vegetarian diet, although they will also eat any food, including dead fish, which are on the bottom of the tank. They are particularly good at eating the algae that can grow on the tank walls.

Bristlenose should be provided with a piece of soft wood in their tank, as they will scrape the surface of the wood to remove any algae and microscopic organisms that may be on the wood. Other than wood they have no specific requirements for tank decorations and seem to thrive no matter whether there are plants, rocks, sand or any other decorations in the tank, as long as there is somewhere for them to hide.

The Bristlenose is a peaceful fish and will cohabitate with any other species of fish including other bottom dwellers. Reaching a maximum size of about 15 cm (the long finned varieties appear larger due to their flowing fins) they are suitable for all tank sizes except nano tanks. In addition although they are a vegetarian they do not tend to feed on live plants, nor are they big enough to destroy an aquascaped tank.

Male GBA at mouth of cave with fry

Photo: Geoff Haglund

It is quite easy to sex a Bristlenose as the male will have a set of bushy tentacles, or bristles, growing over his top lip and one or possibly two rows of bristles extending up the centre of the face towards the eyes. Rarely the females may grow a single row of fine bristles along the upper lip, but the females never have the rows of bristles extending up the centre of the face. Note that sometimes these fish are referred to as “Bushy Nose” due to the bushy tentacles. Breeding the Bristlenose is also a relatively easy task. Bristlenose, like most Loricariidae, are cave spawners and therefore need to be provided a cave for them to spawn in. The cave can be a tube or even an upside down broken pot. Basically anything that the male can encourage the female to lay her eggs in.

A Bristlenose is capable of breeding once it is about 7 cm in length and does not require any special activities, like a dry or rainy season. All that is required is good water, a healthy male and female, and somewhere to lay the eggs.

Once the eggs have been laid (up to 100 eggs for a large female) the male will fertilise the eggs and then he will begin fanning the eggs with his pectoral fins to prevent fungus growing on them. The male will guard the eggs and remove any that were not fertile. After about 5–7 days the fry will emerge from the egg and start to consume the egg sack. This will take another 5 or so days at which point the babies will leave the cave and start to look for food. It is quite easy to feed the fry as they are able at this point to eat the same food that the parents are eating.



Photo: Joel Carnat

Betta splendens

Betta Splenden

Siamese Fighters, or Betta Splenden to give them their correct title. The males – bright colours, striking stature, sartorial elegance! The females slightly less so but still a very pretty fish.

There is so much debate around about the care of these fish – on forums, on facebook pages, even face to face meetings, with accusations of cruelty or ignorance.

In the beginning, and still now but to a much lesser extent, Siamese fighters, then known as plakat, were a small dull brownish green fish with short fins and tails, and were found in rice paddies, shallow waters and ponds on floodplains. All areas of stagnant water, slow moving or still water, all with low oxygen content.

Fish lived a solitary life, only pairing up during times of floods when their small 'patch' become a tiny part of a much bigger area of water.

Moving on nearly two centuries there are fewer 'plakat' in the wild, and those found near villages and cities have often crossbred with the modern fighter today due to escapes and releases into nearby rivers and streams.

The commercially bred or domestic Betta Splenden of the 21st Century looks vastly different to the original fish with a myriad of colours and tail types available. However within each of these modern day fish there is clearly still a gene inherited and retained through the generations - the fighting gene.

Because of this the Betta Splenden is best kept in a tank or container on its own – not just males but females as well. Put two males together and they will fight, not necessarily to the death but, as history tells us, until one can fight no longer due to injuries and backs off, usually to die from the severity of the wounds and internal damage inflicted.

Betta splendens

Females will also fight with each other although if given enough floating plant cover in a tank with multiple females, where the aggression will be spread, the option is available for a fish to evade a fight by lying on the upper side of the leaves.

Likewise, a group of females in a tank with a solitary male will 'gang up' and attack a male if they are agitated, usually because one female is full of eggs.

Adding fighters to a community tank can give rise to a new set of problems; other fish nipping at the fighters' fins, the fighter chasing smaller fish and nipping them, fighting with other fish with long fins – mistaking them for other fighters. Avoid a tank with other long finned fish ie guppies, long fin danios, other labyrinth fish like gouramis, known nippers like barbs and give plenty of plant cover if you are intending to add your beautiful long finned male fighter to a community tank. Be sure to have a spare tank on hand if the fighter will not tolerate other fish around her/him.

Containers do not need to be large - vases and jars are sufficient - but the water does need to be kept clean and free from leftover food and faeces. Daily water changes are required, twice daily if the container is very small. While there is some opinion around that these fish, having come from stagnant ponds, can handle less than quality water conditions, we must remember that we are talking about the betta of today now, betta that have been bred for centuries in increasingly improved conditions and no longer have the same resilience as their ancestors. Keeping your fighter in less than optimum conditions will increase the chances of diseases, like fin rot.



Photo: copepodo

Heating is also not an essential within a fighter container or tank but only if the room is maintained at a steady suitably high temperature to keep the fish's metabolism functioning fully. While fighters, like all other fish, can handle variations in temperature, a tank or container that cools below 22°C will see the fish's ability to function reduce significantly; the fish will 'rest' on the bottom of the tank and struggle to swim to the surface to breathe (a fighter's ability to breathe underwater is virtually non-existent). The fish will not eat as its metabolism will slow right down.

Likewise if you place your tank or container in a room where the temperature of the water will rise over 28°C you will be putting your fighter under unnecessary stress.

Fighters of the past survived on mosquito larvae, daphnia, insects and any small fry that came their way. Today's Betta Splendens are no different; consider setting up a container to give you a constant supply of daphnia or mosquito larvae (be careful here not to put it on a fence line and upset your neighbours). Whiteworms, frozen bloodworms and dried foods are all favoured by these fish.

Siamese fighters – bright colours, striking stature, sartorial elegance!

