

# Aquarium World

magazine

Volume 65 Issue 2 2020





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# Aquarium World

magazine

Volume 65 Issue 2 2020

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## FRONT COVER

spotted mandarin dragonet

*Synchiropus picturatus*

Photo: Nicolene Palmer



 **FNZAS**  
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## 5 EDITORIAL

## 7 CONTRIBUTORS

## 8 Captive Bred Spotted Mandarin Dragonets

by Nicolene Palmer

## 14 FISH PROFILE - Goldfish

by Darren Stevens

## 14 MINI FISH PROFILE - Zebra danio

by Darren Stevens

## 18 REPTILES and AMPHIBIANS - Axolotls

by Mark Paterson

## 24 MARINE - Filefish

by Mark Paterson

## 26 A striking speedster - *Epalzeorhynchus kalopterum*

## 28 HABITAT - Thailand Tank

by Melanie Newfield

## 38 HOW TO - Keep and Breed Locusts

by Mark Paterson

## 41 PLANT PROFILE - Bardaya

by Darren Stevens

## 44 INTERESTING IMPORTS

by the Editorial Team

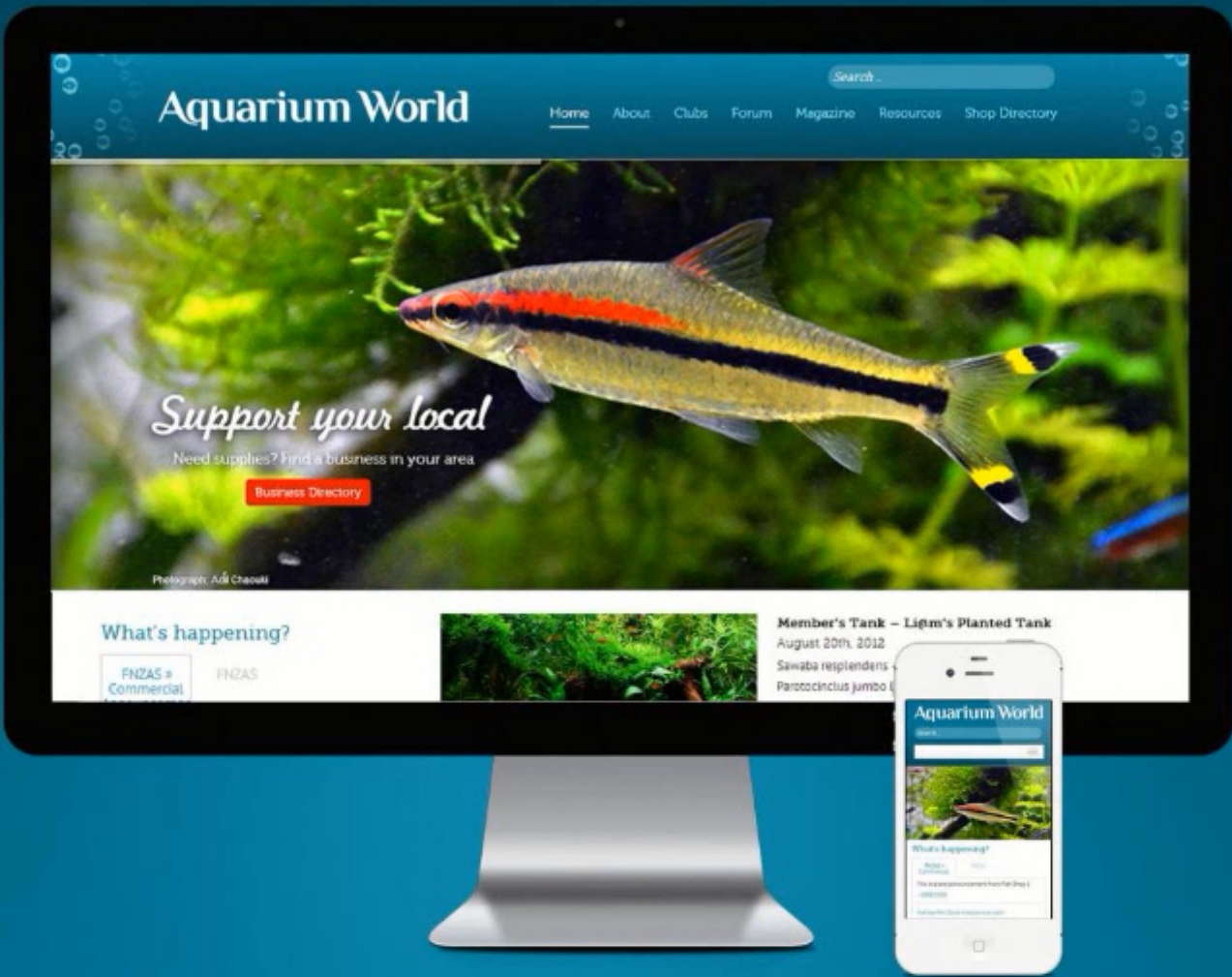
## 48 SHOP TOUR - Lyall Bay Pet Centre

by Darren Stevens

## 52 IMAGE SOURCES

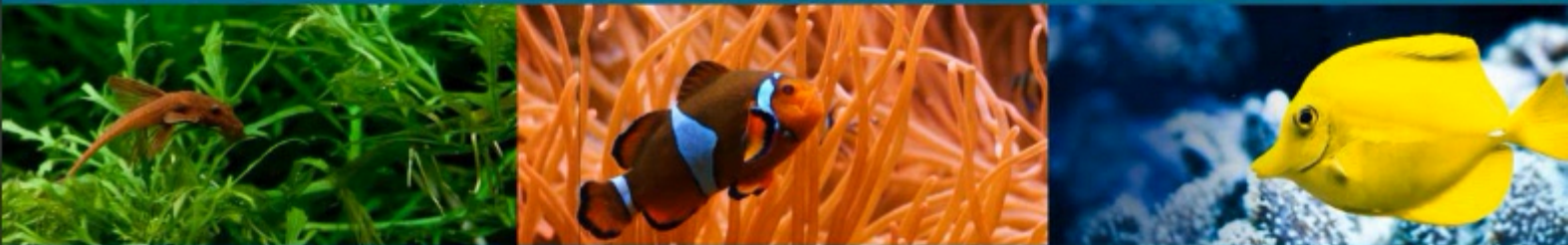
## 53 FNZAS AFFILIATED CLUBS

## 54 FNZAS SHOP DISCOUNT PARTICIPANTS



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# Aquarium World

www.aquariumworld.nz

Welcome to another issue of Aquarium World.

In these uncertain times many of us are at home in lockdown. While this is an unusual concept to get used to, it helps being a fish keeper, especially one with multiple tank syndrome. For those of us with a spare aquarium it might be a good chance to set up a new tank. It could be a biotope tank, a terrarium, a paludarium, or a new breeding project.

One inspired breeding project was from Nicolene Palmer who successfully bred her spotted mandarin dragonet. These beautiful dragonets are rarely bred in captivity and Nicolene shares her remarkable achievement.

Axolotls have been in New Zealand for almost 90 years and they have a loyal following. Mark Paterson looks at the history of axolotls in New Zealand and gives us some advice on how to keep these unique amphibians.

Biotope aquariums try to imitate a natural aquatic habitat. They are becoming increasingly popular and they present their own unique challenges. Melanie Newfield shares her journey in creating a Thailand tank.

Aquatic plants and goldfish have not been imported into New Zealand for many years and we are fortunate to still have a good selection of both in the hobby. This is in no small part due to the actions of dedicated hobbyists, goldfish farms, and fish importers who also grow aquatic plants. In this issue's 'Current Imports' we look at some of the coldwater fish, including goldfish, and aquatic plants that are available from the importers.

Happy fish keeping, look after each other, and stay safe.



