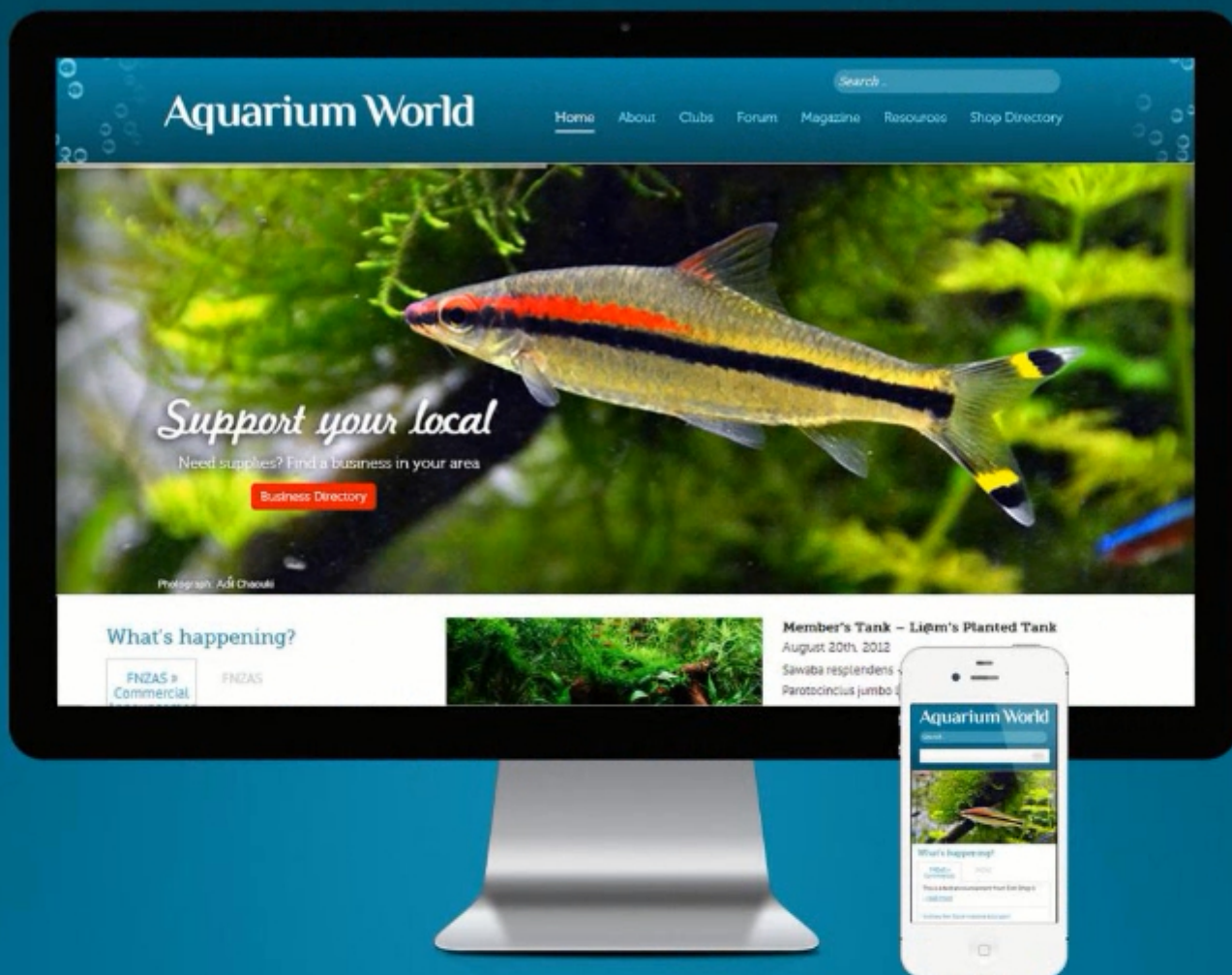


Aquarium World

magazine

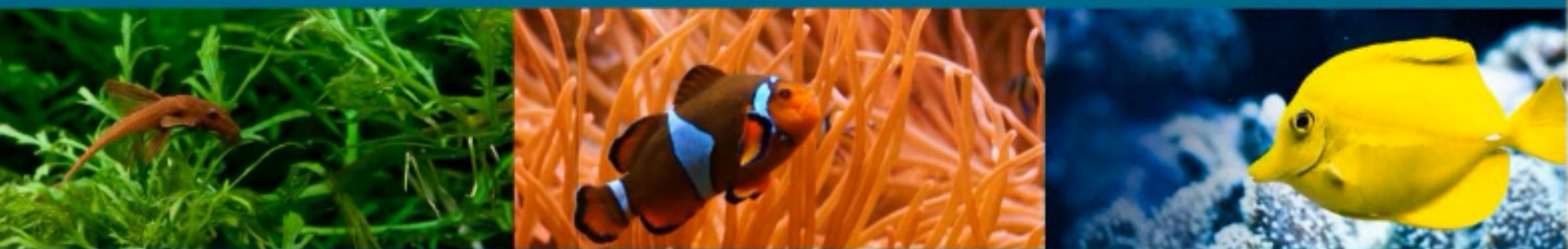
Volume 64 Issue 1 2018





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Aquarium World

magazine

Volume 64 Issue 1 2018

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Intellagama lesueurii leseurii
Juvenile eastern water dragons
Photo: Quinn Harris



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Welcome to a new issue of Aquarium World.

Firstly, I would like to welcome Nicole Figgins to the editorial team. Nicole is a very keen fish keeper with a wealth of experience and a great addition to the magazine's editorial team.

Have you ever wanted to build your own tank? In this issue we have a bit of a do-it-yourself focus with articles on making your own photo tank, the advantages of plywood tanks and how to go about constructing one and, for marine keepers, how to build a kreisel tank.

One of the great things about fish keeping is watching your fish grow to maturity and then trying to breed them. With some species this can be relatively easy while others pose more of a challenge. In this issue I share an 8-year saga in trying to get my leopard cactus plecos to spawn.

Cryptocorynes (Crypts) look great in a planted aquarium but few people ever get to see their spectacular flowers. Simon Check decided to encourage his crypts to flower by growing them emmersed and he shares his journey.

And finally, Australian water dragons look great and have plenty of personality. In this issue Reuben Anderson features these striking lizards and provides advice on how to keep them.

Darren

Darren Stevens
FNZAS Editor



Cryptocoryne cordata
Photo: Simon Check

Simon Check



Simon has been keeping fish for over 20 years but has drastically reduced the amount of tanks recently as the human family has grown. American cichlids and rainbow fish are favourites, along with a huge interest in aquatic plants and biotopes. He currently only has one tank, with fire mouths, green severums and lemon tetras. When time and weather permits, he likes to explore local aquatic habitats, sometimes spending way too much time in streams and ponds.

Olivia Cook



Olivia's interest in fish-keeping started as a child when the family kept a tropical community freshwater tank, a couple of axolotls and goldfish. Her interest in fish keeping was rekindled ten years ago when she started her first tropical marine reef system. Nowadays she keeps a tropical marine system and is particularly interested in hobbyist mariculture, propagation and larval rearing systems.

Nicolene Palmer



Nicolene's interest in the hobby started in her teens. Her addiction began when she first ventured into keeping African cichlids & then onto breeding discus. She then took on the challenge of marines, eventually finding great success and satisfaction in reef keeping. Nicolene currently has a Mixed Reef 800L display tank of marine fish and corals ranging from soft corals to hard LPS - SPS corals, and enjoys sharing her knowledge with other reefers and hearing about their success.

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.

Reuben Anderson



Reuben has been interested in fish and reptiles since he was about 5, catching rainbow skinks in the garden and eeling down at the creek. He started keeping goldfish then naturally moved on to tropical fish and eventually marine. He began keeping native reptiles at around 12 and they have remained a passion ever since. More recently Reuben developed an interest in fish keeping. He is currently completing a BSC and hopes to pursue a career in aquaculture.

Carey Rohloff



Carey is a semi-retired accountant with a background specialising in the fishing industry and has a love of all things fish and outdoors. Having recently returned to tropical fishkeeping, he has specialised in the keeping and breeding of discus, supplying them on a commercial basis. He is also involved in the developing of commercial aquaculture and aquaponic operations, with a particular interest in land-based closed water systems.

Barrie McKoy



Barrie began fishkeeping in the early 80s after being attracted to the bright colours and variety of shapes and habitats of killifish. He was intrigued that a fish could lay eggs that would be left dry for several months and later hatch when the rains replenished their pools. Barrie was a member of the NZ Killifish Association (now in recess) and has kept killifish on and off over the last 30 years, and is now working towards helping rebuild stocks and interest in these fish in NZ.

Darren Stevens



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

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A leopard cactus pleco fish is shown resting on a gravel substrate in an aquarium. The fish has a dark, mottled pattern with lighter spots, characteristic of its species. It is positioned horizontally, facing right. The background is dark and out of focus, showing some aquarium decor like driftwood.

**Well worth the wait:
keeping and breeding
leopard cactus
plecos**

Darren Stevens



In 2009, I walked into my local fish store (LFS) and saw my first leopard cactus pleco (*Pseudacanthicus cf. leopardus*, L114) and I was hooked. It was expensive (about \$200) but stunning with an orange-brown armored body set with rows of thorn-like spikes, covered with an irregular network of black spots, and a mainly orange tail. I thought about buying it for a few weeks and then decided to get two with the long-term aim of breeding them. There is nothing like a challenge and little did I know it would take me eight years to succeed.