Adrienne Dodge

A Beautiful Redhead



Rummynose tetras are beautiful torpedo shaped silvery fish with a striking ruby red head (hence the common name) and a black and white striped tail. Three similar species are sold as rummynoses: the commonly available false rummynose *Hemigrammus bleheri* (pictured), the true rummynose *H. rhodostomus*, and *Petitella georgiae*. All three species grow to about 5 cm and are a great addition to a well planted tropical community tank with soft acidic water (pH 6.4 to 7.0) and a temperature of 24 to 31°C. Their deep red heads become pale when stressed, including in the presence of metabolic wastes such as ammonia, nitrates, or nitrites so they can be a useful indicator on the health of your tank.

Photo: Robert Beke





TRELIZE'S AFRICAN TANK BUILD

by Adrienne Dodge

In 2013 Trelize popped up on the forums with his first post 'My African Tank Journal' – one that instantly caught my attention.

And so the story begins ...

Prior to joining the FNZAS forums Trevor (Trelize) had been researching a tank build via the internet. Having never kept fish before, although his father had, Trevor was initially thinking that a marine would be his first tank but, after further research, he settled on a cichlid setup with a tank and sump design that would allow easy conversion to a marine setup in the future.

His design was as follows –

The tank: 1700mmL x 600mmD x 600mmH with a 200mm full wall overflow on the left leaving a viewable tank length of 1500mm. The tank was drilled with three holes (2 x 40mm drains plus 1 x 32mm return).

The cabinet: 1700mmL x 600mmD x 1000mmH with three cupboards, the left two housing the sump, the right housing the power boards and with shelves for holding dry goods.

The hood: 200mmH and able to be folded in half or the top raised completely.

The sump: 900mmL x 500mmD x 450mmH

Once the design of the tank, sump and cabinet was completed Greg Kingston of Tanks2U was given the task of constructing both the tank and sump. Trevor used Precision Cabinetry to build his cabinet; turned out the cabinet maker is a forum member – rcallander.

Having decided quite early on in the planning that he was not going to settle for a tank which could only be viewed from one room of the house, Trevor used the waiting time to alter the interior wall dividing the kitchen and lounge to allow for the tank to be seen from both rooms. A small interior window was removed from this wall and the wall board cut away. Trevor built a frame for the kitchen side of





the wall and used similarly coloured tiles to create a lower ledge. Wallpaper was carefully chosen to blend beautifully into the framing and tile to create a feature wall in the kitchen of his house.

As Trevor's house is on wooden piles, it was necessary to strengthen the floor. Extra piles were placed under the house where the tank was to sit,



avoiding any potential issues once the tank was filled. During this time his thoughts turned to the type of drain system to be used and after further research he settled on the 'Herbie Overflow Method'.



This is a simple and proven design which, when properly set up and maintained, provides a near silent overflow from the drain to the sump below and is completely fail-safe from possible flooding.

Once the tank and cabinet were in place,

Trevor constructed the control panel. This consists of two four pin multi plugs, each pin with an on off switch, and a STC-1000 Temperature Controller. The controller has a sensor which records the tank temperature. The electronics were neatly mounted on a panel in the upper third of the right hand side cabinet cupboard.

For lighting, Trevor first looked at the Current (USA) Satellite + Freshwater units but then decided to support local businesses and instead purchased Stealth 3W LED custom built lighting. A moonlight bulb was also attached inside the tank hood. Both of the lights were attached to timers. A light was also placed inside the cabinet.

Two Tunze 6045's were placed in the tank – one at each end to create more current for the African cichlids.





Then it was time for the plumbing, which was a totally new concept for Trevor. For the trickle tower he used stackable crates from Stowers plastics. He drilled holes in the top two crates and cut two sides out of the third – this was to create a stand which raised the top two crates off the ground. Two 200ppi filter socks were placed in an acrylic holder within the first (upper and larger) crate and 4.8kg of Aqua One Premium noodles were placed in the middle crate. Three 200 watt Jager heaters were placed in the open bottom section of the third crate, which then completed the tower.

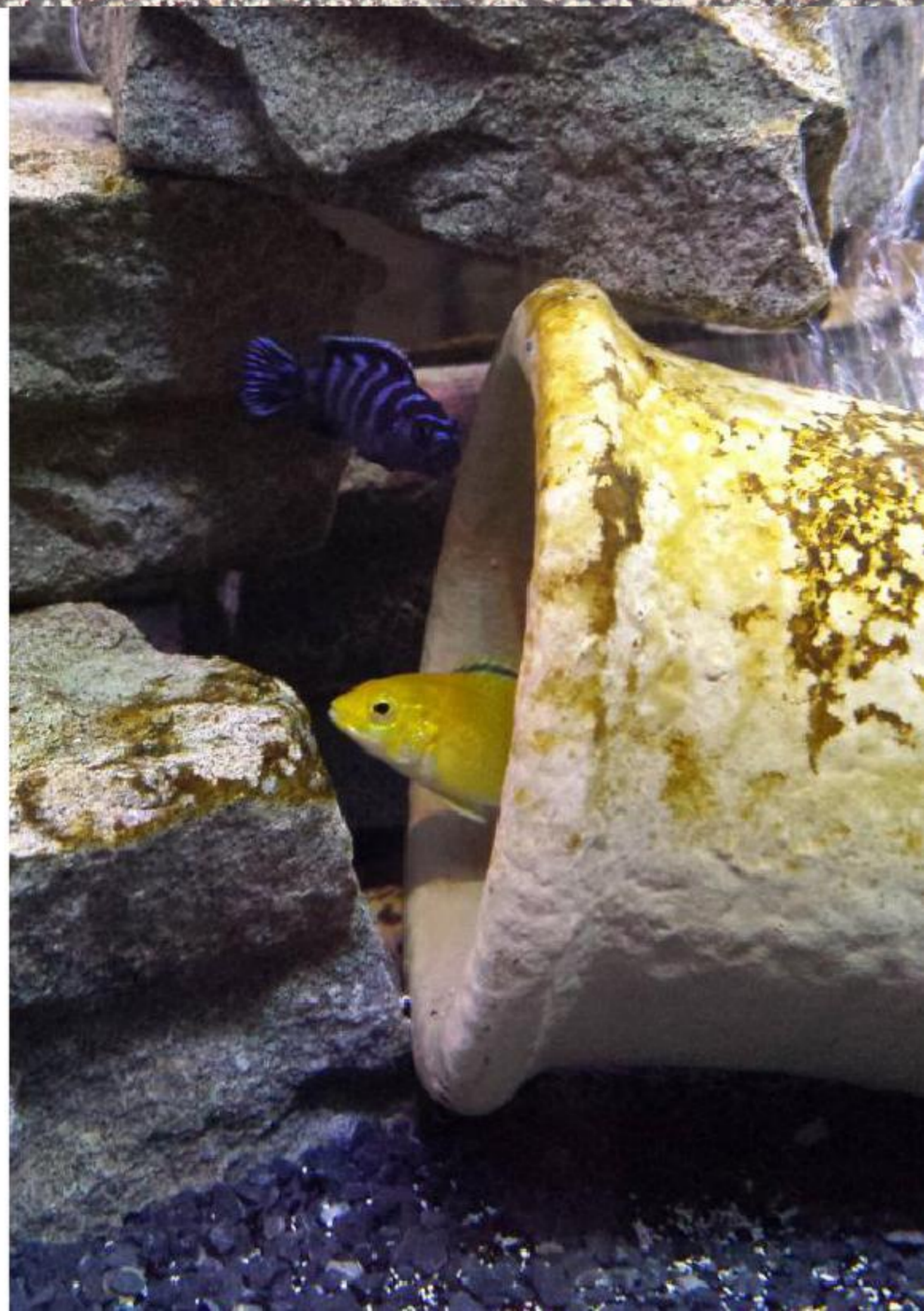
After the filter tower (housed in the first third of the sump), Poret Foam was placed in two sections of the middle third of the sump and a Laguna Power Jet 2000 (PJ2000), which was to be used as the return