Darren Stevens  
FNZAS Editor

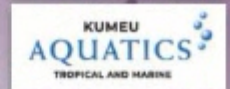


Axolotys  
*Ambystoma mexicanum*  
Photo: Diane Wilkie

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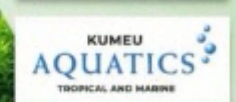


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**Nicolene Palmer**

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.

**Melanie Newfield**

Melanie returned to fish keeping last year after a 25 year break. She originally studied botany and is as keen on plants as well as fish. Her tanks are mainly planted, aquascaped community tanks. She also has a lifelong interest in invasive species, especially invasive plants.

**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.

**Mark Paterson**

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

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# Captive bred spotted

## *Synchiropus picturatus*

About a year ago I purchased a spotted mandarin dragonet (*Synchiropus picturatus*) pair to add to my aquarium. They are elegant, beautiful and a dream fish for many reefers but they can be difficult to keep. Most specimens are wild caught where they feed mostly on copepods that only occur in good numbers in a well-established, mature,

aquarium. To have your mandarin dragonet fish spawn in a home aquarium, they have to be in a stable environment with good water parameters and enough food in the tank for them to thrive.

One day I noticed them doing their courtship dance, spiralling up to the top of the tank where the female would rest alongside the male with their pectoral



# mandarin dragonets

by Nicolene Palmer

fins entwined. Every 2 weeks, as the tank lights were ramping down for the night, this courtship would continue. I didn't even think of trying to raise the eggs.

Top left - two and a half months old

Above -the courtship dance

Right - one of the parent dragonets

Photos: Nicolene Palmer



Months passed then one day they started their courtship dance again and I decided to take up the challenge of trying to raise the eggs. As I soon discovered, this takes a lot of dedication and time, as you need to have a constant food supply for the minute fry. In preparation, I gathered up the necessary equipment to raise the eggs which consists of an egg hatchery, a heater, and a bubbler to tumble the eggs slowly. I also started a rotifer culture for their food.

So, I switched all the wavemakers off for about an hour and watched with anticipation. After their dance, the pair darted to the bottom and the female released a clutch of eggs which went spiralling to the top of the tank. I scooped up about 30 to 60 eggs and transferred them to the hatchery. A female spotted mandarin dragonet can release a clutch of 30 - 200 eggs over the course of 3 days, depending on the size of the fish. The eggs were so tiny and transparent, measuring roughly 0.7mm in diameter. I was hoping most of them were fertile.

The eggs hatched about 12 hours after fertilization. After the first 13 - 17hrs they were transformed into oblong prolarvae with big egg sacs. They were transparent with a spike at one end and had no eyes or digestive system, relying on their egg sac for nutrition. They darted from side to side on the top of the water.

On day 3 I transferred them to a small holding tank so I can keep a close eye on them and see how they progress. They are now bright yellow and their mouth and eyes have not yet formed. I tinted the water with phytoplankton



Two day old prolarvae  
Photo: Nicolene Palmer

and added some rotifers. This was the smallest live food source I had. I added a dim light attached to the side of the tank to attract the rotifers and fish. I did small water changes once a day throughout the rearing stage to keep the water parameter stable.

## Day 4

The larvae are still bright yellow and about 2mm in length. They are readily feeding, and their yolk-sacs are slowly depleting. They have developed their large mouth and big, black, silver looking eyes. I noticed that their tiny bodies would curl into an 'S' shape and dart towards the light were the food was.



## Days 5 to 24

The moment of truth. This is the crucial stage when rearing the fry as their yolk-sac has disappeared, they need to start eating, and their food needs to be small enough for them to consume. Their colour has changed to a pale yellow with their yolk-sac completely gone. Their fins were also starting to develop.

## Days 25 to 30

Their food source seems to be good and they are thriving. They are now a tan colour but they have no markings. They seem to stay at the bottom of the tank, slowly swimming around and searching for food. Their bodies are slowly taking more shape. Their mouths are not as large, and they seem to have become smaller/narrower.



## Days 40 to 70

They are starting to take the shape of their parents and are a slight mottled tan colour with an intricate pattern of dark brown and black markings. Their heads are more pointed and bodies more streamlined. They are always on the search for food. At this stage I have got them to eat live newly hatched brine shrimp and I am doing 2 water changes a day and tinting the water slightly with phytoplankton. I am checking the temperature and salinity daily.





### Day 90

The mandarin babies are thriving. Their markings are obvious, they are getting darker in colour, and they look more like their parents except there is no green colour as yet, just the black markings and a bit of orange in the centre. They have a flathead, streamlined body and move around more frequently, mostly bobbing at the bottom of the tank, always on the search for food.

### Day 109

They are doing extremely well. I transferred the mandarin babies to a well-established and bigger tank, where they can hunt for their food and be more independent. I still occasionally add live brine shrimp and rotifers to the tank. I also started adding small amounts of crushed pellet food to try and train them to consume it.

### Day 113

I am continuing to train the baby mandarin fish to eat crushed pellet food. This is still a work in progress, but they have adapted well to their new environment.

My goal is to be able to provide a captive bred mandarin that will eat pellet food, thus allowing reefers to successfully introduce this type of fish earlier on into their tanks. Aquaculture is also considered more environmentally friendly, meaning less harm to the natural reefs around the world where wild specimens are caught.

This journey has been so challenging but also so rewarding. Especially seeing how the mandarin dragonet fish go through the different stages in their life cycle.

**Nicolene Palmer**





## Aquaculture by Reef Essence

As part of Nicolene's journey, she asked us to comment on some aspects of feeding the mandarin larvae. As a member of our Aquaculture program we made it our challenge to assist Nicolene by providing advice and practical steps in achieving her goals.

We were met with a challenge with food production. With the first couple of rounds of attempting to raise the larvae, there was a bottle neck around day 5 where the larvae would die off. We suspected this was due to a lack of feeding, as that is roughly two days after their mouths develop and egg sacs are consumed, which would line up with starvation periods fairly closely.

To overcome this, we helped Nicolene develop strains of food that were smaller in size and more readily taken up by these small critters. We helped her through the process of both culturing the food strains as well as the phytoplankton to keep them well nourished. After introducing this smaller strain of food to the protocols Nicolene was able to achieve her first successful batch past the day 5 bottleneck and these larvae continue to do well!

We are so proud of her achievements and are looking forward to working with Nicolene in her next ambitious breeding project.

# GOLDFISH

**BY DARREN STEVENS**

©Virginia Mui

Goldfish (*Carassius auratus auratus*) are a domesticated version of a less-colourful carp (*Carassius auratus*) native to east Asia. It was first domesticated in China more than a thousand years ago and several distinct breeds have been developed. Goldfish breeds vary greatly in size, body shape, fin configuration and colouration (various combinations of white, yellow, orange, red, brown, and black are known). Goldfish make great pets and with regular feeding and tank maintenance they can live for over 10 years. Under good conditions in a large tank, some varieties can grow to 30cm.

## **Environment**

Goldfish are coldwater fish and do best at 18 - 23° Celsius and a pH of about 7.2 (water that is very slightly alkaline). Fish tanks are

## **Fantails**

Photo: Virginia Mui

preferable to goldfish bowls as they have a larger surface area for gas exchange and allow more room to swim. Pick a tank that is appropriate for the size of your goldfish. Don't overstock. You are better off with 1 or 2 healthy fish than 3 or 4 unhealthy ones. Place your tank in a stable area away from fresh breezes (which can cause the temperature to change quickly), loud noises, vibrations, or direct sunlight (this can cause algae problems and overheating during summer). Try not to tap on the glass as this may frighten your goldfish.

**Fish tank cycling.** It is always best to allow your tank to cycle before you fully stock your tank. This means that the nitrogen cycle, in

which good bacteria break down harmful waste (mainly ammonia and nitrites) from fish and uneaten food, is working properly and stable. It can take several weeks to cycle a fish tank but you can speed up the process using products such as Stress Zyme or Cycle which contain millions of good bacteria. Always understock a newly cycled tank and it is a good idea to do more frequent water changes (see below) until the good bacteria are working well and the tank is stable. There are plenty of good articles on the internet on how to cycle a fish tank.