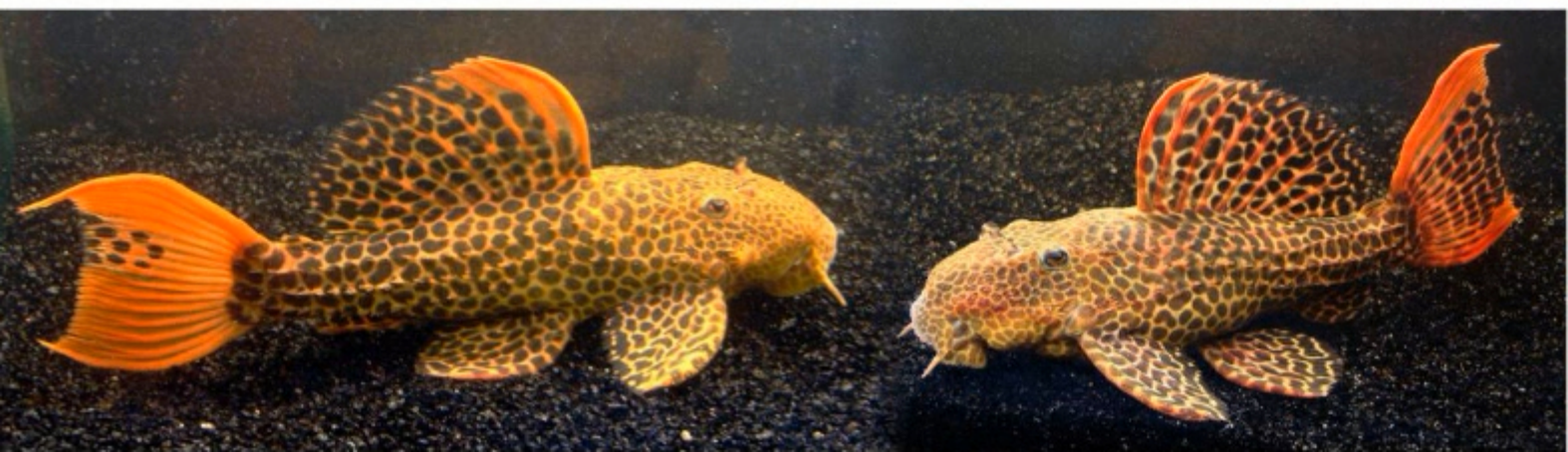
I purchased two L114's, and then the following week my LFS got in another one which was even

My first leopard cactus pleco
Photo: Darren Stevens

nicer, so I got that as well. The addiction had begun. They were 10–11 cm and one was kept in a 200 litre tank and two in a 300 litre tank. They grew fast and were soon transferred to a 1.8 metre (620 litre) tank which they shared with three juvenile goldie plecos (*Scobinancistrus aureatus*, L014). As my cactus pleco obsession grew I

Below: Young adult male and female L114 at about 2½ years old

Previous page: the same pair at 29 and 22cm FL and about 8½ years old feeding at night in low light
Photos: Darren Stevens



wanted a bigger group to increase my chances of a compatible pair. Two years later I purchased another two juveniles from my LFS and shortly afterwards a beautiful 21 cm male which I named Henward after its previous owner. Six years later and the L114's (and the L014's) have grown into impressive adults and I was lucky enough to end up with three males and three females. The largest male is now 29 cm fork length and the largest female is 22 cm. Their tank has a deep bed of fine gravel and is furnished with large pieces of bogwood, two large tile tunnels for refuges, two extra-large D-shaped breeding caves, and a few rocks to hold the caves and tunnels in place (adult L114's are good aquascapers). Geoff Haglund kindly brought back the breeding caves for me from two L-Numbers Days conventions in Germany, as carryon luggage!

I mainly feed my L114's on Repashy Bottom Scratcher, Grub Pie, or Soilent Green mixed with Bottom Scratcher or Grub Pie. When I am pressed for time or away from home they are fed on trout/salmon pellets and JBL NovoPleco or Hikari Algal Wafers. They occasionally get fed Hikari Massivore or shrimps.

Over the 8 years I have been keeping them my two dominant females often appeared gravid but they have never looked like breeding. I think this was because, despite the L114's intimidating appearance, the smaller goldie plecos (L014's) ruled the tank and the caves.

I felt that to successfully breed my leopard cactus plecos I needed to move the goldies to another tank. It took a while but I finally had a new stand and two new tanks: a 666 litre for the L114's and a 420 litre for the goldies. During the installation of the stand and tanks I moved the L114's and the L014's to three holding tanks. Quite unexpectedly things then started to happen.

The action took place in a 396 litre tank (110 x 60 x 60 cm) where I had placed Henward and my dominant female. The other tank mates were

a large female L014 and a pair of electric blue acararas. The tank was furnished with river rocks, bogwood, and two large D-shaped caves.

After three weeks I noticed that the female looked very fat (ready to burst). I tried triggering them with a 30% cold water change, which dropped the tank temperature by 5°C to 23°C. Over the next 3 days, Henward repeatedly kicked the goldie out of the larger cave (32 x 11 x 8 cm internal) before taking possession of it. After work on the 4th day, I noticed Henward was out of the cave and the female had wedged herself across it – I presumed she was ready to breed. I checked again after dinner and Henward had her trapped in the cave. I gave them a 30% cold water change in case they needed more encouragement.

Later that evening Henward's tail was quivering rhythmically. He still had her trapped the next morning but by 6 pm that evening a slim, trim and undamaged female was outside the cave. Henward's tail was gently moving so I assumed he was on eggs. I briefly shined a torch in the cave but couldn't see beyond him. For the remainder

| Henward taking a break from brooding



of the brooding period I left the main light off in the fish room and I kept noise and movement to a minimum.

Four days into the brooding period the electric blue acaras decided to spawn on a piece of wood close to the cave entrance. The male acara was getting stroppy so I slowly moved the wood with the eggs on away from the cave. The male acara then went and repeatedly bit Henward's tail. In response, he backed out of the cave, covered the entrance with his body and raised his dorsal fin. I quickly shone a torch in the cave and glimpsed a golden glow at the back of the cave. Thankfully Henward went back in his cave, and the acaras went back to tending their eggs (which disappeared overnight). Fortunately, there were no further issues over the next 3 days although Henward would sometimes back most of the way out of the cave for a few seconds before going back in.

Based on overseas spawning reports, L114 eggs take about 7 days to hatch. Seven days after spawning I noticed that Henward wasn't going fully into the cave and his tail was hanging out by 2–3 cm. He also didn't appear to be backing out and resting anymore and I assumed this meant the eggs had hatched. Seven days later I decided to remove the young to rear separately. At 7 days old, the fry should be well developed but not enough to want to leave the cave where they may get eaten or struggle to get enough food.

I was nervous removing the fry in case there were issues getting Henward out – the last thing I wanted was a stroppy 29cm male leopard cactus pleco thrashing around and killing the fry. I half-filled two large plastic trays with tank water and grabbed a large net. However, as soon as I moved the piece of bogwood lying over the

Below: The breeding pair shortly after their mammoth effort



cave, everything fell into place because Henward backed out of the cave. I used the net to block him from re-entering and gently lifted the cave out of the tank. I then slowly tipped the water out of the cave into one of the trays and about 20 fry fell out.

Then I shined a torch into the cave and my mouth fell open. There was a large mass of wriggling fry in the end. I repeatedly slowly tipped water from the plastic container into the cave, gave it a gentle swirl, and slowly emptied the contents into the container until all the fry were out of the cave. It looked like there were about 200 fry (I later counted 470!). Henward had done an outstanding job on his first attempt. Now it was my turn to look after the fry.

The fry were raised for 4 days in the parents' tank in 3 homemade floating 'Gerd' boxes (see

| L114 young at 1 week old (12mm SL)

Aquarium World 2014/3) each with a thin layer of fine gravel and a few small pieces of bogwood. At 11 days old (before they started feeding) they were transferred to a 140 litre grow out tank which had a fine gravel substrate, numerous small tunnels (short lengths of 17 mm plastic pipe siliconed to ceramic tiles), bogwood, and was filtered by 2 Fluval 3 plus filters.

At about 7 am and 9 pm each day the fry were offered a 50:50 mix of Repashy Spawn and Grow and Soilent Green. Most fry began to feed 2 days later when they were 13 days old. Before they were fed, the tank was given a gravel vac and a 15–20% water change (30–40% daily). The filters were cleaned daily and every 3–4 days the sides of the tank, tunnels, and bogwood were given a good clean. Not surprisingly, the fry were more active at night and ate more food than during the day. Under a regime of heavy feeding, large water changes, and regular gravel and filter cleaning the





young grew from 12 mm SL at one week old to 21 mm SL at 5 weeks old with only 15 deaths (97% survival).

Based on overseas breeding reports, mortality can be very high when rearing large numbers of cactus pleco fry together. At about 4 to 6 weeks of age they can become very aggressive, biting and killing their siblings. One overseas breeder recommended either rearing them in small groups (say 50 fish per group) or trying to reduce aggression by providing as much tank space and as many hiding places as possible. I did not have enough spare tanks to rear them in small groups so to try to minimize aggression, the fry were fed twice a day (hopefully well-fed fish would be less

| L114 young at 1 Month old (20mm SL)

aggressive), plenty of cover was provided (tunnels and bogwood), and the group was split across two 140 litre grow out tanks at 25 days old.