pump – rated at 7500lph – placed in the final section of the sump. Plumbing was put in place using a lot of materials sourced from Waterworks. The Hansen ball valves were purchased from Mico. All joints were plumb taped and glued to ensure they were watertight.

With the electrical and plumbing completed it was time for the hardscape. Paradise stone from Stone and Water World was purchased for the rocks in the tank with Caribsea Cichlid Mix combined with 1-2mm black marble chip used for the substrate. As these were insufficient to keep the pH at a level suited to African cichlids 2.7kg of coral rubble was placed in the sump. Nearly eight months after the first post was made on the forums the tank was filled. After a week, and with media from an established tank added, the first group of fish – 20 juvenile Demasoni were placed in the tank, followed by Electric Yellows, Red Top Trewavasae, Cuckoo Synodontis and more recently Blue Moori were added as a dither fish. Since the original build Trevor has removed the Stealth Lighting, which he said is fantastic lighting but was too bright for the tank, and has replaced it with two 24watt Current Freshwaterr+ LED units.





While Trevor has been the only one named during the tank build, his wife Elize has also been fully involved in the project, supporting and assisting him every step of the way. In Trevor's words, 'she has been awesome!' In summing up, I can state that the visual appearance of this tank is simply stunning. Elegant and understated in the simplicity of the hardscape, with the outlet and power heads blending in with the surrounds, this silent tank set up is one for us to aspire to. I can not wait to see it when the fish mature into adults.

Adrienne Dodge

In the spare room of his house he showed me a new sump which is slightly larger, but of a different design, as he has found that when the noodles in the tower of the current sump require cleaning he has to dismantle the lower part of the sump system. The new sump will hold the noodles in a separate compartment giving easy access.



FISH MINI PROFILE

Eyespot or Emerald Eye Rasbora



The eyespot or emerald eye rasbora *Brevibora dorsiocellata* is a delightful small (3 - 3.5 cm) silvery rasbora, with a distinctive black spot on the dorsal fin which gives rise to their common names. They are native to Malaysia, Borneo, Sumatra, and southern Thailand, where they are found in gently flowing blackwater streams with very soft, acidic water. Captive bred fish are more adaptable than wild caught fish and do well in a pH of 5.0 - 7.5 and temperatures of 20 - 25°C. Eyespot rasboras are a peaceful shoaling species and are suited to planted tropical community tanks with other small peaceful species. Photo: Robert Beke

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Breeding Clownfish

by Mark Paterson



Clownfish guarding a clutch
Photo: B.Osborne369

Breeding Clownfish nowadays is a relatively easy thing to accomplish and not nearly as hard as you might think so long as some of the basics of fish keeping are adhered to. For the purposes of this write up I will assume you have already kept tropical marine and understand the needs to keeping the water parameters stable.

My first foray into clownfish breeding occurred as I had a pair of Maroon Clowns that laid in my reef tank. If you don't already have a pair the other options are obviously to either purchase a known pair or buy three to five juveniles and grow them on. Buying an established pair is perhaps the easiest way to go as some local pet shops with a marine section either have these or can order them in for you. The other way is to buy a group of juveniles and raise them to breeding age. This can take up to two years with some species. With juveniles, as the

group grows they will pair up by themselves with the female being the largest and the male the next biggest while the rest should stay juveniles. If there is a selection of larger fish in the pet store look for a pair that swim together as this is a good sign that they are a true pair.

In the wild in a group of Clownfish the female is the largest, with the male as the second largest. All others will be juveniles and gender-neutral. When one of the adults disappear the next biggest will take its place. Thus the male will become female and a juvenile will turn into a male. Once they are female they can not change sex again.

For a breeding set-up the larger species like Maroon Clowns will need a 60 litre tank and the smaller species like Ocellaris a 45 litre tank. For filtration I use air powered sponge filters which have been kept for at least four weeks in a mature system to allow the bacteria

to populate them which aids the nitrogen cycle. I put a small clay or ceramic pot in the tank for the pair to spawn on and, of course, a heater to maintain the tank at 25°C. Lighting can be simple – try to simulate daylight as much as possible. A timer for the light on your system is a must to allow the fish to get into a regular night to daytime cycle, I usually run 12 hours on and 12 hours off.