**Filtration.** Goldfish produce a lot of waste so it is useful to provide a filter, particularly if you have a few goldfish or one or two larger

goldfish. Clean your filter twice a month.

**Aeration.** Goldfish use a lot of oxygen from the water. If your goldfish is gulping for air at the surface you probably don't have enough oxygen in your tank. A good filter should provide enough aeration but you may want to add a small airpump and an airstone.

**Decorations.** Use only aquarium safe decorations and choose ones that don't have sharp edges or places in which they can get stuck. Some decorations such as driftwood, coral and shells, can make the tank more acidic or alkaline.

| Telescope

| Photo: Diane Wilkie





**Substrate.** Many people like to have gravel in their tank. Gravel harbours good bacteria and looks great however, it also provides areas for left-over food and fish waste to build up. Clean your gravel weekly with a gravel vac. Goldfish will suck food of the bottom when feeding and are also likely to suck in gravel. Make sure the gravel has no sharp edges and choose gravel that is large enough that your goldfish can't get it stuck in their mouths.

**Lighting.** In a well lit room lighting is probably not necessary but if you are keeping plants in the tank, or want to see your fish more clearly, then you may want to add a light.

Oranda  
Photo: Diane Wilkie

**Plants.** Coldwater plants can look great in your tank but goldfish like eating many types. While this is great for the goldfish, you may want to consider plastic plants.

Never use flyspray or other aerosols near your fish tank. These have compounds that can kill your fish.

### **Feeding**

Use good quality goldfish food. Goldfish like a variety of foods so you can supplement their diet with blanched veggies such as romaine (cos) lettuce is the best for feeding), zucchini/courgette and frozen foods such as

brine shrimp and bloodworms. Feed once or twice per day and never more than your goldfish can eat within 3-5 minutes. Remove excess food as it will foul the water and can lead to further problems.

### **Water changes**

Water changes are essential for healthy goldfish. This helps keep toxins such as ammonia and nitrates at acceptable levels and replaces minerals. Change 10% of the water weekly in a filtered (and cycled) aquarium, and 25% in a non-filtered aquarium. Use a water conditioner when making water changes. Water conditioners neutralise and detoxify harmful substances from your tap water such as chlorine/

chloramines and heavy metals. Never change most, or all, of the water in a tank. An established cycled tank has thousands of good bacteria that help break down toxins. Never use distilled or demineralised water as fish need minerals to be healthy. If your tap water looks cloudy then your local water provider may have flushed the system with chlorine.

If you have problems, contact your local pet store or FNZAS aquarium club (<http://www.fnzas.org.nz>). If you take a water sample from your tank into most pet shops they will test it for pH, ammonia, and/or nitrites, and provide advice. There is also plenty of good information and advice on the internet.

Darren Stevens

References: wikipedia

Zebra danios (*Danio rerio*) are small, attractive, peaceful, and easy to keep. They are an active schooling species and should be kept in groups of at least 8 fish. Albino, golden and leopard (which was once thought to be a different species) varieties are available and all forms can be long finned. Zebra danios are also used for genetic and developmental research and overseas genetically modified Glofish® are available in a range of fluorescent colours. Zebra danios grow to about 5 cm, can live for 5 years, and are suited to temperatures of 18–25°C and pH values of 6–8. They will do well on a varied diet of small dried and live foods. Photo Lynn Ketchum

## **FISH MINI PROFILE**



**Zebra danio**

# Axolotls



Perhaps one of the strangest aquatic animals we keep in our home aquariums is the axolotl or Mexican walking fish (*Ambystoma mexicanum*). Their distinctive appearance gives them an alien like appearance and while most other salamanders go through an aquatic stage before becoming land-dwelling animals, the axolotl remains in the adolescent-like stage and remains entirely aquatic. Axolotls were a popular food for the Aztecs, and they were named after their god of fire and lightning, Xolotl. In the wild, axolotls live in the remains of Lake Xochimilco and the canals leading to it on the edge of Mexico City. They have become critically endangered in the wild and their trade is restricted by CITES but their ability to regenerate missing limbs has meant many generations have been captive bred for research purposes. At any injury, or even amputation, the surrounding

*Ambystoma mexicanum*

Photo: ZeWrestle

cellular structure reverts to an embryonic state and the limb or affected tissue regrows without any scarring.

After hatching axolotls resemble tadpoles with frilly gills, which they retain as they develop. They also have fully functional lungs and often rise to the surface for a gulp of air. Though they can breathe air, their gills help in gas exchange within their bodies and they can be seen flicking them from time to time to aid in this. Axolotls reach maturity around one year of age and eventually get to 30 cm in length. Females are usually larger than males, noticeably so when carrying eggs. Normal wild coloured axolotls are mostly brown with a mottled mix of small spots but, through selective breeding, can now be

found in a mix of colours ranging through black, white or albino (golden with gold eyes).

Axolotls are fairly easy to care for. A minimum of a 50-litre tank is OK for one axolotl and 3 can be housed in a 100-litre tank. As they can swallow stones or gravel a sand base, or even bare bottom, is best with added caves, driftwood, soft plants or large rocks to provide a safe place and enrichment to their environment. Appropriately sized sections of PVC pipe make good caves.

Axolotls do best in brackish water, a mix between fresh and saltwater, as their skin can be easily damaged. One well-known solution, mixed by German axolotl researcher Johannes Holtfreter, requires that the water be filtered through a carbon and particulate filter, a UV light, and treatment with a dechlorinator.

The solution is made as follows:

Holtfreter's Solution (per litre of water)

NaCl (salt – non-iodized)	3.46 grams
KCl (potassium chloride)	0.05 grams
CaCl <sub>2</sub> (calcium chloride)	0.1 grams
NaHCO <sub>3</sub> (sodium bicarbonate)	0.2 grams