At 38 days old (21 mm SL) they were taken to Geoff Haglund for a six week vacation as I was away for work. Geoff has a wealth of experience with breeding and raising plecos and he was happy to babysit them. The fry were bagged into groups of twenty for the three hours and 160 km journey to Geoff's house. I also took a few 20 litre plastic containers filled with water from the rearing tanks which we used to give their new tank a 50% water change. We left their new tank



to settle and warm up before slowly introducing the young. Only two young were lost in the move.

When I got back from my work trip I was feeding the adults one night (the breeding pair were placed back with the main colony two weeks after the young were removed) and I noticed a couple of small young in the tank. The next morning, I removed all furnishings and the adults and caught 18 roughly 2-week old fry. It was nice to know Henward hadn't lost his charm (he had 2 of the 3 females lining up at his cave) but I already had a good number of young to rear out so I removed

the breeding caves and let him have a well-earned break.

A couple of days later I visited Geoff. The young L114's were now 3 months old, up to 38 mm SL, and they looked fantastic. Geoff had done a great job and had lost very few young until some of the larger ones decided to have a short lived killing spree. Geoff witnessed one attack, when one of the larger young rocketed out of its hiding place, king-hit a small one killing it, and then swum back to its lair. A rearrangement of the tank, the addition of more cover, and turning the tank lights off stopped the rampage. Thanks to cactus pleco guru, Ole Paulsen, for his advice to Geoff. Unfortunately, more juveniles were also lost due an oxygen supply problem in one of the holding tanks. However, I still had about 200 juveniles to grow out. These were split over a 250 litre and a 400 litre tank. With heavy feeding on a variety of Repashy products, and frequent water changes, the largest were 55 mm SL at 6 months old, and 80 mm SL at 7.5 months old.

While the prospect of raising so many young was

| L114 young at 3 Months old (38mm SL)





daunting, and there were a couple of hiccups along the way, I feel privileged to have had the opportunity to raise such beautiful fish. Watching them grow from delicate 12 mm fry to stunning juveniles has been a highlight of over 10 years of keeping and breeding plecos.

| L114 young at 6 Months old (55mm SL)

I would like to thank Geoff Haglund for looking after the young while I was away and Ole Paulsen for his advice to Geoff when the young were having their killing spree.

Darren Stevens

| L114 young at 7 ½ Months old (80mm SL)

| Photo: Geoff Haglund



Cactus plecos – *Pseudacanthicus* species



Young female coffee and cream cactus pleco (L160)

There are 8 scientifically described cactus plecos *Pseudacanthicus* spp. and a few more awaiting a scientific name. *Pseudacanthicus* means 'false thorns' and refers to the rows of thorn-like spikes that adorn the body, and gives rise to the common name of cactus pleco. Many cactus plecos have limited ranges and are therefore susceptible to overfishing.

Two of the more commonly available cactus plecos can be imported into New Zealand. The spiny monster or coffee and cream cactus pleco (*Pseudacanthicus spinosus*, L096, L160) is very rare in New Zealand, and the leopard cactus pleco is occasionally imported.

The name leopard cactus pleco is used for four very similar varieties (L114, L427, 'L600', LDA07), which may represent one widespread variable species or two or more similar species. The most commonly available form is the Demini leopard cactus pleco (*P. cf. leopardus*, L114) from the Rio Demini, a tributary of the Rio Negro, in Brazil. Prior to 'L600' being imported, L114 were thought to be the 'real' *P. leopardus*. True leopard cactus plecos (*P. leopardus*, 'L600') come from waterways near the Brazil/Guyana border. These two forms differ in colour, spot size on the head, body form, and apparently the number of teeth. Male leopard cactus plecos grow to at least 29 cm fork length (females are smaller) and are suited to large tanks with pH's of 5.6–7.0 and temperatures of 24–28°C. Like all cactus plecos, leopard cactus plecos are largely carnivorous but need some vegetable content in their diet.

Leopard cactus plecos are not for the faint hearted. An adult colony needs a large tank (at least 600 litres), line of sight barriers to reduce squabbles, and plenty of hiding places. They often jostle for dominance, territory, and food (including the females) and bite each other. However, their boisterous antics rarely result in injury and they are great to watch. If you have a large tank (at least 60 cm wide and 400 litres for 1–2 adult fish) and are thinking of a beautiful and entertaining bottom dweller with a bit of an attitude then it's hard to go past a leopard cactus pleco.

Cryptocorynes



photos and article by **Simon Check**

Crypts (*Cryptocoryne* spp) come from the rainforests of South East Asia and India/Sri Lanka, with approx 60 known species and probably many yet to be discovered. The name *Cryptocoryne*, comes from the Greek words “Krypto”= hidden and “Koryne”= Stick, referring to the hidden spadix.

They are a basal growth herbaceous perennial plant and a member of the Araceae family. With most species of Crypts, the only sure way to identify them is to observe their bloom. Few crypts will flower while fully submersed, and the actual appearance of a submersed cultivated plant can vary greatly from that of one grown emmersed.

In their natural environment they grow in bogs and swamps or on stream and river banks, where they are seasonally flooded with the wet season. During the dry season is when these plants will flower, and

I Large crypt collection in a 300 litre Aqua One tank

the flowers can be described as nothing short of spectacular. After discovering the spectacular and bizarre flowers that these species produce, I decided to try and replicate their natural environment, and see if I could get them to flower.

Because they are from humid and warm rainforests of Asia, these conditions are required to be maintained, due to the fact of an adaptive feature of the plants known as “Crypt Melt”. If the plant is subjected to extreme changes, ie. temp, humidity, the plant will start to turn brown, and the leaves and stems turn to a mush and disintegrate.

I have used a 300 litre Aqua One tank that has three built-in 30 watt T8 fluorescent tubes. Being covered, keeps the humidity up and temperatures pretty constant.

The crypts had their roots pruned and were planted in small terracotta pots with holes drilled through them to allow water to flow easily around the roots. Planting media is a mixture of general potting mix with sand, peat and Daltons Aquatic Mix.

The pots were then placed into the tank and water was added to the level just below the top of the pots. A 300 watt aquarium heater is the heat source, heating the water to approximately 27°C. A small powerhead and airpump with an airstone are used to provide water movement to prevent any uneven temperature. This also has the added advantage that it increases humidity due to the bubbling.

Crypt collection in a smaller tank housed within the 300 litre Aqua One tank



Lighting is set on a timer and is running 12hrs on and 12hrs off.

Initially the crypts were kept in a smaller tank inside the main tank, until the size of my collection increased and they were then placed directly into the big tank.

For the first week or two, very little growth occurred due to the pruning of the root system. The reason I trimmed the roots was to encourage new healthy roots to grow, giving the crypts a good start.

Most plants have now shown a considerable amount of growth, with lush foliage and even smaller plantlets shooting up beside the mother plants.

To date, only one of the crypts has flowered for me, *Cryptocoryne wendtii* (shown below, this is also the one plant that has grown the most, almost tripling its size) and although this particular crypt does not have as spectacular flowers as some others, it still leaves me with a great amount of satisfaction, and also anticipation, to see what the other plants will produce. The wait continues.

Simon Check





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Eastern water dragons

Intellagama lesueurii lesueurii

formerly *Physignathus lesueurii lesueurii*

by Reuben Anderson

I thought I would do my best to do a write up on how to care for eastern water dragons as there doesn't seem to be much information out there. They are becoming more popular as pets in New Zealand and, being the cheapest dragon on the market, they are often being bought by people who haven't done their research beforehand. Then they ask why they are having problems with their dragons and it turns out they have no UVB light or they are not providing other basic requirements. I am by no means an expert on these animals but I am using information that I have gained through keeping mine, things I have learnt from other more experienced keepers and research I have gathered through many different books and articles on the internet.

Eastern water dragons are stunning, prehistoric looking lizards that make great pets. They are native to eastern Australia from Victoria northwards to Queensland. The ones we have in New Zealand are mostly eastern water dragons *Intellagama lesueurii lesueurii* but some do have genes from the Gippsland Water Dragon *I. l. howittii* in them. Eastern water dragons are the longest reptile available on the New Zealand market with some males close to 1 metre long and a kilogram in weight, and they can live for 15 to 28 years. They have lots of personality and are very active lizards. They don't take much effort to care for, and it is easy enough to set up a suitable enclosure. Males generally have a much thicker and shorter head, a darker black/grey bar behind their eyes, a more dominant crest, and a red underside.

Water dragons can be kept outside all year round in most places in New Zealand. An outdoor enclosure provides many advantages and you will probably get to see more of their natural behaviour. You are also usually able to build a much larger enclosure which makes for a happier lizard. The size of an outdoor enclosure should ideally be a minimum of a 2m x 2m x

Below: Eastern water dragon enclosure that is 3m across the front



could do a mixture of substrates to mimic their natural habitat. In an outdoor set up I would use bark or mulch as you don't need to worry so much about the mess and it looks very natural. You also want to have many branches and hollow logs etc. You can create waterfalls and place large rocks here and there to help mimic their natural environment. Remember water dragons are an arboreal (tree living) reptile and like to rest on high branches and bask so they will spend a fair bit of time perched up on branches and logs. A branch over hanging the water is also good.

It is usually advised that you keep your dragon indoors for the first and maybe second winter depending on their size. Many experienced keepers keep them outside from the beginning as this can help with fertility and makes a much hardier lizard. However, it is good practice to leave your dragon inside for the first year or so.

If you don't, you may find it may get too cold during the winter and not come back out of hibernation and die.

The recommended minimum size for an indoor enclosure depends on their size.

