Aquarium World magazine

Volume 60 Issue 1 August 2013

CONTRIBUTORS

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Liam is a first year university student studying Landscape Architecture. He caught the aquarium bug about four years ago and has since delved into Aquatic plants and has taken a keen interest in aquascaping.

Tom Gilberg

Tom is 19 years old and was born in Germany and moved to New Zealand when he was two years old. He began fish keeping around 2010 and progressed into aquascaping, which has become a passion. The thing he enjoys about aquascaping is that a planted tank is never static but forever changing. Growing plants is a big part of this and he thoroughly enjoys aquatic horticulture.

Adrienne Dodge

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

Jennifer Hamlin

Jennifer is a lecturer of veterinary technology. She trained in the USA majoring in Neurobiology, Physiology & Behaviour with a degree in chemistry. She has been keeping fish since she was a child and has a particular interest in planted tanks. She is also current president of the FNZAS.

Darren Stevens

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

Zarah Green

Zarah is an IT manager for an electronics manufacturing company and also runs his own IT consulting business, specifically for small businesses. He has been keeping fish for over 10 years and currently has both tropical freshwater and tropical marine tanks. His interests include all things in and on the water as well as a developing passion for photography. He is also the FNZAS webmaster.

Paula Brooksby

Paula has a phD in chemistry and is currently a research scientist at a leading university where she works with advanced materials and nanotechnology. She enjoys several aquariums at home and prefers low-tech, easy-care tanks housing few numbers of fish. Tanganyikan shell-dwellers are a particular favourite.

Caryl Simpson

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

ADVERTISING Advertising for the Aquarium World magazine and the Aquarium World website is managed by the FNZAS and can be arranged by emailing: advertising@fnzas.org.nz

Sales: Jennifer Hamlin Accounts: Adrienne Dodge Ad production: Dena Emanuel

SUBSCRIPTIONS Printed editions of The Aquarium World Magazine are $60 per year.
Digital subscriptions are free to affiliated FNZAS club members.
Throughout 2013, digital editions are free to non-members but will be $20 per year from February 2014.
email: subscriptions@fnzas.org.nz

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Aquarium World
magazine

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Aquarium World Magazine is published quarterly in August, November, February and May by the Federation of New Zealand Aquatic Societies Incorporated (FNZAS)

ISSN 1173-8375

COVER
Common octopus
Pinnoctopus cordiformis
Photo: Brian Gratwicke

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EDITORIAL

Welcome to the new layout of the Aquarium World Magazine.

This new design reflects a changing direction for the Federation of New Zealand Aquatic Societies and is part of a complete new look for the organisation and the website.

In this issue, we are proud to bring you a selection of interesting articles that have a distinctly New Zealand flavor. Of note are the shop tours where in each issue we will be featuring New Zealand aquatic businesses and services from all over the country. We also will have a regular feature on New Zealand natives where you will see articles on native plants, marine fishes and organisms and freshwater fishes and invertebrates. Product reviews will offer you some insight into items that you can find in your local shops, including some that have just arrived on the international market. In upcoming months, you will also see highlights of new fish available on the import list as well as news that is pertinent to New Zealand markets.

As with all new things, we expect subtle adjustments as we find out what you want to see and how we can best offer you interesting content. In the meantime, we hope you enjoy this issue.

Jennifer Hamlin
FNZAS Editor & President

Pristella maxillaris
Photo: Robert Beke

PLANT PROFILE

Hemianthus umbrosum

Profile and photos by
Liam Winterton

Hemianthus umbrosum is a charming plant that looks similar to *Glossostigma* sp. when grown emersed. It has small leaves and grows very well as a marginal plant. To grow *H umbrosum*, simply use a container without much drainage and fill it with nutrient-rich top soil (such as Yates Black Magic Potting Mix). Water or mist daily but avoid flooding the container to prevent root-rot. Cuttings are easily propagated using the same method.