Once you have your pair set up in their tank you will need a good dose of the marine keepers' friend, Patience, while waiting for them to lay. Feeding live foods like mysid or daphnia can help condition them. Don't forget another dose of patience as well.

When your pair is happy in their tank you need to get prepared for feeding the larvae as once they are free swimming they will need a constant supply of rotifers, and to feed the rotifers you will require some phytoplankton. This takes some preparation but is achievable. Phyto plankton is essentially green water, usually in this country either *Tetraselmis* or *Nannochloropsis*, and rotifers are normally *Branchionus* sp.

If you are lucky your pair will spend a few days cleaning a spot on the surface of the pot and hopefully you will see some bright orange eggs appear there. Within a couple of days the colour fades and eyes will start to show. The male guards the nest and fans the eggs to keep them oxygenated clean, and at around 8 – 10 days, depending on the temperature, the eyes will become silver and will usually hatch that night. I normally turn the lights and flow to the tank off and wait half an hour, then I shine a small LED light into the corner of the tank. The fry are attracted to this and once enough are gathered there I scoop them out with a plastic container. I have used a net before but lost most of the fry to damaged fins and fungus. If you choose to move the rock and eggs to a separate tank prior to hatching you must keep the eggs aerated gently with an air stone or fungus can set in.

For the larvae a 7 – 10 litre tank with a small light, airstone and heater will suffice. Keep an eye on ammonia levels and have some ammolock handy if necessary. You may need to leave a light on the first few days until the larvae develop their hunting skills. The first 10 days are most crucial and I keep the levels of phyto and rotifiers fairly dense in the tank so fry are not expending energy looking for food, and use a 5mm tube to clean the floor of the tank and remove water for a 10% water change daily. This is the period when the greatest numbers are lost. For some reason metamorphosis (around day 10) is very stressful. Immediately following this transition stage, the youngsters will begin developing their stripes, after which point you are pretty much home free – and free to enjoy your beautiful little clowns.

Good luck!

Mark Paterson



Clownfish juveniles
Photo: B.Osborne369



Mandarinfish, Mandarin Dragonet

Synchiropus splendidus

Photo: Jochim S Mueller

Classification Order: Perciformes

The Mandarinfish has the most attractive colouring and pattern of any of the most commonly kept marine fish. It is one of only two vertebrate species known to have blue colouring because of cellular pigment. The scaleless body is a blue-green colour with wavy orange lines across it. The tail is bright red with blue edging.

Distribution: Native to the Pacific, the mandarinfish is found in an area ranging from South Australia to the Ryukyu Islands.

Habitat: These fish are reef-dwellers, preferring sheltered lagoons and inshore reefs. While they are fairly common in their range they are not easily seen due to their bottom feeding habit and their small size. These fish are normally found in groups or pairs.

Maximum Length: 6cm

Life Span: 15+ years

Aquarium Size: Minimum recommended size 80 litres.

Maintenance: Mandarinfish are considered difficult to keep, despite their popularity among saltwater aquarists, mostly due to their very specific feeding habits (See Diet). An established tank (9 months minimum) is required. Mandarinfish that do acclimatize to aquarium food are considered to be quite hardy and highly resistant to diseases, such as the all too common Ich. They cannot catch Ich because their skin type is not the same as those that are commonly affected by the disease. The tank should be set up with large amounts of live rock to provide places for the fish to hide and preferably with sand so the mandarin dragonet can burrow if it wishes.

Water Conditions

Temperature: 22 – 28°C

pH: 8 – 8.4

Specific Gravity: 1.023 – 1.026

dKH: 8 – 12

Diet: In the wild *Synchiropus splendidus* feed primarily on small crustaceans and other invertebrates. Feeding is continuous during the daytime and the fish selectively pick at small prey such as polychaete worms, small gastropods and gammaridean amphipods which have become trapped on coral substrate. Despite being a very popular aquarium fish the mandarinfish has a reputation of being a very hard fish to keep as they have very specific dietary requirements. Some fish never adapt to aquarium life, refusing to eat anything other than live amphipods and copepods which are only found in numbers in larger, well established, reef tanks. One way to ensure that mandarinfish always have a ready supply of food is to create a breeding ground for copepods in one area of your tank. Simply stack a pile of rocks and, every few days, insert a piece of shrimp into the pile. This pile will provide both the food and shelter copepods need to breed in your tank.

Behaviour and Compatibility: The Mandarin Goby is very peaceful in nature. This makes it a very good choice for a well-established peaceful reef tank. This fish minds its own business as it scoots around the tank searching for copepods and other micro-organisms. Two males will typically fight in a tank so either keep a male/female pair or a single specimen. Mandarins are very slow and methodical feeders, who often struggle to compete for food if kept with faster fish.

Reproduction: The male mandarinfish tends to be larger than the female and has a larger dorsal fin and an elongated dorsal spine. Nearly all fish available in the hobby are wild caught but there are reports of Mandarin Dragonets breeding in captivity when

provided with the right conditions. If there is a male and a female in the tank they may pair up and go through the courting ritual which is fun to see. Mandarinfish spawn by a pair aligning their bodies and rising up the water column. The female releases eggs for the male to fertilize, and it may take many "false ascents" for breeding to actually occur. The eggs usually float to the surface. Within 12-15 hours the floating eggs hatch into oblong "prolarvae" with huge yolk sacs, yet no eyes or mouth, digestive tract or even fins. They begin developing these missing organs and limbs, then begin feeding by the fourth day. At three months old they finally resemble adult Mandarinfish and begin to eat prepared food.