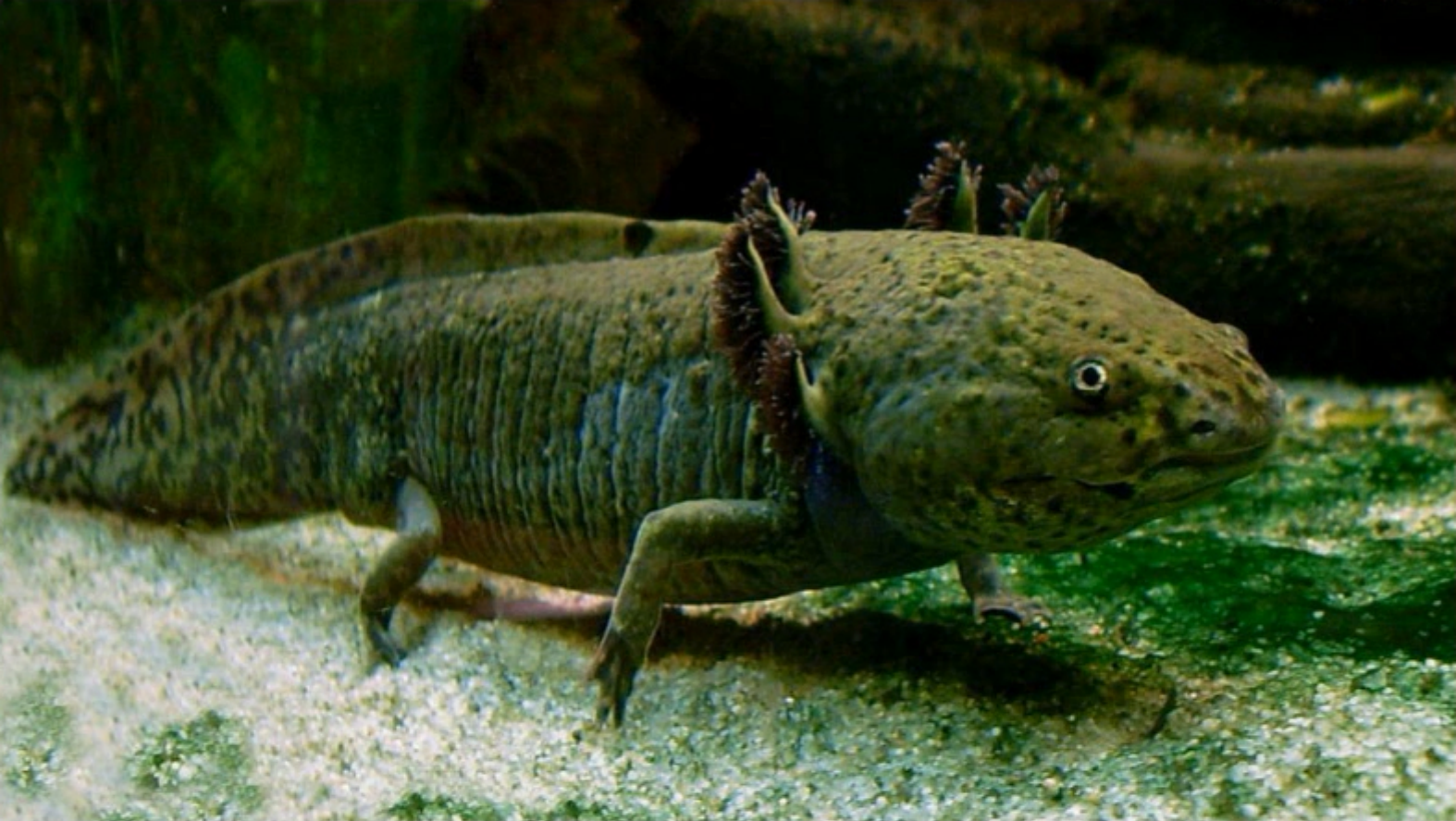
While axolotls can be kept with just regular weekly water changes, a low flow filter will aid with maintenance. Their gills can easily be damaged by high, rapid, water flow and poor water quality. It is important to ensure the aquarium has gone through the nitrogen cycle as excess ammonia will burn the soft skin of the animal and create further health problems. Tap water maybe used but a good dechlorinator is necessary, along with live plants and regular water changes, to help remove other stressful components of water quality. Don't keep them in really soft or distilled water as they need hard water for healthy skin.

You do not need a heater in an axolotl tank as the ideal temperature for axolotls is between

16–18°C. In summer, if the tank gets over 22°C, you may even need to add a chiller to your tank. Make sure your tank is kept out of direct sunlight, which can cause temperature swings and increased algae growth. The most important thing you can do to support your axolotl's health is to provide clean water and good diet. Like all aquatic tanks, your axolotl tank will require regular maintenance and the amount and frequency of water changes will depend on your filter and tank capacity, how

*Ambystoma mexicanum* gills  
Photo: Cedricguppy





many axolotls you keep, and how much they are fed. The most common cause of disease in all aquatic animals is poor water quality.

In the wild axolotls eat a wide range of prey including snails, small invertebrates, small fish, and other axolotls (Shaffer, 1989). Juvenile and adult axolotls will accept a wide variety of foods. Besides salmon (trout) pellets, other feeding possibilities include daphnia, mosquito larvae, earth worms (a favourite), "feeder" guppies or goldfish, and beef liver or heart. Any live fish should be removed from the aquarium, if uneaten, as they may peck at the axolotl's gills. Wild caught or pond live food, including fish, can possibly introduce parasites to the axolotls.

There are a few commercially available axolotl foods in the form of pellet or frozen foods that will provide optimal nutrition, but it can take some patience to get them to accept them.

Keep to a consistent schedule and feed at the same spot in your aquarium. With patience, axolotls can be trained to accept pellets at a

*Ambystoma mexicanum*  
Photo: LoKiLeCh

target, or in a specific area of your tank. Besides ingesting stones, the most common issues with axolotls is caused by poor water quality and even with their unique healing ability any nicks or wounds to the skin or gills can cause major problems unless the water is clean.

With clean water, a good home, and complete diet, you can expect up to 15 years with your axolotl.

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**Mark Paterson**

# Axolotls in New Zealand

Axolotls were first brought into NZ in the early 1930's for scientific study into their regenerative abilities but were unable to be kept by hobbyists at the time. In 1938 axolotls cost 2 pound 2 shillings each. In 1946 a Mr L.E. Smith of Christchurch, Canterbury Society, applied for a permit to keep axolotls and subsequently bred them for the first time in New Zealand. In 1950, after requests from the Federation of New Zealand Aquatic Societies (FNZAS), the Department of Internal Affairs granted authority to import axolotls "to responsible people who have the correct facilities to keep them in strict captivity."

☆ ☆ ☆

The department of Internal Affairs states that applications for authority to import Axolotls are considered and authority is granted to responsible people who have the proper facilities for keeping them in strict captivity. The department is also prepared to consider applications by persons wishing to obtain Axolotls from persons in New Zealand authorised to own them. The Department comments "Axolotls appear to be harmless creatures in their natural home. However, they are not established in this country, but could well do so in the warmer districts at least. How they would react in New Zealand is unknown and in view of New Zealand's past experience with seemingly innocuous exotic species it is desirable that restrictions with regard to their keeping should be imposed".

☆ ☆ ☆



In 1961, after a request from the FNZAS to the Department of Agriculture, axolotls were able to be kept privately without a license, and so began the relationship of the hobbyist with this unique amphibian in New Zealand.



## DEPARTMENT OF AGRICULTURE

P. O. BOX 2298 WELLINGTON C. 1

6 August 1958

Mr T.K. Atkinson,  
73 Makera Hill Rd,  
Karori,  
WELLINGTON.

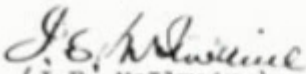
Dear Sir,

I acknowledge your letter of 29 July 1958 requesting permission to keep axolotls which you propose to obtain from Miss D.F. Stilburn, 8 Emerson Street, Berhampore, Wellington.

Permission is granted for you to keep axolotls subject to the following conditions:-

- (1) That they are kept in captivity in a properly constructed aquarium under conditions which will not permit escape.
- (2) That they are not disposed of except with the consent of this office.
- (3) That they are available for inspection at any suitable time by an Inspector under the Stock Act.
- (4) That they are not to be used for breeding, resale, or for commercial purposes.

Yours faithfully,

  
(J.E. McIlwaine)  
Director  
Animal Industry Division

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# Filefish

Filefish (Monacanthidae) are an unusual group of fish that are closely related to triggerfish and pufferfish and are found in tropical and subtropical waters of the world. There are over 100 species worldwide, of which 58 species are found in Australian waters. They generally have flat bodies and rough, sandpaper-like, skin which was said to be used to sand wooden boats, hence the common name. Filefish have a lockable spine on their heads (like triggerfish) and often a camouflage pattern of colours that blend in with weeds and sponges. They have a tapered nose, a large tail, and they mainly move by waving their pectoral fins, which means they are not terribly good swimmers.

Orange spotted filefish - *Oxymonacanthus longirostris*  
Photo: ©Richard Ling

Most filefish are found in shallow water, inhabiting depths of no more than about 30 metres in lagoons, or associated with reefs and seagrass beds. They are often seen floating head down amongst seaweed.

Filefish diet varies, with some species eating algae and seagrass, others eat small invertebrates such as sea squirts and soft corals, and some species only eat corals. It is therefore vital to research the species before purchase as some species can be hard to maintain in the home aquarium. Filefish are generally shy and peaceful but they can be aggressive towards each other.



The following filefish are approved for importation into New Zealand. Most are relatively small species and can be kept in tanks as small as 140 litres with a specific gravity of 1.020–1.025, pH of 8.2–8.5, water hardness 8–12 °d, and temperature of 22–24°C. Usually a male and female can be safely kept together. Most species are mainly carnivorous and newly acquired fish will need live food to sustain them until they can be weaned onto frozen foods. Many species are not considered to be reef safe as they will nip at coral polyps and eat small invertebrates.