- Hatchlings (pair) an enclosure measuring 900mm x 450mm x 450mm (L,W,H)
- Yearlings from 1–2 years (pair) an enclosure measuring 1200mm x 600mm x 600mm (L,W,H)
- Adults 3 years plus (pair) an enclosure measuring 1800mm x 600mm x 800mm (L,W,H)

Water dragons, being active lizards, need lots of room to run around so these dimensions should be the minimum. As they say, the bigger, the better.

Juvenile eastern water dragons

Photo: Quinn Harris



Water

Water dragons weren't given their name for nothing! They require a large pool of water to swim and soak in. The water should be deep enough for them to fully submerge themselves in as they retreat to the water if they feel threatened or scared. They may stay under the water for several minutes and adults even sometimes over an hour! Make sure they can get out of the water with ease if they need to. A piece of wood or a rock emerging from the water is perfect, and it is also somewhere they can cool off without entering the water. Make sure to either provide a filter for the water, or regularly change the water, as they defecate in it. It is important to not heat the water as if the water is too warm, you may find your dragon will spend too much time in there and it may not hop out to bask. If they stay in the water too long they run the risk of fungal infections. Ponds need to be kept cool as water is their main way to thermoregulate, i.e. to cool off. The water area should be at least 1/4 of the enclosure floor. Adding an air stone or pump to the water may encourage them to enter the water if you find they don't like going in to the water.

Substrates

There are many substrates you can use in your vivarium.

Outdoor artificial turf - This is a very common substrate used by many hobbyists. It is easy to clean, comes in many different colours, it is safe for your lizard, and it's also quite appealing to the eye.

Tip: purchase two pieces that cover the entire floor so you can wash one while you use the other one. Paper towels can also be used but are a bit of an eyesore.

Sand - This is okay but can be very messy. You also run the risk of impaction if you feed on the substrate. If you use sand I would highly recommend you feed in either a large dish or separate feeding enclosure.

Bark/mulch/aspens - This looks quite effective and is cheap but can also be quite messy. Avoid products made of pine or cedar as it has a very strong smell which is not liked by the dragons at all!

Stones/pebbles - I would stay away from these as small pebbles can be ingested and can cause impaction. They are also very cold and hard.

Sterile potting soil - This can look really nice and you can grow live plants in it but is also very messy, you will be constantly changing the water dish and wiping the front glass etc.

These are the most popular substrates but there are more being used. My favourite is outdoor artificial turf because of the reasons mentioned earlier.

Female eastern water dragons
Photo: Mark Paterson



Plants

You have the option of live or fake plants. Fake plants can be easily cleaned and now look very realistic. They can be pricey however, once you have them, they can be used for years. Live plants are more aesthetically pleasing but quite a few are toxic to reptiles and it can be hard to know which ones are and which aren't. Bromeliads, types of ferns, grass, small shrubs and palms are all suitable. These can be planted straight into the ground. It's also beneficial to grow edible plants in the enclosure. You can grow strawberries, blue berries, dandelions, etc., and they are easy to grow.

Lighting and heating

This is a fairly simple aspect to the care of water dragons but many people are often confused about this topic. Water dragons are diurnal lizards so they need UVB/UVA light. A 10.0% UVB output bulb is recommended but a 5.0% will do if there are branches close to the light. Tubes are usually preferred over compact bulbs but both do the job - make sure you follow the manufacturer's directions as there is a fine

line between too much UV and not enough!
REMEMBER TO REPLACE THE UVB BULB EACH YEAR!

A basking spot is also required to keep the enclosure at a stable temperature and to create hot and cold ends within the enclosure. There are many types of lighting to create basking spots. For example; basic spot lights, ceramic heat emitters, infrared bulbs, metal halide bulbs and many more. I prefer just basic spot lights as they are cheap and do the job while still providing light. Stay away from bulbs which claim to provide both heat and UVB as usually this is not the case. Using these bulbs by themselves can lead to a lack in calcium absorption which can cause MBD, metabolic bone disease, which can permanently damage your lizard and can leave it with major back problems and weak bones. Always purchase a safety cage to cover the bulbs as water dragons are excellent jumpers and can get burned if they touch the bulb. Heat mats are not needed as water dragons in the wild get all their heat from

Young male eastern water dragon
Photo: Mark Paterson



above. Don't use heat rocks as these have been known to cause serious burns to your reptiles. Temperatures in the enclosure should be: cool end 20–25°C, hot end 25–30°C and basking spot 35–40°C.

Lighting and heating is not needed in an outdoor set up. A basking bulb can be used but is not necessary. You may want to fix a UVB tube to the roof of the enclosure as if you have used clearlite or a similar product it will reduce the amount of UVB rays that get in.

Diet

Water dragons should be offered a wide variety of foods for a healthy diet.

Some good foods are:

- mealworms, crickets, waxworms (wax moth larvae), locusts, low fat cat food - the casserole type, not pellets or jelly meat, avoid types with fish.

- ox heart with fat and sinew removed.
- shredded greens like dandelion - the whole plant can be used, not just the flowers, rocket and clover
- fruits like strawberries, grated apple, raspberry, banana; and grated squash - a good and healthy way to bulk up salads

It is important to offer a mixture of fruit/veggies and meat/insects at each meal time. A juvenile's diet should be 60% meat/insects to 40% fruit/veggies. An adults diet should be 60% fruit/veggies to 40% meat/insects. It's a good idea to add vitamins and calcium to their food. You can purchase vitamin and calcium powder from pet stores. This helps them get all the vitamins and minerals they need to stay healthy. Make sure you follow the manufacturer's directions. Too much can be harmful!

This article is compiled from a care sheet on Water Dragons by Reuben Anderson on the Aquarium World forums.

FISH MINI PROFILE

Blue-green Chromis



Blue-green Chromis *Chromis viridis* are an attractive, popular and easy to keep marine fish. They grow to about 10 cm and are widespread in the Indo Pacific region. They are not endangered and are frequently aquacultured in sea cages in the wild. They are a schooling fish best kept in odd numbers in an aquarium. They are generally peaceful fish and do well at temperatures of 20–26°C. A small school will require at least 100 litres of space but a single fish can be kept in a 38 litre aquarium. Blue-green Chromis have been bred in captivity. During spawning, the male turns more yellowish in colour and guards the eggs till they hatch.

Photo Citron

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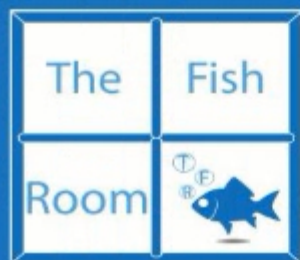
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A Beautiful Royal

Royal or regal angelfish *Pygoplites diacanthus* are a stunning feature fish that can grow to 25 cm and live for 15 years. They are widespread in the IndoPacific and are generally found among coral, often near caves, where they graze on benthic invertebrates. Royal angels are difficult to keep, may nip at some corals and clams, and can get bullied by aggressive tank mates, so are best kept by experienced marine keepers with very large tanks (at least 400 litres).

Photo Robert Beke





HOW TO MAKE YOUR OWN KREISEL TANK

ARTICLE AND PHOTOS BY **OLIVIA COOK**

The allure of a full reef system is easy to understand. Reef systems represent a microcosm of the marine environment, comprising equal parts beauty, tranquillity and complexity. The desire to replicate, in miniature, a small slice of the natural reef environment led me to establish my own reef system. This in turn led to an appreciation of invertebrate life cycles and an attempt at replicating an invertebrate larval rearing system – the kreisel.

Kreisel is a German word which loosely translates to 'spinning' or 'roundabout'.

Kreisel's are designed to move water in a perpetual spinning motion, thus replicating the pelagic environment that forms the habitat for the early life stages of many crustacea species. In recent years a desire for sustainable mariculture has encouraged more home hobbyists to create DIY kreisel systems and attempt larval rearing within their own homes. While kreisel's are commercially available, they often come at significant cost and are designed with a particular species in mind (typically jellyfish).

The creation of my DIY kreisel system was born from a desire to attempt raising cleaner shrimp *Lysmata amabilis* and peppermint shrimp *Lysmata bogessi*. While this system has yet to be fully tested I hope a full test run might occur in the not too distant future. In the meantime, why not try making your own system by following the instructions below.

What you'll need

- A cylinder preferably around 200mm in diameter
- Acrylic sheets
- Acrylic bonding agent
- A pump to circulate the water (an Aquamanta filter is perfect for the design below)
- A small aquarium to house your completed kreisel.
- Fine netting material
- A saw