Common name: *Hemianthus umbrosum*

Origin: North America (U.S.A)

Temperature: 20-26 degC

pH range: 5.5-8

Hardness: Soft-Hard

Light: Submerged - High/Very High
Immersed - Medium/High

Height: Submerged - 10-15cm
Immersed- 5cm

Difficulty: Submerged-Medium
Emersed- Easy

Status: Allowed


Müller

The Art of the Planted Aquarium

Tom Gilberg visited the Hannover Pet Fair in Germany last January and took the opportunity to take some stunning photographs of some of the entries of the aquascaping contest that was held there

The Art of the Planted Aquarium is part of a large pet expo that takes place annually in Hanover Germany. The event has been going on for the past six years and this year I was lucky enough to be able to attend.

The two day event was packed with things to see. Exhibitors included importers for Betta splendens, Discus breeders, product displays, aquatic plant growers, a shrimp competition and much more.

The main attraction of the event was the aquascaping contest which was separated into two categories - Nano and XL. Each section had around 20

participants, including the famous aquascaper Oliver Knott who was up to his usually quirky tricks. All of the aquascapers there were accessible to spectators and available to chat. Most were very friendly and seemed surprised that I came all the way from New Zealand.

I was really impressed by the quality of the aquascaping and the management of the event and recommend it highly to anyone who is in Europe at that time of the year.

Tom Gilberg

FISH PROFILE

Pristella maxillaris

Pristella maxillaris (Pristella, X-ray Tetra or Water Goldfinch)

Classification Order: Characiformes

Family: Characidae

Distribution: Native to the coastal waters of Guyana, Venezuela, Suriname, French Guiana and northern Brazil. Wild fish are unlikely to be found for sale. It is commercially bred in huge numbers for the trade, due to its popularity.

Habitat: The Pristella maxiillaris inhabits clear water streams and their tributaries during the dry season. When the rains come, the fish moves into the flooded areas of the savannah where the submerged vegetation becomes its spawning ground.

Maximum Length: 40 - 50 mm.

Life Span: A Pristella maxillaris may live to be five years old.

Aquarium Size: The smallest size aquarium that should be considered is 60x30x30cm.

Maintenance: The Pristella maxillaris will do well in most tanks. In a heavily planted tank the fish looks very effective but in a bare set up it can appear very washed out. This fish is a shoaling species and therefore should be kept in a group of six or more.

The best way to see this fish is in a biotope tank. By using river sand as your substrate and adding driftwood branches and twisted roots, a few handfuls of dried oak or beech leaves you will have a natural looking aquarium. Aquatic plants are not a feature of this species' natural waters. By allowing the wood and leaves to stain the water, making it look the colour of weak tea, and adding a small net bag of aquarium peat to the filter you can simulate the black water conditions of this fishes natural habitat. Dim lighting should be used.

Water Conditions: Temperature: 22-28 degC

pH: 6.0 - 7.5

Pristella maxillaris

Hardness: Because the natural waters of these fish are subject to flooding on an annual basis, the amount of dissolved minerals in the water can vary widely over the course of the seasons. Anywhere in the range of 2 – 20d GH is acceptable. However if you are attempting to spawn this fish, its natural breeding season is the wet season when the water is softer and more acidic, a value towards the lower end of the range is better.

Nitrates: should be kept below 20ppm.

Diet: The Pristella maxillaris is an omnivore. In the wild it feeds mainly on small invertebrates and plants but in the aquarium this fish is not fussy and will accept a mixture of flakes or granules along with live frozen foods such as daphnia and artemia (brine shrimp).

Behaviour and Compatibility: This fish is a very peaceful species that does not compete well with much larger or fast swimming tank mates. It is ideally kept with other South American species, such as pencil fish, dwarf cichlids, Corydoras, small Loricariids and other small tetra.

In a community tank it combines well with livebearers, loaches, barbs, small rasboras, Anabantoids and the Pelvicachromis species.