#### ***Oxymonacanthus longirostris***

The orange spotted filefish, or harlequin filefish, is found on coral reefs in the Indo-Pacific region and grows to 12

| Black bar filefish - *Pervagor janthinosoma*

| Photo: ©David Harasti

cm. In the wild it feeds mainly on the polyps of *Acropora* corals so its lifespan is usually very short in captivity, unless it is provided with live corals, although they can be taught to eat frozen food and live foods such as copepods. They need to be kept by themselves or with peaceful slow moving tankmates such as seahorses or pipefish.

#### ***Pervagor janthinosoma***

The black bar filefish is found in shallow lagoons and reefs in the Indo-West Pacific region and grows to 13cm. It is a herbivore, usually feeding on algae and sea grasses in the wild, so it can be hard to acclimatize to eat commercial foods in the home aquarium.



### ***Pervagor melanocephalus***

The redtail filefish is found in deep reefs (20-40 m) in the Indo-West Pacific and grows to 16 cm. It can vary in colour with ones from Hawaii tending to have more vivid colours than those from the Indian Ocean. It is a carnivore that feeds mainly on bottom dwelling invertebrates and should be offered a varied diet of fresh or frozen meaty foods (e.g. adult brine shrimp, mysis shrimps, shrimps, marine fish flesh, and shellfish). It is shy and peaceful, may nip corals and will eat small invertebrates, snails, and crabs.

### ***Pseudomonacanthus elongatus***

The four-band leatherjacket occurs in shallow tropical marine waters of Western Australia and Indonesia and grows to 25 cm. Juveniles are found

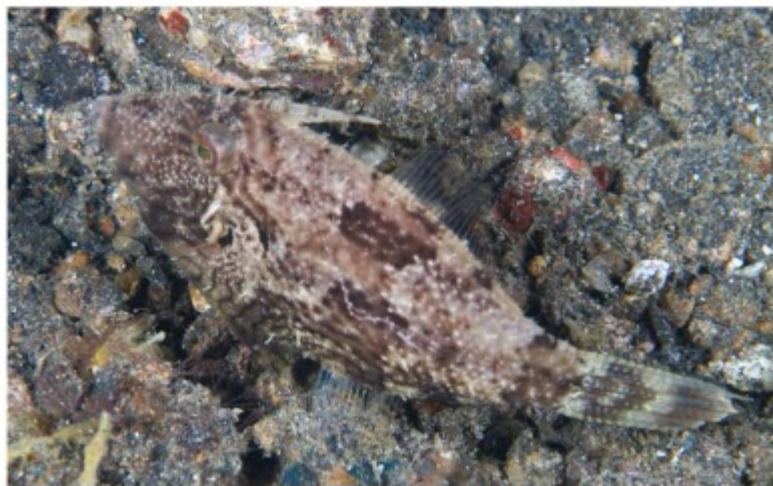
| Red tail filefish - *Pervagor melanocephalus*

| Photo: ©Haplochromis

in shallow estuaries among floating flotsam rafts while adults are generally found among seagrasses or over muddy bottoms with algal reef outcrops. Algal based foods should be included in a mainly meaty diet.

| Fourband leatherjacket - *Pseudomonacanthus elongatus*

| Photo: ©maractwin





***Pseudomonacanthus macrurus***

The strap-weed filefish is found in shallow coastal algal reefs across the Indian and Pacific oceans. It is a shy fish and can be outcompeted for food by more boisterous tankmates. A good, varied, diet may see them reach a length of 18 cm.

| Potbelly filefish - *Pseudomonacanthus peroni*  
| Photo: ©ianbanks



| Strap-weed filefish - *Pseudomonacanthus macrurus*  
| Photo: ©jnpet

***Pseudomonacanthus peroni***

The potbelly leatherjacket is found in tropical marine waters of Western Australia and Papua New Guinea and can grow to 40 cm. As its common name suggests, it has a large flap on the underside that it can extend downwards.

***Acreichthys tomentosus***

The bristle-tail filefish is found in the Indo-West Pacific and can grow to 14 cm. Adults are found in weedy and rubble areas on shallow coral reefs and among seagrass beds. It is also known as the Aiptasia eating filefish, which makes them a favourite among people with coral aquariums, but they may develop





Left: Bristle-tail filefish in sea grass camouflage - *Acreichthys tomentosus*  
Photo: ©Blogie Robillo

a taste for coral polyps and will eat small invertebrates. Once established, it is considered to be easy to care for and quite hardy. They have been bred in captivity.

And finally, we have our very own filefish, the leatherjacket;

### ***Parika scaber***

The New Zealand leatherjacket, *Parika scaber* is found in coastal waters around New Zealand and can grow to 35 cm. Youngsters can be found amongst weed in shallow waters from November

Far left: Bristle-tail filefish on coral rubble- *Acreichthys tomentosus* Photo: ©maractwin

Left: Bristle-tail filefish - *Acreichthys tomentosus*  
Photo: ©Haplochromis

New Zealand leatherjacket - *Parika scaber*  
Photo: ©Mark Paterson

onwards. They are quite peaceful and easily tamed but can nip if food is not coming fast enough.

They should be fed a varied diet from flake food to raw fish and they are very partial to shellfish.

They will eat sponges and invertebrates in the tank. If chased it can wedge itself into rockwork by extending its trigger but will usually release if left alone.

**Mark Paterson**

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# *a striking speedster*

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flying fox (*Epalzeorhynchus kalopterum*) is an attractive, streamlined fish that related to the red-tailed black shark. It is often confused with Siamese algae eaters (SAE's, *Crossocheilus* species) and the false Siamese algae eater (*Garra bodgiensis*). However, flying foxes have a few white edged, black fins which are SAE's, and in false SAE's the fins are yellowish and the black stripe does not onto the tail fin. In the wild, flying foxes are mainly algal biofilm grazers. They algae but, compared to SAE's, they do a poor job of controlling it. Larger flying can be territorial and aggressive, particularly towards similar looking species SAE's. They are best kept singly, and tank mates should be chosen with care. They are adaptable but will thrive in a large aquarium that resembles a flowing stream with a rocky substrate, large boulders, bogwood with a few attached hardy plants and good water movement. Along with good quality flake and granules, they should be fed fresh vegetables and small live or frozen invertebrates (e.g. brine shrimp, daphnia, bloodworms). Flying fox grow to about 15 cm and are suited to temperatures of 23 to 27°C and pH's of 6.0 to 7.5.