Adrienne Dodge

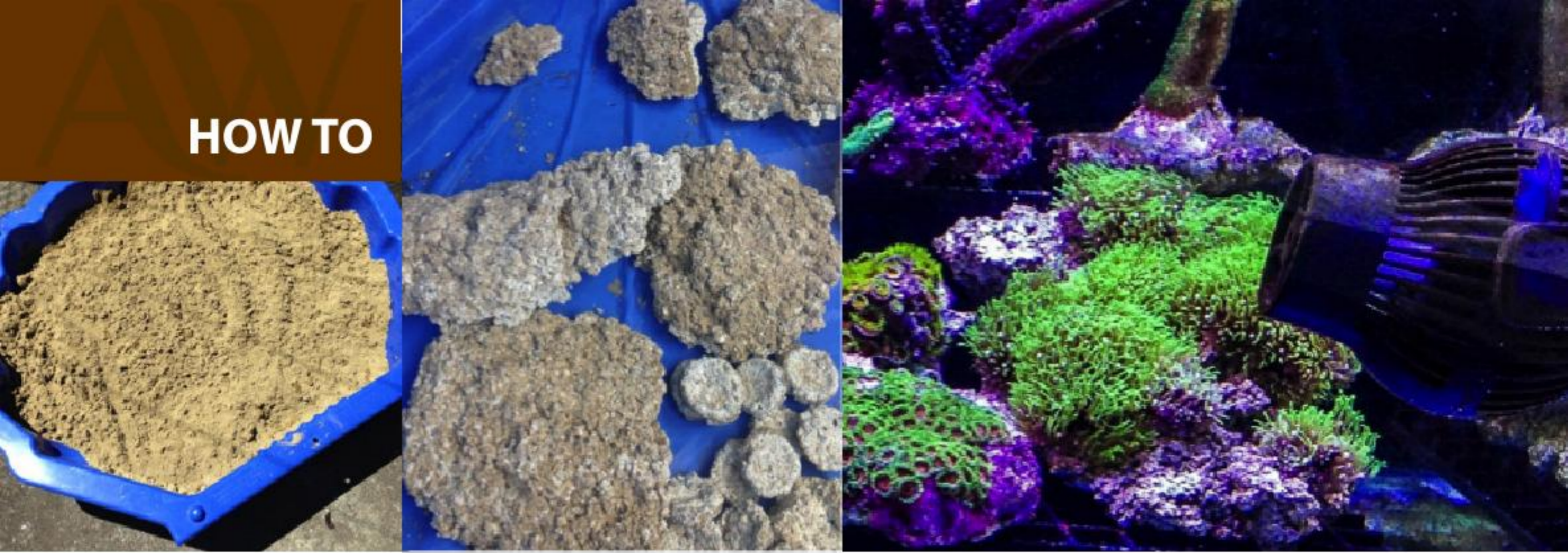
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Photo: Laura Bilton

HOW TO



create your own

Coral Rock

a step by step guide

by **Simon Lemin**

After hours of watching Youtube videos and reading forums, I have put together many different ideas from people who have made their own rocks and created my own.

This is a 'How to guide' to show you how I created my fake coral rock and to help you create your own.

It is recommended you read through these instructions prior to construction of your rock and mixing the cement. This will make you aware of the process and also give you ideas of how you will go about it and any changes you wish to make.

Items needed

- Coarse builders' sand (aragonite sand is recommended). - \$8.98 (Mitre 10 Mega)
- Fine play sand. - \$8.98 (Mitre 10 Mega)
- Oyster grit/bird grit. – \$14.23 (CRT)
- Rock salt. - \$12.50 (CRT)
- White Portland cement - \$15.82 (40kg bag, Mitre 10 Mega)
- A few pieces of real coral rock (with shapes you would like to replicate)
- Large shallow sandpit or paddling pool



- Mixing & rinsing buckets
- Trowel
- Measuring container/scoop
- Acetone. - \$17.76 (Mitre 10 Mega)
- Recycled polystyrene
- Protective gloves
- Protective eyewear

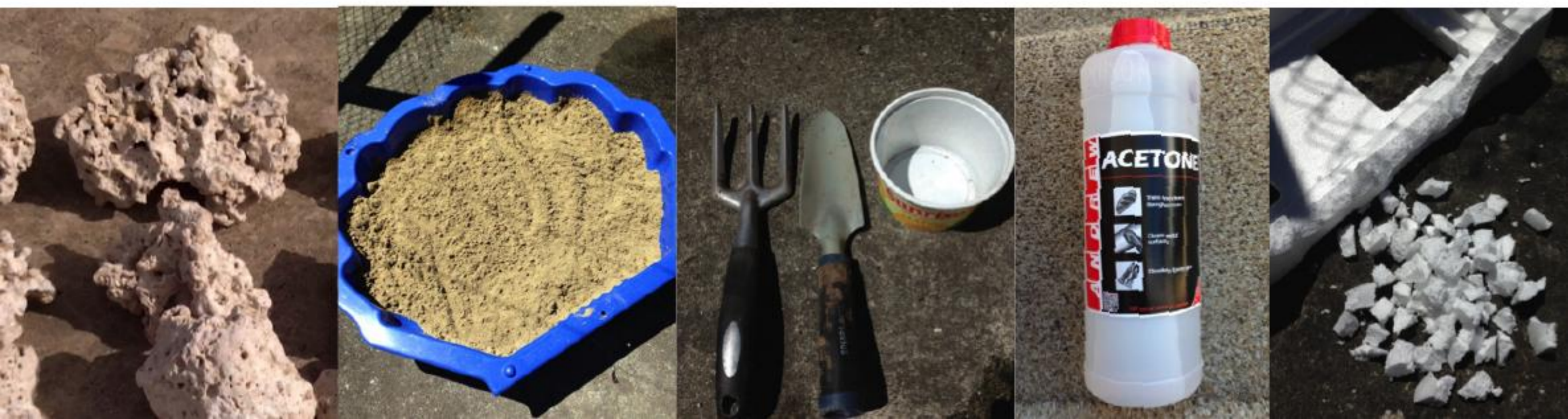
Instructions

1. Fill your sandpit or paddling pool up with the fine play sand. Two bags were sufficient to fill one of these 'shells'.



2. Then take the pieces of real coral rock (I didn't have any coral rock so used another type of rock that had a natural pitted/porous shape), and push it into the sand to create the rock moulds in the shapes you prefer. Now could be a good time to maybe think ahead to what sort of shapes and size rocks you will need for your aquarium.