Reproduction: The Pristella maxillaris is not difficult to spawn, however they are unlikely to beed by 'accident'. Mature females are usually bigger and stockier than males. You need to put the adults in a tank set up especially for spawning. A tank 45x25x25cm is a suitable size for this purpose. Soft lighting and clumps of fine leaved plants such as ambulia, java moss or spawning mops are required, to give the fish somewhere to deposit their eggs. The other alternative is to cover the base or lower half of the tank with a mesh, with large enough holes so the eggs drop through but small enough that the fish can not reach or get through the mesh to them. For spawning, a pH of 5.5-6.5, gH 1-5 and a temperature of 27-29 degrees celcius will give you optimum spawning conditions.

These fish can be spawned in a group, with six of each sex being a good number. It is important to condition the fish with plenty of small live foods prior to spawning. Once the eggs are seen the adult fish can be removed, or should they spawn in your very heavily planted tank they can be left there and the fry siphoned from the tank once you see them.

It is important to realize that the adults will eat the eggs if they are given the chance and therefore removing them immediately the eggs are noticed is advised. The eggs will hatch within 24-36 hours and the fry will become free swimming 3-4 days later.

The fry can be fed on an infusoria type food for the first few days, until they are large enough to take live brine shrimp or microworms. Both the eggs and fry are light sensitive in the early weeks of life and should be kept in darkness if possible.

Note: There is a gold albino variant of this fish (Pristella maxillaris) known as the Gold Pristella Tetra that occasionally appears in the shops in New Zealand. If you want something different keep your eye out.

Adrienne Dodge

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Image: Robert Beke

HOW TO

Instantly Get Rid of Algae

While this may sound like a 'magic pill' for everybody's worst aquarium nemesis, it really is not. Algae grows whenever there are available nutrients and light so solving the cause of the problem is a more complex issue, however, it is possible to quickly improve the appearance of plants and fixtures in the aquarium with a simple treatment.

The treatment for quickly eliminating algae on plants and surfaces involves chlorine bleach (sodium hypochlorite) which is poisonous to aquatic life. Bleach must never be used in a living aquarium, or anywhere near living fish. Bleach can be used on plants, fixtures, ornaments, rocks, and wood which have been safely removed from the tank. Once treated these can be rinsed well and safely returned to the living tank with no ill effects to the fish or bacterial filtration.

To carry out this treatment, carefully follow the instructions below:

1. Get some bleach – Chose a quality plain bleach solution. You get what you pay for. Cheaper brands often have much lower concentrations so they may not be as effective. Bleach also ages with time and the chlorine diffuses out of the liquid so an old bottle on the shelf will no longer have the same effectiveness of a freshly produced bottle.
2. Prepare yourself and the environment – Concentrated bleach will discolour and eat away fabrics like clothing, carpet and furnishings as well as erode some metals. Prevent damage by preparing the solution in an environment that can handle some splashes if they occur. Wear white clothes, or clothes that you don't mind getting damaged and wear gloves. Open a window for ventilation if the smell bothers you.
3. Measure out 20mls (4 teaspoons) of bleach and add to a plastic bucket filled with about 1 litre of lukewarm or cool water. The amount is not exact and depends on the quality of the bleach. The more concentrated bleach you use, the faster it will kill the algae, however, if you use too much (e.g. more than 20%) it will risk damaging porous ornaments and fixtures and will certainly damage living plants. Take care and only use the minimum amount needed to do the job.
4. Choose the fixtures, ornaments, and plants that you wish to treat and remove them from the tank. Rinse off any organic matter like mulm, fish food or rotting plants.
5. Place the items into the bucket of diluted bleach and make sure they are submerged under the surface of the solution. Leave them in the solution for the time suggested in the chart.
6. Once the allotted time has passed, remove the items from the bucket and rinse well under a running tap. The solution will quickly rinse off but if you are worried, you can additionally submerge them in a bucket of water with added de-chlorinator which will neutralize any remaining bleach.
7. The items can now be safely added back to the tank!