Photo Robert Beke

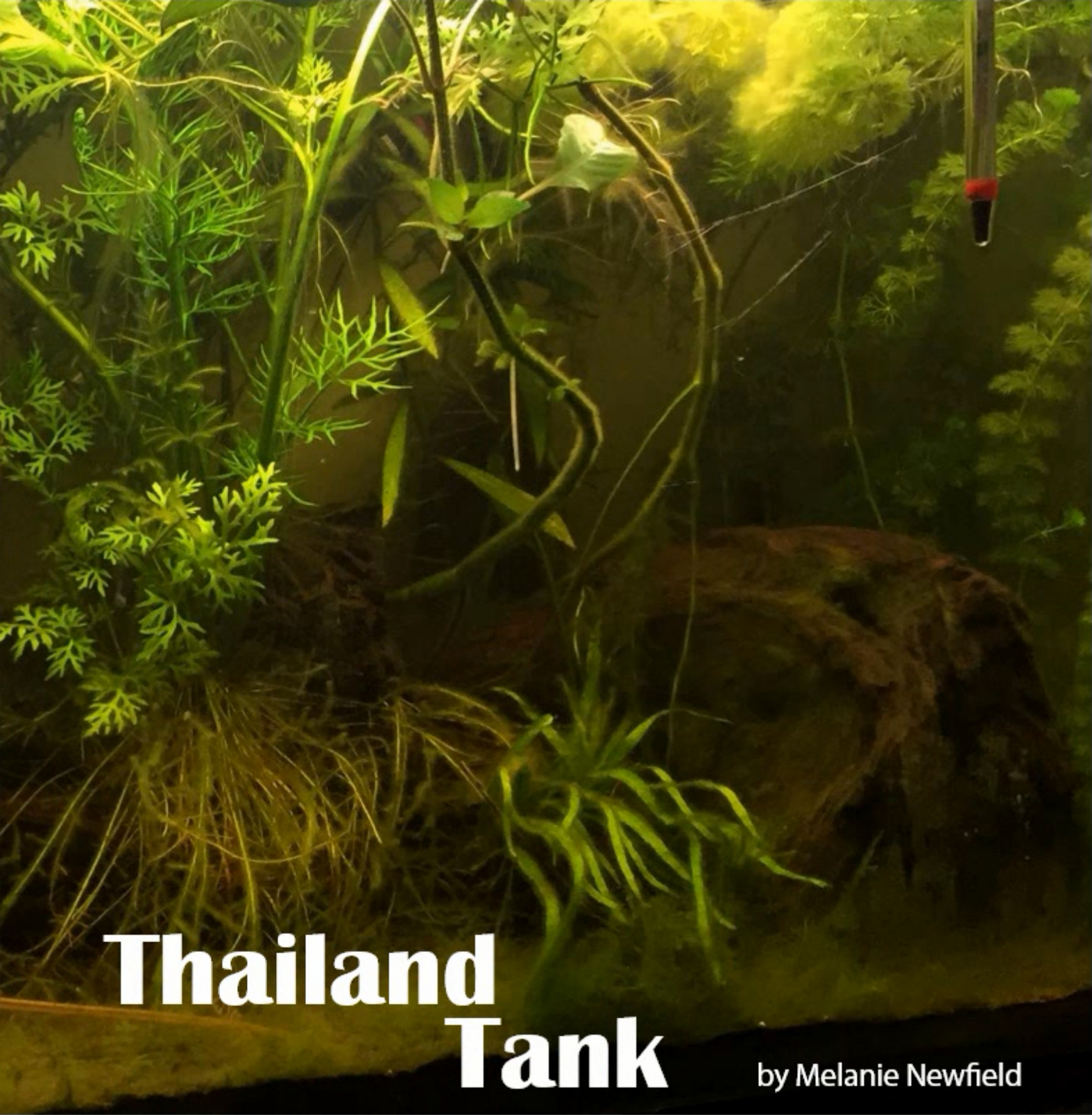


## HABITAT



Two years ago, I put some plastic plants and a few swordtails into a 150L tank and took an unexpected crash course in the nitrogen cycle. Today, I got excited because I found out that both the pearl gourami and the eyespot rasbora occur in Bera Lake,

Malaysia. I'm excited because I'm currently putting together a biotope tank for my pearl gouramis, and I'm looking at possible habitats to work with and other fish that might be suitable to go with them.



# Thailand Tank

by Melanie Newfield

So how did I get from plastic plants with swordtails to scanning a paper listing, by scientific name, the 127 species known from a particular lake in Malaysia to see if I can put two fish together?

The answer lies in one word: biotope.

Scientists use the term "biotope" as another word for "habitat". So a biotope aquarium is an aquarium focused on representing a particular habitat. The true biotope experts



skillfully copy natural habitats to create the most amazing tanks, with titles like “surge habitat in Lake Tanganyika” or “Sabangau peat swamp” (Borneo). I’m not there yet but maybe I’ll get there one day.

My first attempt at something like a biotope was my “Thailand” tank. I allowed myself any fish or plant species native to Thailand

and worked to create something that looked more like a natural habitat than my swordtails and sunken ship tank (which by that time had real plants, but no theme other than trying to make it look attractive). I can’t actually remember why I decided on Thailand – but it may simply have been that I had good information on the aquatic plants of Thailand to work with.





This tank was the first where I used a proper substrate for the plants. I used Dalton's aquatic mix capped with fine blank sand. My reason for using the sand was that I planned to have kuhli loaches in the tank, and I was told that they preferred a fine, sandy substrate. I've since been told that this sand, which is magnetic, can cause problems with filters, but I had it in three tanks by then. So far, I've been lucky, and it does seem good for bottom-dwelling fish.

I also put a lot of wood into the tank, partly to create a natural look and partly in the hope it would lower the pH a bit. The water ended up with a light tannin stain – not enough to be classed as blackwater or prevent the plants growing but enough that the water looked natural for a stream which runs through forest. After I added fish and was doing regular water changes, the colour faded, so I began using dried leaves and a small amount of peat.

As well as the planned kuhli loaches, my "Thailand" tank ended up with dwarf chain

loaches and pearl gouramis. In behaviour, and in the way that they used the space in the tank, they worked together well however they would never be found together in the wild.

For plants, I had ambulia, Java fern, narrow-leaved Indian fern, Java moss, *Hygrophila corymbosa* and *Cyperus helferi*. I had planned on having some crypts, but once the tank got established, I realised that I really didn't have space. As with the fish, it wasn't a species combination which would be seen naturally, but it made an interesting tank. The tank got far more light than is generally considered a good idea, and the plants went crazy. The ambulia, hygrophila and Indian fern all began growing above the water, and the fish thrived in the shelter that they created.

As biotope tanks go, it was definitely a beginner effort, but it was a fascinating tank and I was hooked.

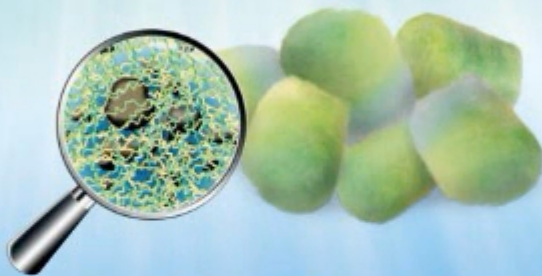
**Melanie Newfield**



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Above: Hydrilla weed bed  
Photo: John Clayton, NIWA

Left: Hydrilla  
Photo: Rohan Wells, NIWA



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HOW TO

# Keep & breed locusts



BY MARK PATERSON

The locust we have in New Zealand is the migratory locust (*Locusta migratoria*). It is a desert species, so needs a dry and warm environment to breed and thrive. Too much humidity will result in infections and death so a heated enclosure with good ventilation is a must. In this article I have used a terrarium with a mesh top but so long as the container is large enough (12 adult locusts need a cage of at least 50 x 50 x 30 cm), escape proof and warm, it should do. The ideal daytime temperature is between 25 - 35°C with a night time temperature not below 15°C. This is easily achieved with a regular

Female migratory locust  
Photo: ChriKo

60w incandescent light bulb (try a 100w light bulb if the temperature is not high enough) or a pet heat pad.

The humidity can be kept low by placing dry sand, coconut fibre or bran on the base of the enclosure. Avoid spraying water in the enclosure as the locusts will get all their moisture from their food. If needed, you can lightly spray fresh food with water before feeding it to your locusts.

A good diet is key in raising healthy locusts and the best and easiest food

you can give them is fresh grass. Other vegetables or fruit may also be eaten, e.g. carrot, apple, silverbeet, etc. Be very aware of insecticides that may have been used around the garden as it will be deadly to your locusts. Place the food plants inside a container in the enclosure and they will start to eat from it instantly. Remember to clear out all old dry plant material from the enclosure.

Locusts grow to approximately 7cm and once adults, males can be a bright yellow colour while females are usually brown/beige. Breeding them is fairly simple if conditions are right. You just



Laying container  
Photo: Mark Paterson

need to add some laying containers. I use plastic takeaway containers and a 50/50 moistened sand/dirt mix at least 5 cm deep to allow the females to inject



their eggs into it. Do not pack the sand/dirt into the container tightly and leave about a 2 cm gap at the top so the newly hatched locusts can emerge easily out of the substrate when they hatch. After a couple of days, you should see holes scattered in the dirt where the females have laid an egg pod containing 10 - 20 eggs. They usually lay 3 times 7 - 15 days apart and the eggs can take up to 2 - 3 weeks to hatch.