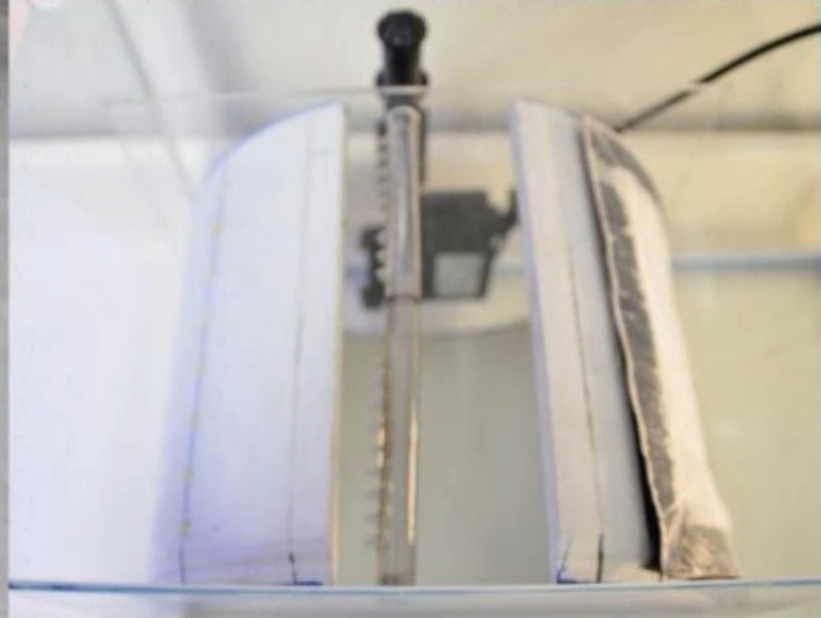
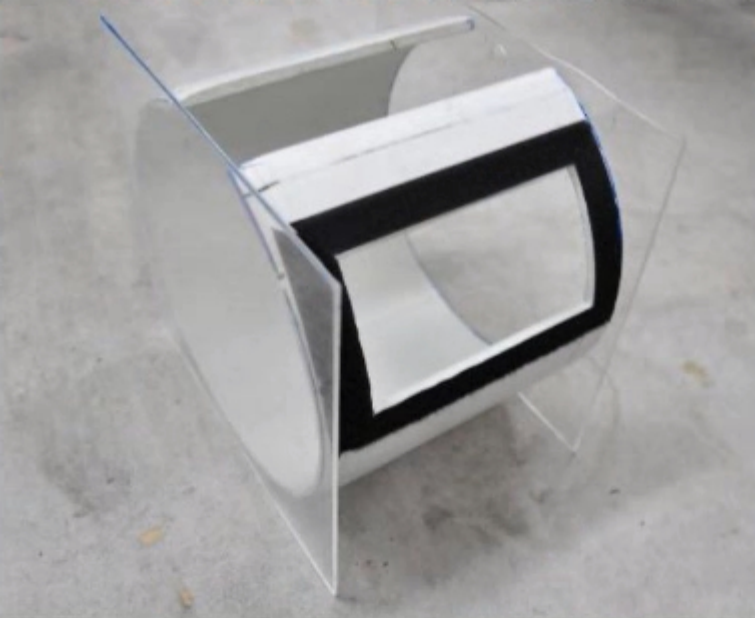


Building the system

The first step is to create the body of your kreisel system. For this system I used a large PVC stormwater pipe. The smooth interior of the pipe assists flow around the pipe and avoids the potential for larvae to snag on internal hazards. Determine the appropriate depth (front to back) for your kreisel by measuring the depth of the aquarium your kreisel will be installed in. Aim for the depth to be approximately 10cm shorter to allow sufficient space for your pump system to be installed at the rear of your kreisel.

The next step is to create the openings of the kreisel. A multi-tool should be used to create an opening at the top of the kreisel that is large enough to





enable your hand to be inserted for feeding of your larvae and maintenance. A second opening is cut on the exterior of the kreisel (at 3'oclock) to allow for circulated water to exit the kreisel. Water exiting the kreisel will be subsequently recirculated back into the kreisel by the kreisel pump system. Fine netting is attached to the exterior of the opening to enable water to exit, but retention of live food and the larvae.

Next, the front and back of your kreisel must be created. Acrylic sheets, cut to size, form the front and rear of the kreisel, and are bonded to the pipe using an acrylic bonding agent (e.g. Weldon). Finally, the pump system needs to be

created to direct circulated water around the interior of your kreisel. For this system I used an Aquamanta internal filter system but any internal filter system that includes a spray bar is a good choice. Remove the pump, pipework and spray bar from the filter housing and set aside. Drill a small hole in the rear acrylic sheet and position the spray bar at the top of the kreisel with the outlets facing in the opposite direction to netting (e.g. at 9'oclock). Pass the inlet of the spraybar through the hole you drilled in the rear acrylic sheet and connect to the pump.

Your kreisel is almost complete! Install your kreisel into a small aquarium, fill with saltwater, turn on and adjust the flow rate. The aim is to create a gentle perpetual motion within the kreisel. Once you have perfected your flow you are ready to start using your kreisel and raising your larvae.



Olivia Cook

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CAREY ROHLOFF

AQUARIUMS PLY vs GLASS

I have only recently got back into fishkeeping, having kept and bred tropical fish when I was a teenager in Whangarei. Back then I had a number of tanks and these were all glass, the warmer temperatures of the North not requiring a substantial draw on power to heat the aquaria. Several years ago I decided to get back into fishkeeping after some prodding. We had put a built in glass display aquarium in our house when it was built but for a number of years it had remained empty. In coming back into the hobby, I was determined to keep some discus so we cleaned out and stocked that tank with discus and some dither fish and, lo and behold, they spawned successfully. That was it, I was hooked once again.

Fast forward some months and I decided it was time to convert part of the garage into a fishroom and further develop the discus operation. That was done through the collection of various new and second-hand glass tanks, together with building some glass tanks, for

the spawning and growing out of discus. Before long I had accumulated a number of breeding pairs and was growing out quite a few discus. The breeding and raising of discus requires a lot of tanks and literage and, when deciding to expand the fishroom further, I got to thinking



about the other options to glass aquariums. After watching a number of YouTube videos, I decided to have a look at building some plywood (ply) tanks.

I was initially drawn to ply tanks for two main reasons;

1. a perceived superior ability of ply tanks to withstand an earthquake. Considering I am living in Wellington and have a substantial investment in my fish; bearing in mind we had just had the Christchurch earthquakes occur and;
2. a perceived belief that I would get better thermal properties from ply tanks and that my climbing energy bill would reduce, knowing that glass aquariums have particularly poor thermal retention properties.

My first build was a 2400 x 600 x 500 (L, W, H) tank, broken down into 6 equal sized tanks of about 100 litres each for either holding fry or spawning adults. Given I am a huge fan of sumps, I planned to plumb an overflow to a sump for filtration purposes and naturally, the tanks would be bare bottomed.

It was a relatively easy process to construct, having watched the DIY Fishkeepers YouTube



video on building a ply tank. Most people would have the tools required to do this which were simply a tape measure, square, a circular saw to cut out the ply sheets, a palm sander, and a battery drill for screwing the aquariums together. It required only two full size sheets of ply and the offcuts provided the doubled up overlapping pieces required around the main joins. I used 17 mm construction ply, plenty of PVA glue and plenty of screws, basically screwing everything 50mm apart.

Within a few hours the bare carcass was completed and it was a very straight-forward process. I then sanded it down and bogged the screw holes up.

Now came the issue of sealing and waterproofing the tank and I was thankfully able to draw on the expertise of Shae Gallagher as to what to use to do this, with Shae working in the paint supply industry.

We elected to fibreglass all of the internal corners, seal the ply with a water-based epoxy sealer and to use a two-pot high build epoxy top coat. There are several high build epoxy products available here in New Zealand and the two I have used, with great success, are EPOTEC and PITAKOTE. Both are more than suitable and the sealer I used is COTEC's water based sealer.

Having had an enjoyable run building the carcass, it was then an absolute nightmare fibreglassing the internal corners, given you were working in such a small space. Once that cured, I then applied the water borne sealer which was very quick and easy to work with. After an initial



cure for 24 hours, I then applied a first coat and then within a further 24 hours, a second coat of the high build top coat.

Please note that it is very important to follow the manufacturers' guidelines in terms of working with the sealers and top coats. In order to ensure proper bonding, follow these to the letter and measure everything accurately.

I also strongly advise long sleeves and old clothes, as the top coat is very thick and not the easiest to apply (I had to use a brush as it was too thick to apply by rolling) and it is not a good idea to get this stuff on your hands, arms, clothes or hair!

I now had the sealed and coated carcass ready now for plumbing and a glass front. It was easy to drill my holes for the Hansen tank fittings for my overflows to the sump and I simply glued the glass front panels in using Sika RTV sealant that I use to build glass tanks.

After leaving for a further week to harden and fully cure, I simply washed the tank down with warm water and then situated it in place, plumbed it up, then put water and fish in.

I do not intend going into the full step by step build process here as I am unable to improve on the instructions outlined in DIY Fishkeepers. Just jump on YouTube and watch the many how-to-videos.

This first build is working as well as the day I built it and it is now some 4 years old. There

appears to be no deterioration in the top coat at all. Since this first build, I have somewhat simplified the process and built a number of tanks and sumps and more than half of the tanks in my fish room are ply.

I have done some analysis in terms of the cost and the completed carcass works out about 50 cents per litre, excluding labour. A general rule of thumb for the cost of glass tanks is around \$1 per litre so as long as you don't mind putting in the effort, they are certainly a cheaper option.

In having built a number, I have learnt the following handy tips and tricks:

1. Don't bother buying the expensive construction ply, the cheaper imported ply sheets are perfect for the job. I used 17mm cheap imported ply at about \$65 per sheet, and 12mm ply at around \$39 per sheet.
2. Measure twice, cut once, and use plenty of screws and glue.
3. Don't bother using fibreglass on the internal corners, they are strong enough glued and screwed on their own, it is just overkill and a lot of fiddly frustrating work.
4. Use the recommended manufacturers' thinners to thin out the high building epoxy coats as this makes it far easier to apply.
5. Don't bother sealing any external panels, only seal those that will be in contact with water.
6. Definitely use the water based sealer as the first coat, it makes applying the top coats a lot easier.
7. Ensure you only apply the sealing and top coats on a warm day with ideally a temperature of 20 degrees Celsius as a minimum, it is easier to apply at warmer temperatures.
8. Do it in a bug and pet free environment.
9. Only mix enough high build top coat that you can use within about 30 minutes, as once it starts going off, you cannot apply it very well.