Recommended exposure times of bleach-solution to get rid of algae on surfaces	
Ornaments and fixtures:	
Wood, rocks, plastic aquarium ornaments	up to 5 minutes
Filter pipes, glasswear	up to 5 minutes
Rubber fittings, sponges	up to 2 minutes
Plastic plants	up to 5 minutes
Silk plants	not recommended
Aquatic plants (living):*	
Anubias species	up to 5 minutes
Cryptocoryne	up to 3 minutes
Echinodorous	up to 3 minutes
Rotala sp.	up to 2 minutes
Ludwigia	up to 2 minutes
Tiger lotus	up to 2 minutes
All mosses	not recommended
Bolbitis sp.	not recommended
Twisted Valisinaria	not recommended
Indian fern	not recommended

If the bleach solution is particularly concentrated, algae can immediately turn white. Some species of algae will turn pink or brown within minutes to hours after bleaching and some algae will just disintegrate once the ornament is placed back into the tank. In a day or so, all evidence of the algae will be completely gone!

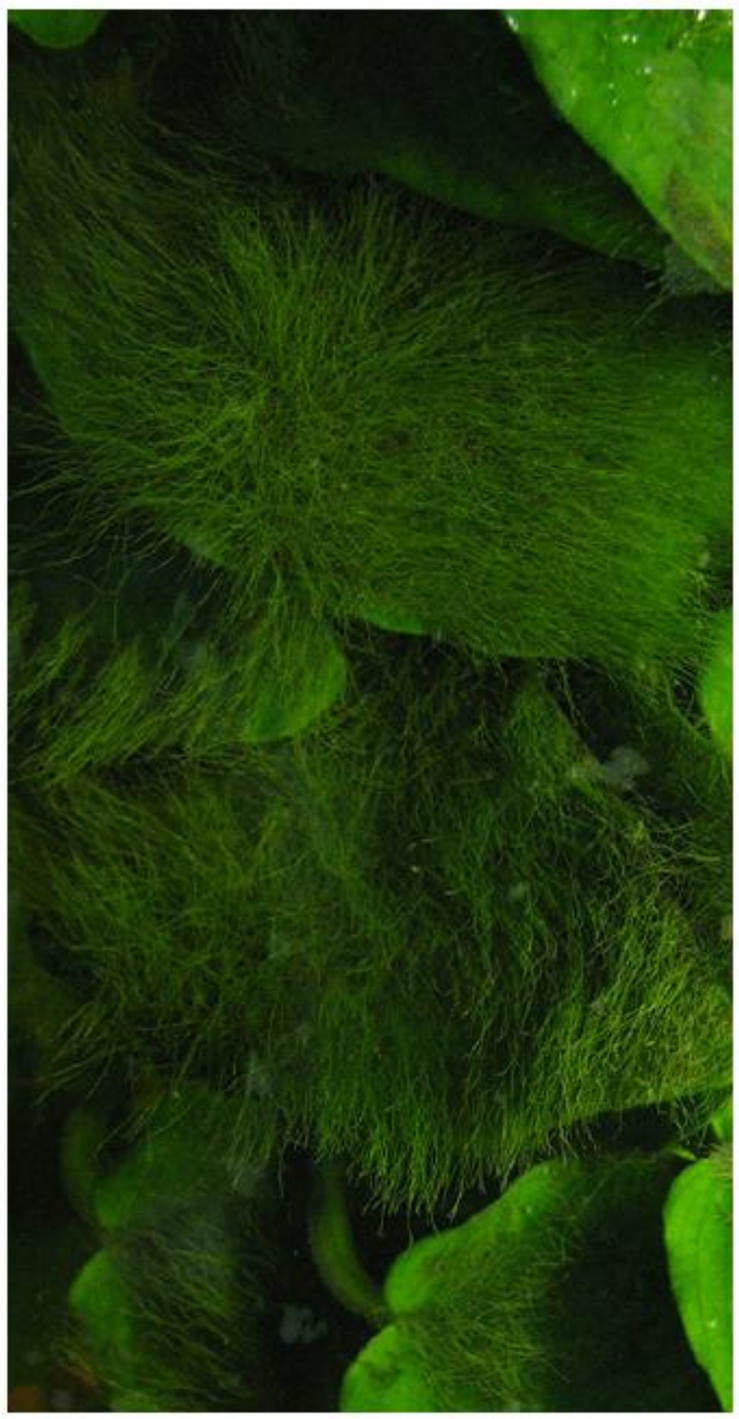
*Living plants that have damaged leaves will not hold up well to bleach so it is best to remove these leaves beforehand, minimize the bleaching time, or avoid bleaching the damaged leaves altogether. Many other plants can be bleached, if only for a minute or less which will kill the single-cells of the algae. Fragile soft-leafed plants are less tolerant of bleach so take care if trying this treatment on them.