Once you see egg holes in the container, place a lid or clingfilm on the top, and

Female migratory locust and nymph in the background  
Photo: Jonathan Hornung

put it somewhere warm (27 - 30°C). After hatching, place the container in a different enclosure and release the lid. It is best to house the babies and adults separately as it can be hard to open the door with the tiny babies jumping about. Young grasshoppers are called nymphs and already look like miniature versions of the parents, except they lack wings. They grow fast and shed their skin (molt) around 8 times in about 4 weeks and at the last molt, both males and females grow their wings. So, it doesn't take long to supply food for your hungry reptiles.

**Mark Paterson**



# Barclaya

by Darren Stevens

The orchid lily (*Barclaya longifolia*) is a spectacular southeast Asian relative of the water lily. It has long undulating crypt-like leaves that can grow to 35 cm long and a bulb-like tuber. In Thailand, it is fairly common in fast flowing, clear, soft water streams, where it grows in loamy substrates (Randall 2019). It is sometimes found in areas with full sun but also in heavily forested areas which only receive short periods of full sunlight (Randall 2019).

Orchid lilies are a spectacular feature plant for a large planted aquarium. There are two varieties in New Zealand: one with green upper leaves and a rarer slightly smaller one with red upper leaves (both varieties are pink to red under the leaves). Both varieties prefer good lighting and will benefit from root fertilization, especially the red form.

Larger orchid lilies will often send up flower spikes that will self-pollinate even if they don't open (flower) or reach the surface (<https://www.aquaticplantcentral.com>). As the seeds grow

*Barclaya longifolia* in a Thailand river  
Photo: R Poorna

*Barclaya longifolia* green form  
Photo: Maxine Lynch





Above: *Barclaya longifolia* flower on water surface  
Photo: Liam Winterton

Right: *Barclaya longifolia* flower spike  
Photo: Maxine Lynch

and mature the seed pod swells and when the seeds are mature the seed pod starts to break down. You can let the seed pod dissolve in the tank, which is messy, and in a few months you should notice a few seedlings. Or cut the seed pod off, remove the seeds (which are in a jelly like substance) and scatter then across the substrate in a small, well-lit, tank (<https://www.aquaticplantcentral.com>). Mature plants may also develop side shoots from their bulb-like tuber and when the plants are larger these can be gently removed and transplanted.

Orchid lilies are fairly rare in New Zealand and are sometimes regarded as being difficult to keep. I keep both green and red varieties in





a 210 litre planted aquarium (a larger tank would be better) with a gentle current and at a temperature of 26°C. The substrate is Flourite® black topped with a thick layer of fine gravel (Daltons™ Propagating Sand No.2), and the tank is lit by a single T5 fluorescent tube. Stronger lighting would bring out the colours a lot more, but my Colombian zebra plecos are happier with lower light levels and the plants are healthy. Orchid lily leaves are delicate and a favorite food for snails. If you don't want holey leaves you may have to adopt some form of snail control. Occasionally orchid lilies may die back but as long as they have a storage tuber they will likely grow back again. I find orchid lilies to be easy to keep and propagate but they seem to like my tank as seedlings I have passed on to others have often not fared well.

Darren Stevens

Above: *Barclaya longifolia* red form

Photo: Luis E

Below: *Barclaya longifolia* red form grown in low light

Photo: Darren Stevens

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## INTERESTING IMPORTS



Goldfish  
Photo: Diane Wilkie

While the importers offer a great selection of imported tropical fish, they also offer New Zealand bred goldfish and locally grown coldwater and tropical plants. If you have a large coldwater aquarium or an outdoor pond, then goldfish are a nice option and available as black moors, bronze fans, calico fans, celestials, pompoms, red comets, red fans, red and

white fans, sarassa comets, shubunkins, and mixed nymphs. If you have a smaller, temperate, tank (with a temperature generally above 15°C), then a school of white cloud mountain minnows (available in standard and golden) are a great option. If you want a fish with a bit more personality and attitude, then why not try a paradise fish?



White cloud mountain minnow  
Photo: Robert Beke



Paradise fish - male  
Photo: Dainella Vereeken



Baby tears  
Photo: Robert Beke



Cardamine  
Photo: Robert Beke

If you have an outdoor pond, mouse ear, 'zealandia' chain sword (*Lilaeopsis* sp.), and the native water milfoil (*Myriophyllum propinquum*) are good options. Other species such as baby tears, cardamine, cherry leaf, moneywort, and water rose (*Samolus*)

will tolerate, and sometimes do well, in coldwater and are worth trying, particularly if you have an indoor coldwater aquarium or live in a warmer part of New Zealand. On the tropical plant front there are some great options. For foreground plants, dwarf hair grass, *Lilaeopsis brasiliensis* and



Giant baby tears  
Photo: Robert Beke



Moneywort  
Photo: Robert Beke



Dwarf hair grass  
Photo: Robert Beke



Water rose  
Photo: Robert Beke



Red hygrophylla  
Photo: Robert Beke

'zealandia' chain sword are deservedly popular. Dwarf sagittaria (*Sagittaria subulata*) and crypts (*Cryptocoryne wendtii* is available) can also be used at the front of the tank but they can often grow relatively tall and are best planted further back. Stem plants are great options for the middle and back of the aquarium. They require regular pruning and replanting to look their best. There are plenty of options available including ambulia, baby tears,

blue hygrophylla, cardamine, cherry leaf, dwarf rotala, ludwigia, moneywort, red hygrophylla, red ludwigia, and stargrass. And finally, if you are a fan of large feature plants, why not try a sword plant (*Echinodorus* species)? Amazon swords, red melons, Argentine swords, marble queens, osiris swords, red horemanii swords and rose swords are all available.

**The editorial team**



Marble queen sword  
Photo: Robert Beke



Osiris sword  
Photo: Robert Beke

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## Lyall Bay Pet Centre

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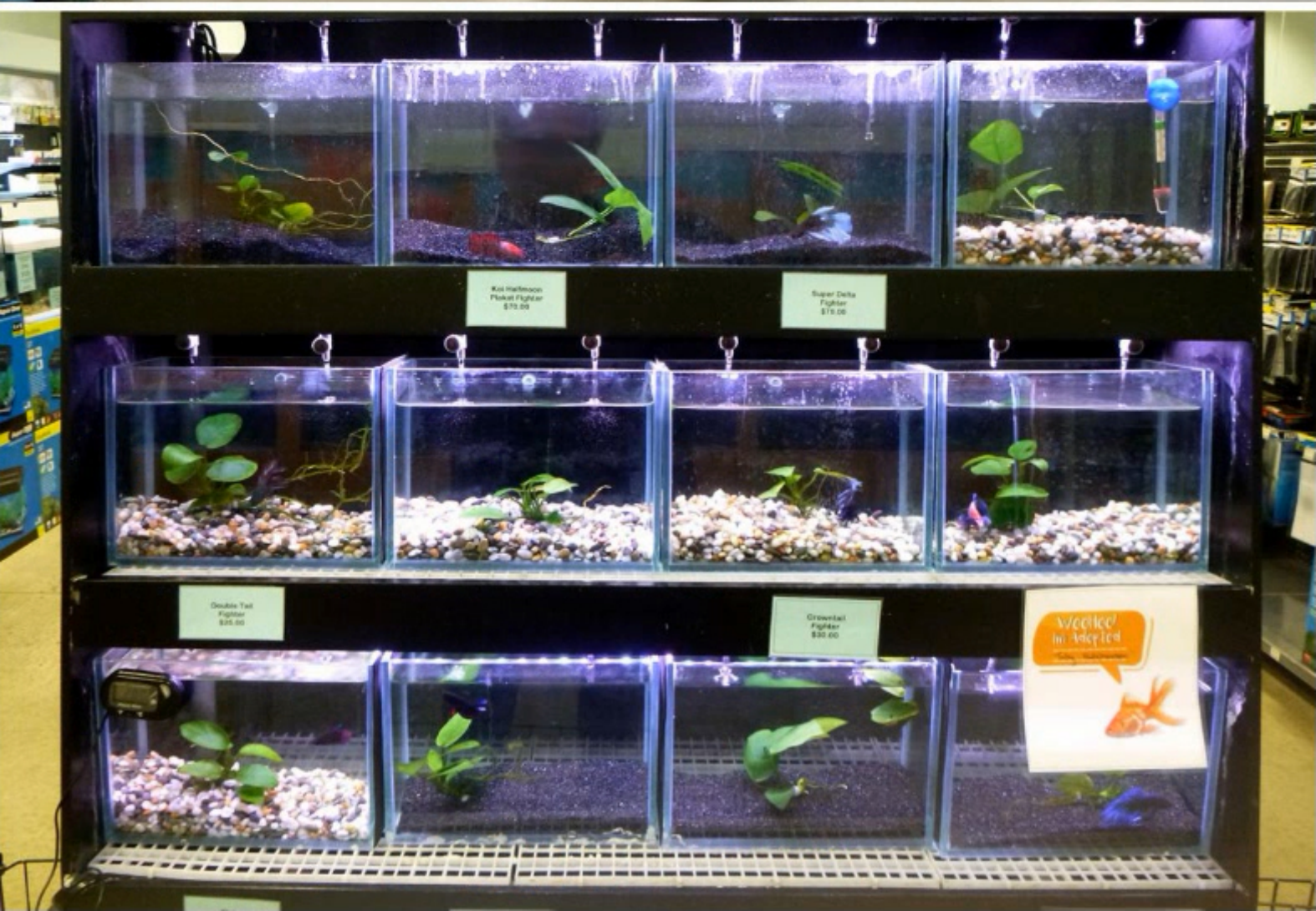
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The Lyall Bay Pet Centre is a large, well stocked, pet store in the Airport Retail Park. It is one of three Pet Centre stores: Lower Hutt, Lyall Bay, and Upper Hutt. The Lyall Bay store is easy to find, offers plenty of free parking, a good selection of pets and pet supplies, and the staff are always friendly and helpful.