3. Half fill a bucket with oyster grit and rinse it 3-4 times to remove all the dust and dirt particles. This will help the cement stick together better and make it less likely to break apart. The grit doesn't have to be rinsed clear, just enough to wash out the majority of dust.
4. To a mixing bucket, add 4 scoops of rinsed oyster grit and 2 scoops of coarse builders' sand. Then add 2-3 scoops of cement. If the oyster grit has just been rinsed and not drained off properly, you will have to add 3-4 scoops of cement to get the right consistency. The second batch I made ended up needing a ¼ scoop of water because I drained the rinsed oyster grit a bit longer. Using the trowel, stir the mixture to a peanut butter consistency. If it is too sloppy then you can add extra scoops of cement, one at a time, and mix until it becomes sticky and doesn't slop down flat.
5. After this mixture is at the right consistency, add 1-2 scoops of rock salt and mix through evenly. It is important to mix the salt in last to prevent it from being dissolved too much in the mixture before the cement soaks up the water.
6. Now, using your hands, take handfuls of the mixture and crumble it through your fingers and let it drop into your moulds. You might want to use gloves to do this because the cement is quite acidic and can eat away at your hands. You can also add



dry sand on top of the cement mixture, in patches, and then add more cement on top of that to create caves and holes through the rocks.

water daily to speed up the process.

13. When the salt has all dissolved it should leave small holes in the rock, making it lighter and more porous.



7. I have also tried a few pieces with broken up bits of polystyrene pushed into the mixture, and the more cement on top again. This will give a certain texture that is also used with the DIY poly backgrounds I have made.
8. Now cover all the cement rocks with fine play sand and wait at least 12hrs (or overnight) for it to dry hard.
9. When it is time to remove the rocks from the sand, dig them up and lift them out carefully with both hands so you don't break up any fragile pieces. Some outer edge pieces might fall off or need to be knocked off to get the final shapes you want.
10. Rinse all the sand off and out of the rocks.
11. The pieces with the polystyrene, remove as much by hand as possible. The rest can be removed by pouring acetone over the rock to dissolve the poly. Make sure you use protective gloves, eyewear and mask when using acetone.
12. Now the rocks need to be soaked in water for at least a week to dissolve the salt. Add a powerhead to the water and change the

14. The pH of the water that the rock has been soaking in needs to be tested at the end of the week to see if the cement is still leaching into the water too much. If it is too high then a further week or two of soaking is recommended.

From here the rock should be treated as if it is new dead coral rock and cycled appropriately before being used.

Conclusion

The rocks ended up looking great. They came out looking very realistic and it is good to have the satisfaction of making them. One problem I noticed was they are very fragile and easily crumble if you try to make too small or detailed pieces. Make sure you make them nice and thick. They are also still quite heavy, although I have had some similar sized pieces of real coral rock the same weight. Make sure you use gloves when working with the cement because it does eat into your hands, being acidic, and stings a bit. Although using real coral rock is probably better and easier for your tank, this cost me less than \$100 to do. I could have easily spent 100s of dollars on real coral rock for the

same amount of rock I could make with these materials. But doing it this way, I get the exact shapes and sizes I want, I save money and I help do my part to save the coral reefs. I also had fun making it. Now I am going to make more and try different rock shapes and sizes for bigger tanks.

Frag Discs



Since making this rock I have improved my methods a bit and have made some frag discs and larger zoa grow out discs.

I used an empty margarine container, and a smaller bottle for the smaller discs, and pressed it into damp sand to create moulds for the discs. I didn't use any salt in the cement mix because I felt this would make them weaker when dissolved out because they would be too small and thin.

Tonga Branches

Here I have had a go at making some Tonga

branch type rocks using PVC pipe and acrylic dowels for reinforcing.

After these had cured for 48hrs I gently pulled them from the sand and used a wood rasp to carefully break off any pieces sticking out to get them looking more cylindrical. Because they haven't cured fully the concrete is still soft and easily breaks, which is the perfect time to make any changes. I then leave the branches for a week to fully harden before I soak them in water to dissolve the salt and cure them.

Rocks in the Tank

After a month of soaking in fresh water I added my first piece of fake rock to my tank. Initially the water went a little murky overnight. I discovered this the next day and did 50% water change immediately. The rock also had a milky slime covering it. I removed it and rinsed it in the old tank water and put it back in. From then on I haven't had any problems with the rock and it eventually went brown with a light covering of diatoms. I glued a few frags of green star polyps to it and within a month it was covered and even coralline algae was starting to grow on it.

The second piece of fake rock I added had soaked for 2 months. This time I didn't get any murky water or slime on the rock. So, soaking the rock longer before adding to your tank could be a good idea.

Simon Lemin



INTERESTING IMPORTS



Pygmy Cory
Photo: Robert Beke

If our feature article has inspired you to invest in a school of corys then there are several great options on the importers lists. Bronze corys (standard and albinos) and peppered corys are hardy and reasonably priced and a great cory for beginners. If you are able to spend a little more then leopard, panda, gold leopards *C. sterbai*, and tailspot corys *C. caudimaculatus* are nice options. For nano tank fans, pygmy corys and Rio Salinas corys *C. habrosus* are on the list and if you are after a larger species then why

not try an emerald green cory *Brochis splendens*, a close cory relative. If you are after something a little rarer then smudge spot corys *C. similis* and Adolfo's cory *C. adolfoi* are also available.