10. Ensure mixing ratios are accurate, use a set of scales to weigh the product accurately.
11. Use twin walled polycarbonate sheets for lids, they are quiet and do not scratch the paint job as glass would and you can screw them to the top of the tank and hinge them by cutting through one wall.
12. If you want to further insulate the ply tanks, you can simply glue polystyrene to the exteriors of the carcass.

Overall, I have been very pleased with the results from building and using ply tanks. The absolute and outstanding benefit of using them over glass has been the reduced heating requirement. In using glass tanks and sumps, I generally find that there is a heating requirement of approximately 1 watt of power per litre. So, a tank and sump system of say 1800 litres would require say 4 x 500w heaters.

With using ply, I actually get away with heating that same 1800 litre system with a single 500w heater in summer, only having to add a second heater during winter. It is very apparent that the ply tanks have a much higher heat retention than glass and similarly, where temperatures

are excessive, you are also less likely to have an overheating issue.

Common sense really, just as it is with applying the logic in terms of insulation to our homes.

I also sleep easy in the knowledge that my tanks should survive a good quake. Although as some have quite rightly suggested that if we get "the big one" here, we will have more to worry about than our fish.

Like anything, you always have to consider the negatives, and the only real negative I have come across is where you have an algae build-up, it can be very difficult to clean off. You are unable to use anything abrasive or the likes of razor blades to clean the surface. Appearance, of course, in a breeding set-up is not such an issue for me and I do not have an issue with any algae build up as it is beneficial to the breeding set-up.

... and you can move and shift them on your own, they are lighter and easier to handle, and can take some rough handling. I don't need 4 thugs around to shift a 500 litre tank, I can simply do that on my own!

Carey Rohloff



HOW TO

MAKE PHOTO TANKS

BY **BARRIE McKOY**



After reading an article on photographing fish in the Aquarium World forums, and having always enjoyed taking photos, I decided to upgrade my camera and see what I could do with it. I purchased a second-hand Canon EOS 400D, added a few extra lenses to it, and the end result was a nice kit that I'm very happy with. My next task was to try getting some photos of my killies, which proved a lot harder than it looked as they wouldn't stay still long enough to get a few shots away. After taking 1000's of shots, and my family getting used to the cursing and the sound of the delete button working over time, I worked out that I had to restrict the fish somehow.

My first thought was to make a tank to fit inside the existing tank but I didn't really

like that as it was always going to be messy. So I then went to making a smaller tank to place in front of the existing tank so I could get the feeling of depth and colour of the plants (or in my case algae).

Here's how I went about it.

First I cut my glass (see Aquarium World 2017 volume 2). I decided to make my tanks 250 mm high x 150 mm wide and 50 mm deep. I felt 50 mm deep was small enough to not give the fish too much room for movement and still allow a detached flash unit to sit on the top. I cut an oversized base for greater stability. Make sure you sand the edges to make sure they are no longer sharp.

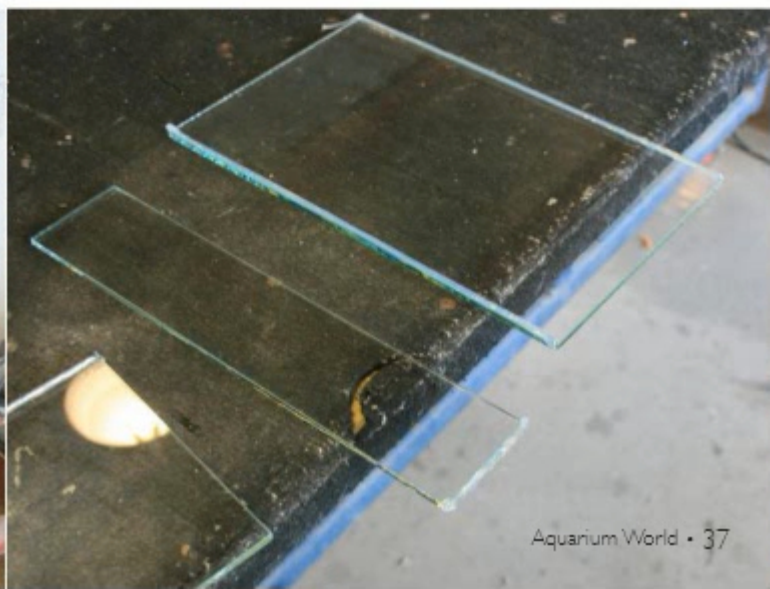
I used an upright belt sander but a Makita belt sander is fine (or use a sanding block



with 180 grit "wet and dry" sandpaper or greater). Use a wet and dry carborundum belt with a 240 grit. Hold the glass at a 45-degree angle and gently run the glass across the belt making sure you flatten the edge of ('arris') all eight sides. Next, work out where you are going to need to

silicone and put as little as you can get away with on the edge of the glass. Keep in mind that any glue on the inside of the glass cannot be cleaned off.

The base will need only the rear edge glued; the back panel will need both sides.





The side pieces of glass will need only the bottom edge glued and the front will need both side and the bottom glued. Note again that less is better than more when gluing these tanks.

Place the back on the rear edge of the base and add one side, then add the other side before carefully placing the front piece of glass on. Make sure that you don't push the rear panel off the back of the base. After a couple of days, water test the tank. If there are any leaks, squeeze more silicone in from the outside.

Then it is just a matter of adding water, then the fish, and taking some pictures. It

is worth experimenting with distance from the tank and the angle of the flash.

I also made a white and a black-backed tank which I felt would bring out the natural colour of the fish without external colours diffusing the fish's colours. The glass was coloured with the same system as is used for kitchen splash backs. I asked my supplier to put a few pieces through when next making black and white splashbacks. This system is far more stable than simply painting the glass.

Barrie McKoy

Right: Photo of a *Betta splendens* taken in photo tank
Photo: Andrew Williams



INTERESTING IMPORTS



Royal knifefish *Chitala blanci*
Photo: Peter Potrowl

If you are after something a little different, there are several rarely imported or unusual fish on the importers' lists. Here's a selection.

For nano tank fans, scarlet badis *Dario dario* are stunning and only grow to 2 cm. Hara hara catfish are another good option, grow to 3 cm, but they need plenty of hiding places, a soft sandy substrate, and very good water quality water.

If you want a special project, why not try keeping and breeding hillstream loaches? These small, flattened, current dwellers are superbly adapted to fast flowing highly oxygenated water and a great option for a specialized tank. Myers hillstream loaches and Borneo suckers are available.

Ornate ctenopoma *Microctenopoma ansorgii* are a beautiful, rarely imported, African bubble-nester. They grow to 7 cm



Hillstream loach
Photo: Robert Beke



Spotted Headstander
Photo: Robert Beke

and are well suited to medium sized, well planted, tanks with peaceful tank mates like the surface dwelling black-winged hatchetfish, which are also on the list.

The bizarre elephant nose is a great feature fish for a larger tank. They need a dimly lit tank with plenty of places to hide and a sand substrate. They can grow to 20 cm. African butterfly fish are good tankmates, providing there are plenty of surface plants, but they will eat any fish they can fit in their mouth.

Headstanders are striking fish and great options for a large tank. They are best kept singly, or in large groups. They do like eating plants, so keeping them in planted tanks can be tricky. Marble headstanders, spotted headstanders, and banded leporinus (they can grow to 30 cm) are all on the importers' lists.

If you like ornate ctenopoma and have a large planted tank, leopard ctenopoma *Ctenopoma acutirostre* are available, but they can be aggressive, have a fondness for small fish, and grow to 15 cm.

And finally, for experienced fish keepers with monster tanks, silver arowana, pearl arowana *Scleropages jardinii*, and royal spotted knifefish are great feature fish but they can grow to 90 cm and also like to eat small tankmates.

As with any new fish purchase, it pays to do your research before purchase. Some of these species are best kept in their own tank, others may thrive in a well planted community tank, some are great jumpers so need well-fitting aquarium lids, and a few are predatory and will eat small tank mates.

The editorial team



Dario dario
Photo: Robert Beke

FNZAS Conference weekend

Napier 18th – 19th May 2018



This year the annual FNZAS conference was hosted by the Hawkes Bay Aquarium Society at the National Aquarium of New Zealand. Thanks to Fhiona O'Leary, Chris Drake, Keri Anne Lester and Charissa Ardron for all their hard work in organising, and hosting, what was a great conference at an outstanding venue and a very enjoyable weekend. I would also like to thank the National Aquarium of New Zealand for providing the venue and supplying morning tea, a great lunch, and the mystery raffle prize (a shark diving experience).

Conference began with registration and a meet and greet on Friday evening





Above: Scotty and the blue tongue skink and
Left: the captivated audience
Photo: Charissa Ardron

at the Aquarium. The next morning registrations opened at 8am and once assembled we all climbed the stairs to the conference room for a very productive AGM. Members had travelled from Auckland, Waikato, Tauranga and Wellington, and a number attended via Skype.

After the AGM and a general catch up, we were treated to a couple of very interesting talks from 'Scottie' (Geoff Scott) on the aquarium's blue tongue skinks *Tiliqua scincoides* and



Regan McDougal on the National Aquarium's kiwi programme, followed by a walk around the aquarium and its many inhabitants.

Above: Regan McDougal explains the setup for the Kiwi Programme

Photo: Charissa Ardron



Left: Ian Mills HBAS and FNZAS life member chats with Paul Young AFA

Photo: Charissa Ardron

That evening we regrouped at the Napier Baptist Church Hall for a BBQ dinner and a very entertaining quiz night. Thanks to quiz masters Fhiona & Charissa, and Chris Drake, and congratulations to the winning team 'Babys' for showing us their expertise. A highlight for me was meeting life member, Ian Mills, who has a wealth of knowledge and has had a long association with Hawkes Bay Aquarium Society and the National Aquarium.