The fish section is run by Monique Keo. Monique has been keeping tropical fish for many years, is a particularly keen on bettas, and keeps a well-stocked betta barracks in the store. She is very approachable and always happy to share her knowledge with other fishkeepers. Her tanks are always very clean and well maintained and she keeps a great selection of tropical and coldwater fish.







Most of the livestock are housed in eighteen 200 litre aquariums at the front right-hand-side of the store. Eleven aquaria are devoted to tropical freshwater fish, including a great range of small community species (tetras, guppies, barbs, danios, etc.), several varieties of African lake cichlids, some nice plecos (calico and starlight bristlenose, and a flash pleco), and a

few specialised nano tank species (scarlet badis, blue-eyes, dwarf puffers, bumblebee gobies). There are some nice crypts, swords, green tiger lotus, and good-sized clumps of *Anubias nana* and Java fern in the aquaria, and another aquarium holds a wide variety of tropical stem plants.



Calico bristlenose  
Photo: Darren Stevens



*Cryptocoryne beckettii* var. *petchii*  
Photo: Darren Stevens



Discus  
Photo: Darren Stevens



Angel fish  
Photo: Darren Stevens

Five aquariums contain a good range of freshwater fish, including several varieties of goldfish, white cloud mountain minnows, and paradise fish, and another aquarium holds a few locally bred axolotls. There is also a betta rack and an aquarium with golden bell frog tadpoles.

The store holds a good range of dry goods to cater for all your fish keeping needs, including fish food, pumps, filters, and heaters, ornaments, and aquariums from 21 to 398 litres. They also stock live and frozen food and reptile supplies.

The Lyall Bay Pet Centre is well worth a visit. They have a great selection of freshwater fish, dry goods and consumables, and very helpful staff.

**Darren Stevens**

### Interesting species

- Bumblebee goby \$7.50
- Southern blueeye (*Pseudomugil signifier*) \$9
- Paradise fish \$12.00
- Dwarf puffers \$17.50
- Scarlet badis \$20
- Orange cockatoo dwarf cichlid (*A. cacatuoides*) \$47
- Double red Agassizi's dwarf cichlid (*A. agassizii*) \$47
- Starlight bristlenose \$50
- Flash pleco (L204) \$170
- Cryptocorynes (*C. beckettii* var. *petchii*, *C. crispatula* var. *balansae*) \$7
- Green tiger lotus \$20
- Axolotl \$25



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

**Pg Source**

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- 38 Female *Locusta migratoria migratorioides* near Aeterba, Red Sea coast, Sudan. ©ChriKo (CC BY-SA 3.0) [https://commons.wikimedia.org/wiki/File:Locusta\\_m\\_migratorioides\\_female.jpg](https://commons.wikimedia.org/wiki/File:Locusta_m_migratorioides_female.jpg)
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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:

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**CONTACT:** Nic Smith dapsdunedin@gmail.com

#### **HAWKE'S BAY AQUARIUM SOCIETY INCORPORATED**

**Contact:** Chris Drake cdrake@paradise.net.nz

#### **MARLBOROUGH AQUARIUM CLUB**

**Contact:** Caryl Simpson caryl@simtrronics.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:** In recess

#### **UPPER HUTT AQUARIUM SOCIETY**

**Contact:** Maxine Lynch uhaquariumsociety@gmail.com

#### **WAIKATO AQUARIUM SOCIETY**

**Contact:** Danielle Wall waikatoaquariumsociety@gmail.com

### **Online Clubs**

#### **NEW ZEALAND REEFKEEPERS**

**Contact via:** <https://www.facebook.com/groups/nzreefkeepers/>

#### **NEW ZEALAND REPTILE AND AMPHIBIAN SOCIETY**

**Contact via:** <https://www.facebook.com/groups/NZRAS/>

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](http://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

## 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

## MORRINSVILLE

**Demetry Pet Supplies** - 10% Discount

15 Thames Street, Morrinsville. Ph 07 8897789 Mobile 027 5526955  
<http://demetry.co.nz>

## 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](http://www.thefishroom.co.nz)  
Email: [getfish@thefishroom.co.nz](mailto: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 Sempole 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

Online @ [www.thepetcentre.co.nz](http://www.thepetcentre.co.nz)

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

### **The Pet House** - 10% discount

Coastlands Mall, Paraparaumu Ph 04 296 1131



What's happening?

FNZAS »  
Commercial

FNZAS



Member's Tank - Liam's Planted Tank

August 20th, 2012

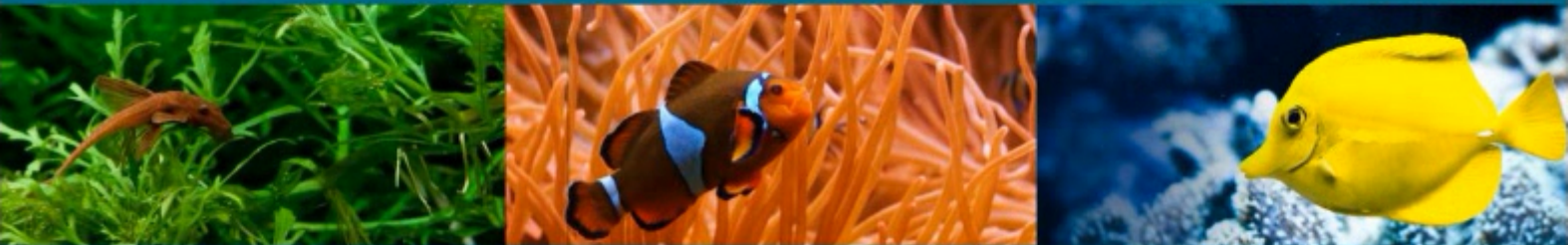
Sawaba respiciens

Parotacincus jumbo



# Join the Community

Online advice and support for all levels of the hobby  
find your nearest club • support local suppliers



# Aquarium World

www.aquariumworld.nz