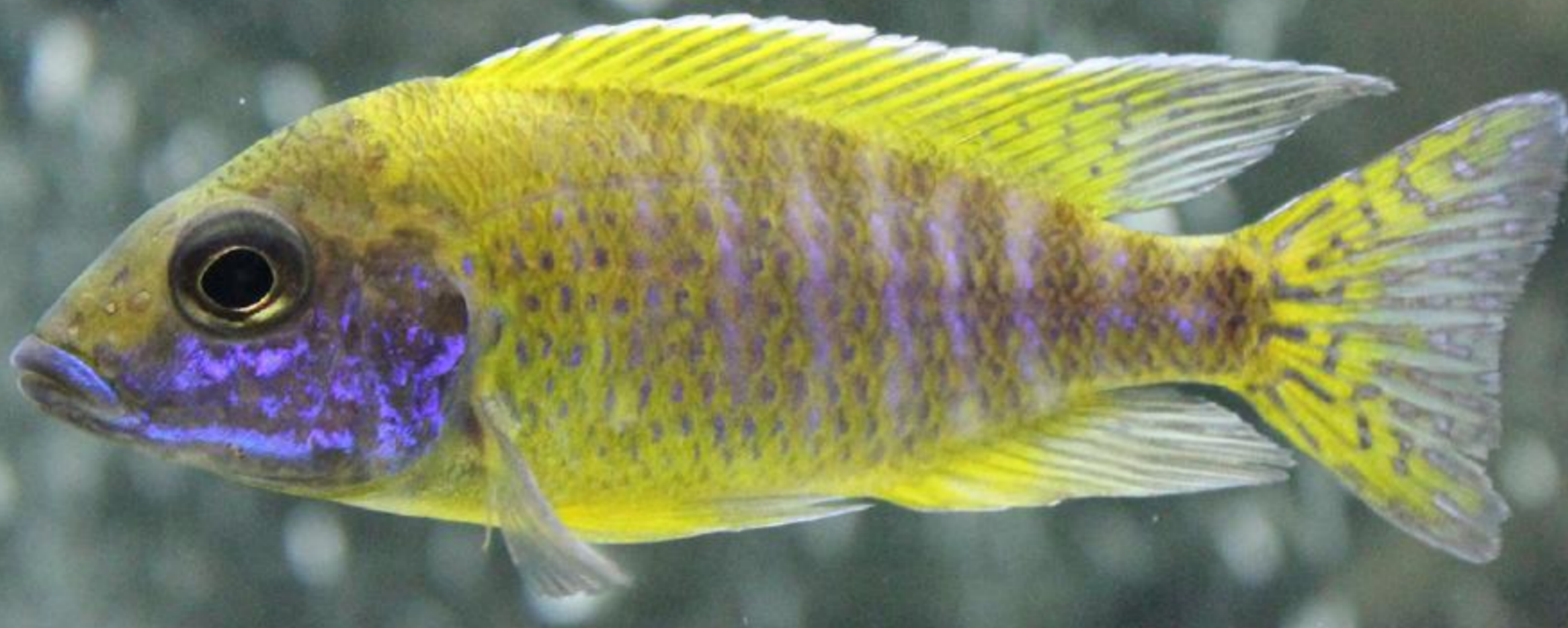
If you are thinking of adding a larger catfish species why not try a comical hoplo cat *Megalechis thoracata*, a distant cory relative, a bumblebee catfish *Pseudomystus siamensis*, banjo catfish, red whiptail, or glass catfish. For those with a large budget, the stunning zebra pleco *Hypancistrus zebra* is on two importers' lists.

For Siamese fighters fans there are a number of options. Long finned males are available in red, blue, and green. Crown tail males are available in red, blue, black, pastel, and assorted colours; and if you have a large budget then black half-moon plakat males are available. Female crowntail, halfmoon, and regular fighters are also on the list.

If you are a fan of African cichlids then there are several great options including: blue, eureka red, marble, orchid blue, and sunshine peacocks, Fuelleborn's cichlid, red Topped Trewavasae,



Betta
Photo: Robert Beke



Sunshine Peacock
Photo: Jack Jiang

chrysonotus cichlid *Copadichromis chrysonotus*, and rainbow *Melanochromis*.

For killifish fans, the delightful Foer's Notho *Nothobranchius foerschi*, blue Notho *N. patrizii*, gold panchax *Apolcheilus lineatus*, and American flag fish *Jordanella floridae* are available.

And finally, if you have a tropical marine tank and are thinking of buying a clownfish, or even trying to breed them, several species are available: tomato clowns, blue stripe clowns *Amphiprion chrysopterus*,

Pacific maroon clowns *Premnas biaculeatus*, orange (Coral Sea) ocellaris clowns, percula clowns, sebae clowns, and skunk clowns *A. sandaracinos*. For something a little different and more expensive there are a number of spectacular varieties including black, snowflake and extreme white ocellaris clowns and picasso and black picasso percula clowns on the importers' lists.

The editorial team



Red Whiptail
Photo: Aakash Sarin



Clownfish
Photo: Diane Wilkie

Conference 2015 Wellington

MAY 30 & 31



Photo: Donovan Govan

This year the 2015 Federation of New Zealand Aquatic Societies (FNZAS) annual conference will be held in Wellington.

It is a great opportunity to come and visit the coolest little capital in the world for an enjoyable and relaxing conference. Accommodation will be provided by members on a first-in basis or if you would prefer your own space there are a few good local motel options.

Along with the conference meetings we have organised a range of activities, which are likely to include:

- A friendly catch up and a meal out for those who arrive Friday night

- The conference will be held at the Tawa Community Centre, 5 Cambridge Street, Tawa. This is close to the train station for those wanting to nip into town.
- Guest speaker: This year we are fortunate to have guest speakers covering a range of topics including: LED lighting, Hamburg Matten filtration, Repashy superfoods, and Antarctica
- A takeaway dinner followed by a quiz night at the conference venue.
- A day out in Wellington's CBD and a chance to explore our beautiful city. Planned activities include a visit to Te Papa and the thought provoking 'Gallipoli: The scale of our war' exhibit. This is to be followed by a behind the





Photo: Partyzane



Male Stitchbird
Photo: Duncan Wright

scenes tour of the National Fish Collection - a fantastic opportunity to view specimens of some of the 1300 fish found in the New Zealand region. Lunch will be provided.

- For those who are staying until Monday a guided tour of members' tanks can easily be arranged.

And if you would like to do something else you could also visit 'The Great War Exhibition' at Pukeahu National War Memorial Park, take a ride on historic Wellington cable car to the Botanic Gardens, or visit some rare natural treasures at Zealandia Eco-Sanctuary.