Above: Quiz time!
Photo: Charissa Ardron

Right: Paul the raffle guy!
Photo: Charissa Ardron

I always look forward to the annual FNZAS conference. It is a great chance to catch up with old friends and the make a few new ones.

Darren Stevens

The 2019 FNZAS conference will be hosted by the Bay Fish and Reptile Club in Tauranga



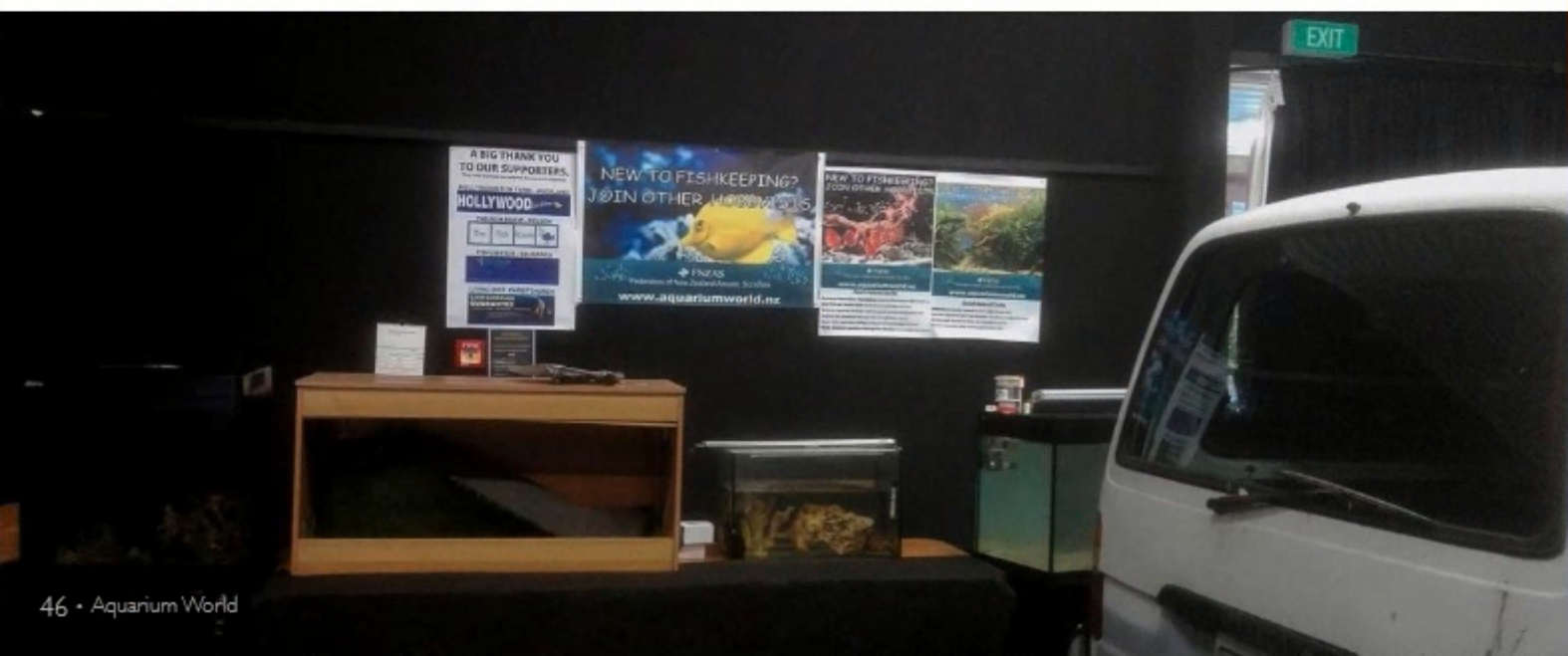
FNZAS at the Expos



In April of this year the Waikato Aquarium Society, a Federation of New Zealand Aquatic Societies (FNZAS) affiliated club, held another successful aquatic expo and asked our executive if they would like to have a stand promoting the FNZAS. I talked it over with our local club and

FNZAS stand on the left at the Aquatic Expo held at the Hamilton Gardens Pavillion

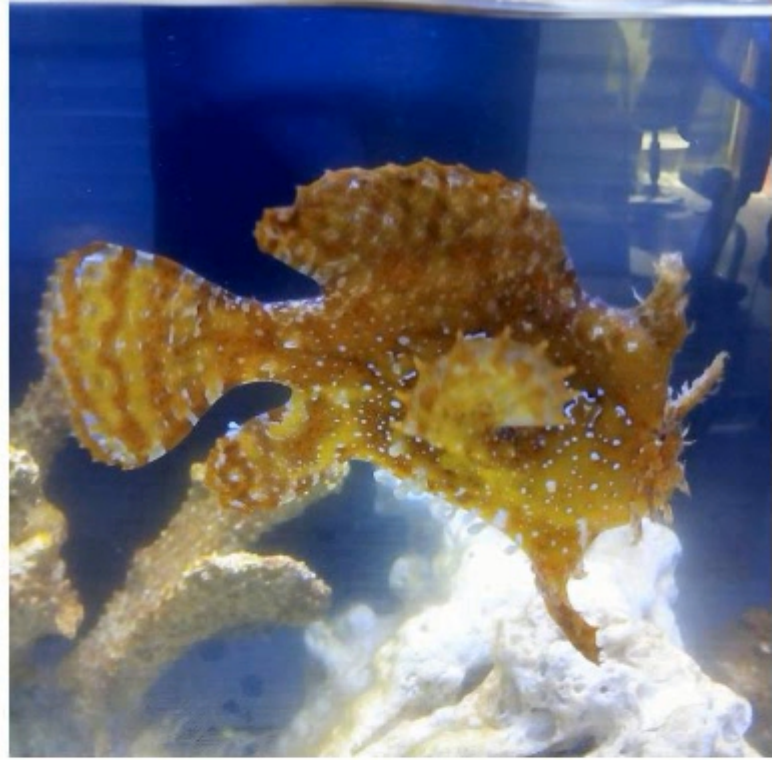
Jim and Fiona Sytema offered to help me out with organising it. It was lucky that we had a couple of tanks to use for displaying seahorses



and a sargassum weedfish I had collected from the Tauranga marina at the end of summer. We packed the van with 400 litres of saltwater and 3 tanks and drove over to Hamilton on Friday afternoon to set up the stand. Traffic was light, thank goodness, and we were able to drive right into where the stand was to be setup. Jim and I manned the stand both days then packed it all back into the van and drove back Sunday evening. Andrew, Janine, Steve and Maxine were able to help us unload and set the tanks back up at Jim's place.

| Right: Sargassum weedfish

| Bottom: Natalia Clark showing patrons her water dragon Drake at the Hamilton Aquatic expo





We didn't learn our lesson from that experience so when we were offered a stand at the Bay of Plenty Pet & Animal Expo 2018 in June we put our hands up again. As it was close to home, more club members were on hand to help

FNZAS stand being set up at the Bay of Plenty Pet & Animal Expo

us out with the set up and pull down. We all enjoyed sharing our hobby and promoting the FNZAS to the wider community.

| Jim Sytema doing the rounds with a bearded Dragon

Photos and article by Mark Paterson



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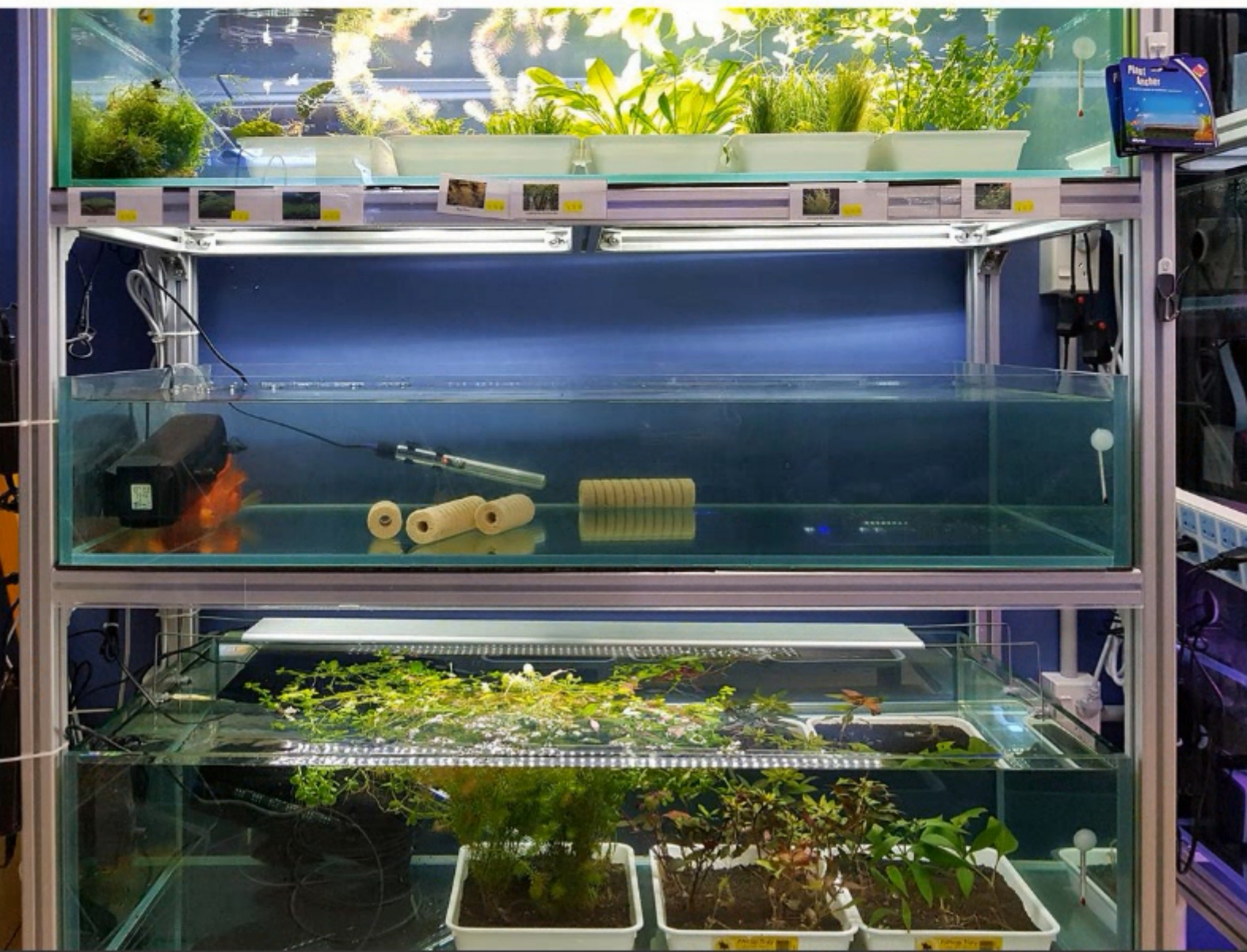
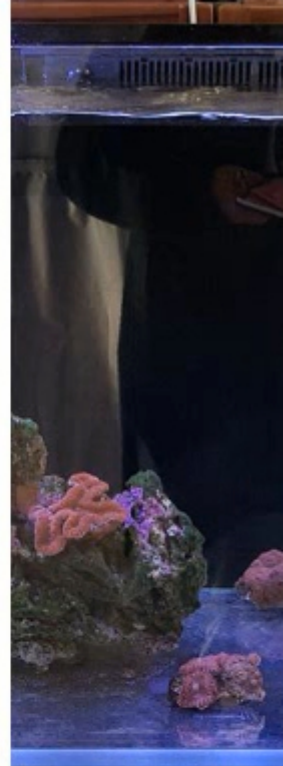
Facilities: 6 tropical marine
9 freshwater tropical
1 tropical display tank
1 marine display tank

Aqua Forest Aquarium Studio is located in the Auckland CBD and was very easy to find. The

layout of the shop is well maintained and all the tanks and products are well displayed. The display tanks are well looked after and house a bit of everything in marine and freshwater.

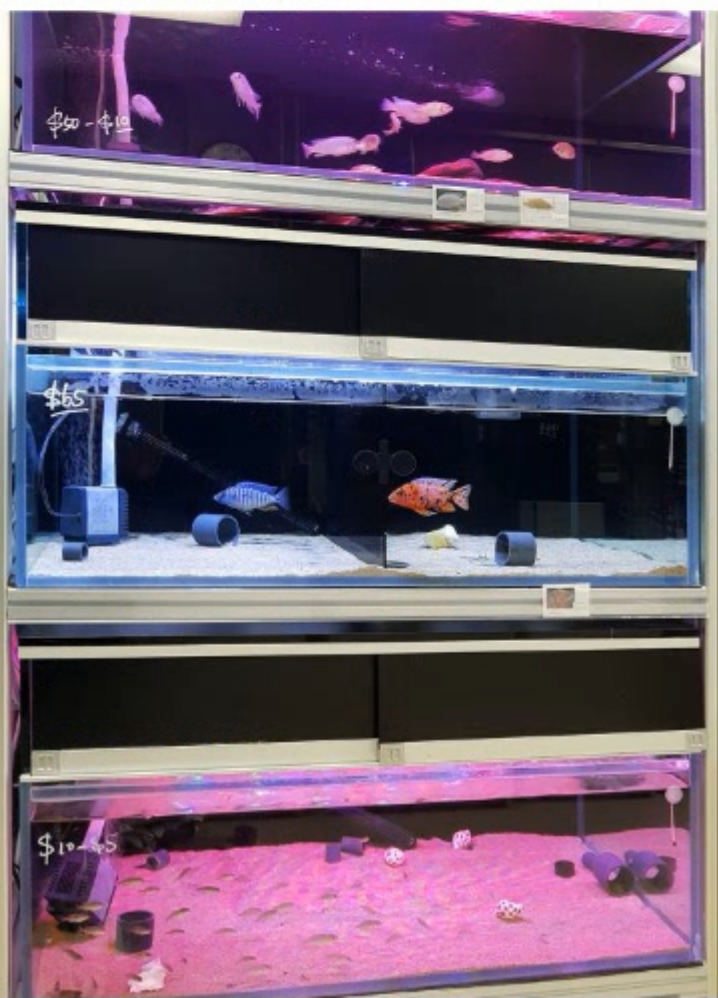
The shop consists of six tropical marine and nine freshwater tanks holding fish and coral for sale. Two of the freshwater tanks also have a variety of freshwater plants. There is a tropical marine display tank as you enter the shop and at the back of shop there is a freshwater display tank. Their freshwater display tank is a show stopper and features some attractive rock and wood pieces and a range of fish including fancy tail guppies. There are also small display tanks all around the shop in marine and freshwater which are well kept near the different sized tanks for sale.







There are freshwater fish, marine fish and corals, and a good selection of products, tanks, and accessories for sale. The staff are friendly and acknowledge you as soon as you walk in the store and greet you with a smile; they are helpful



and will answer any questions to the best of their ability. The shop is well laid out from front to back and easy access through the fixtures.

On chatting to the owner, not only has he great pride in presenting a top-class retail shop but he wants to provide each customer with a great experience. He revealed some huge plans going forward which I won't mention now... so watch this space...

Nicolene Palmer

Interesting species

Tropical freshwater

A range of tetras and barbs \$5

Dragon head guppies \$10

Large cobalt blue cichlid \$49

Large red parrot \$66

Marble angelfish \$12

Tropical marines

Blue surgeonfish \$149

Emperor angelfish \$169

Frostbite clownfish \$500

Platinum clownfish \$350

Scissortail dartfish \$49

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	N/A

HOLLYWOOD

Fish Farm



For all your aquatic needs under one roof

**We can provide both expert advice
and a wide range of supplies
to help you look after your fish and reptiles**

10 % discount

**Off items not already discounted
Applies to current FNZAS members
Membership card must be shown**

OPEN 7 DAYS

**Mt Roskill Branch - 36 Frost road Mt Roskill 10am till 6pm
09 962 5249**

**Albany Branch - Albany Trade Centre 10/2 Tawa Drive
09 415 4157**

SHOP ONLINE

www.hollywoodfishfarm.co.nz



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: Alex Fleming 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: Nic Smith dapsdunedin@gmail.com

HAWKE'S BAY AQUARIUM SOCIETY INCORPORATED

Contact: Chris Drake cdrake@paradise.net.nz

KAPI-MANA AQUARIUM CLUB

Contact: Vincent Curtis kmacnz@yahoo.co.nz

MARLBOROUGH AQUARIUM CLUB

Contact: Caryl Simpson caryl@simtronics.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: Maxine Lynch uhaquariumsociety@gmail.com

WAIKATO AQUARIUM SOCIETY

Contact: Danielle Wall waikatoaquariumsociety@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

GISBORNE

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

Grey St, Gisborne Ph/Fax 06 868 6760

HAMILTON

Pure Aquatics - 10% discount on everything.

966 Heaphy Tce. Hamilton. Ph: 07 855 2176

HAWERA

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

49 Glover Rd, Hawera Ph 06 278 7525

NAPIER

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

120 Taradale Rd, Onekawa, Napier Phone 06 842 2033

NELSON

The Fishroom

www.thefishroom.co.nz/

Email: getfish@thefishroom.co.nz

ROTORUA

Wonderworld Aquarium and Pet Centre - 10% discount

82 - 84 Clayton Road, Rotorua Ph: 07 348 0328 Email: info@wonderworldpetcentre.co.nz

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)

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 - 28 Rutherford Street, Lower Hutt 5010, 04 569 8861

Upper Hutt - 82 Queen Street, Upper Hutt 5018, 04 9745473

Lyall Bay - 117 Tirangi Road, Rongotai 6022, 04 282 1242

Thorndon Quay - 56 Thordon Quay, Pipitea 6011, 282 0199

Online @ www.thepetcentre.co.nz

Free shipping with orders over \$30 + fish club discount still applies

The Pet House - 10% discount

Coastlands Mall, Paraparaumu Ph 04 296 1131

REEF SYNERGY

Reef Synergy is a family owned company based in sunny Tauranga.

We aim to bring quality brands at affordable prices, direct to aquarists around New Zealand.

Since entering the market in 2015, we have secured direct distributorship for iconic brands, such as Neptune Systems, Korallen-Zutch (ZEOvit), Aquaforest, Pacific Sun and are in the process of securing other lead brands.

We operate from an online store, and have recently established ourselves as wholesalers to select stores nationwide.

One of our key brands, Aquaforest, is an exciting range of aquarium products for both freshwater and marine systems. They have been tried, tested and used by some of the top aquariums internationally and have become a household name among aquarist here in New Zealand.

For more information about our products visit our website and like our Facebook page to stay up to date with our news.

Authorised Distributors For

 Aquaforest®

 Pacific Sun

 korallen-zucht.de

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www.reefsynergy.nz

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