KMAC



Photo: Clilly4



Photo: Clilly4



Photos: Darren Stevens

Petone Vet Hospital Petone

376 Jackson Street
Petone, Lower Hutt
04 380 9827

<http://www.wellingtonvets.co.nz/petone-pets-specials-aquatic-stock>

Hours: 8am – 6:30pm Monday to Thursday
8am - 5:30pm Friday
9am - 3pm Saturday
10:30am - 2:30pm Sunday

Facilities: 14 tropical freshwater tanks
9 cold freshwater tanks
7 tropical marine tanks

At the far end of the Jackson Street shops in Petone is the Petone Vet Hospital. Along with their veterinary practice they offer a good range of pet supplies for cats, dogs, and other pets. They also stock coldwater, freshwater tropical, and tropical marine livestock and dry goods and have a fish club which offers a 7% discount on all aquatics goods.

The aquatic section was set up by tropical marine enthusiast Sarah Barker 7 years ago and comprises 30 tanks that take up the back and much of the right hand side of the shop. The tanks are very well maintained and the staff are welcoming and helpful. If you are after specialist advice, particularly with tropical marines, you are probably best to talk to Sarah who works Tuesdays and Thursdays.

The tropical freshwater fish are housed in 14 x 340 litre tanks set in two tier stainless fronted racks. Each rack is filtered by a large sump. The shop stocks a good selection of the more commonly kept species along with the odd rarer species. If you are after something special ask Sarah or Lysette and they will try and order it for you. They also stock a good selection of coldwater fish (several varieties of goldfish, white cloud mountain minnows, turtles, and gold axolotls) but what really steals the show are the tropical marines.

The tropical marine section is impressive and a reflection of Sarah's passion. There are 7 marine tanks: an impressive display tank at the back of the shop, two 1.8 metre 300 litre tanks for marine



fish (most tanks have a fish or two), two coral tanks – one mainly for frags, a red sea max, and a live rock tank. Stock varies depending on what’s available but there are always a few gems in store. When I visited there was a good selection of fish including a purple tang *Zebrasoma xanthurum*, and a great selection of corals including a purple/blue *Goniopora*, red open/barley brain, and a purple tip hammer coral. They also offer a selection of marine setups starting at a 19 litre Nano for \$350.

If you are in the neighbourhood the Petone Vet Hospital is well worth a visit, particularly if you are interested in tropical marines.

Interesting species

Tropical freshwater

Rainbows (several species) \$19.90

Red parrots \$22

Tiger and big band tiger plecos \$39.90

Tropical marines

Purple tang *Zebrasoma xanthurum* \$290

Sharpnose puffer *Canthigaster* sp. \$120

Lubbock’s Fairy Wrasse *Cirrhilabrus lubbocki*

Boxing shrimp \$120

Goniopora purple/blue coral \$130

Red open/barley brain coral \$120

Crocea and squamosa clams \$150–160

Darren Stevens

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

SHOP TOUR



Photos: Julie-Anne Cunningham

Pet Essentials Napier

20-60 Wellesley Road
Balmoral Shopping Center
Napier

Phone: 06 833 7546

Email: info@petessentialsnapier.co.nz

<http://www.petessentialsnapier.co.nz>

Hours: 9am – 5:30pm Mon to Wed and Friday
9am - 6pm Thursday
9am - 5pm Saturday
10am - 5pm Sunday

Facilities: 24 tropical freshwater tanks
5 cold water tanks
4 display tanks (2 tropical freshwater, 1 cold water, 1 turtle tank, 1 frog tank)

Pet Essentials Napier is part of the national Pet Essentials group, started by Dennis and Bernie Pert who had an interest in raw food feeding for animals. They saw an advertisement in the paper and the opportunity to open a pet store in Napier stocking

pet supplies. This was their chance to help educate people in pet nutrition.

As you enter the store you are greeted with an array of pet care essentials for all manner of animals. The store is very well staffed and access to the store is excellent, flat automatic opening doors, excellent wheelchair or disability access, nice wide isles that make moving around a busy store easy and enjoyable. Toward the rear of the store you will find spacious cages and aviaries set to house pets that are available for sale. Nick Calder is the in store specialist in aquarium care and aquatic pets. He is knowledgeable and helpful and has a keen interest in aquarium keeping himself. Nick has over a decade of experience in aquatics, has installed over 500 aquariums and worked in the Australian market for 6 years. Andre also works part time in the aquatic department to help on busy days and Nick's days off.

As you enter the Aquarium section you are in for a treat, passing through an array of aquariums for sale, and a good range of aquarium accessories and necessities. They are well stocked with an assortment of filtering, lighting, heating, food and décor options



to suit your needs and budget. Along the far wall of the shop you will find 24 aquariums, filled with stock for sale. Currently the store is looking at upgrading their tank display system. The tanks are clean and well lit, and many are beautifully decorated to give you examples of what you can achieve with your own aquarium set ups. These set ups include live and fake plant as well as interesting ornaments from their range. Pet Essentials import and exclusively stock the Kazoo range of ornaments and also stock a good range of wood and assorted substrates.

Live Aquatic plants are displayed for sale in an impressive, cyclic, tiered running water display. There are so many to choose from and stocks are replenished weekly.

Fish stocks vary and include many varieties such as goldfish including celestials and comets, guppies, swordtails, corydoras, platies, bristlenose, angels, assorted tetras, Bolivian rams, red-tail black sharks and silver sharks, gourami, Borelli dwarf cichlid, and black ghost knifefish to name just a few. New stock is ordered weekly and cichlids and more exotic species can be ordered in for clients.



Pet Essentials catch phrase is "Where your pets would want to shop". The store has a great community feeling, often you will find customers and their furry friends visiting, shopping, and getting advice.

Interesting species

- Celestial goldfish \$12.00
- Borelli dwarf cichlid \$26.00
- Bolivian ram \$16.00
- Electric blue cichlid \$30
- Black ghost knifefish \$50.00
- Angelfish (several varieties) from \$16 - 30.
- Golden black-eyed bristlenose \$15.00
- Crown tail Siamese fighters from \$25.00

Julie-Anne Cunningham

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

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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

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 Membership 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

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MT MAUNGANUI

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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

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