1 - Before treatment - this photo depicts Anubias with surface algae

2 - Immediately after treatment – this photo depicts algae that has been bleached.

3 - Two days after treatment – most of the algae has gone

Photos: Diane Wilkie



Charming

Shell-dwellers

One of the most endearing of the African cichlids are the gold shell-dwellers *Lamprologus ocellatus*. These small African cichlids reach a maximum of about 5 centimetres in length and their relatively peaceful demeanour makes them popular tank inhabitants in New Zealand and around the world

by Jennifer Hamlin

The native habitat of shell-dwellers is the shallow, sandy littoral zone of Lake Tanganyika which is littered with the empty shells of endemic snails (Neothauma tanganicensis). These shells are used as shelter for the fishes as well as a site for egg-laying and brood care by the female. The name of *L ocellatus* is derived from the bright coloured eye spot on the fish's operculum, and indeed when this fish postures in defence with its mouth open and its opercula flared, it has the appearance of having much larger eyes – likely a defence mechanism designed to trick the opposition into thinking it is a much larger fish.

Top: Male. Photo: Jennifer Hamlin
Bottom: Young male. Photo: Ryan Jury

Previous page: Female and fry
Photo: Jennifer Hamlin

Sex differentiation is minimal, but easily appreciable in adults. The males are larger by about a third reaching about 5 centimetres and being thicker through the body while females average 3.5 centimetres in length and are narrower overall. Both sexes have a golden-yellow colouration with a grey shaded skullcap and grey darkening throughout when threatened. Females are generally more brightly yellow coloured throughout the body and fins. They also tend to have yellow and white edging to their bright yellow caudal fin whereas the males have a grey coloured dorsal fin with only a small amount of white at the posterior edge and yellow trim along the anterior edge. Males also have much more vivid pink and blue highlights along the lateral flank.

Keeping shell-dwellers

In captivity, the shell-dwellers are undemanding and hardy tank inhabitants appreciating clean, well-aerated water that is between 24 - 27°C. Like other Tanganyikan cichlids, the shell dwellers do best with a pH between 7.8 and 8.8 and with water that has a general hardness (GH) of between 160 – 320 ppm or dH 9 - 19 . These fish are particularly sensitive to low oxygen or broad fluctuations in water conditions so to maintain stability, small water changes every few weeks are all that is needed. Similarly, transporting these fish, or transferring these fish to new tanks must be done with care to ensure stable water parameters.

In their native environment, shell-dwellers live amongst an abundance of shells and females often will chose shells that are sheltered by the landscape as well as clustered around other shells which will provide additional shelter for her young as they venture out from her care. To provide an environment that allows these fish to exhibit natural excavating behaviour, a fine river or beach sand is needed as the primary substrate.

Shell dwellers appreciate the ability to excavate the substrate to bury or hide their shells from adversaries or predators. They create an impression around the shell to funnel small invertebrates toward the opening so that small fry do not have to venture far from the shell to feed. In doing this, they exhibit a most unusual behaviour of shooting streams of sand over their shell by plunging open-mouthed into a pile of sand, anchoring themselves, and then rapidly fanning the pectoral fins to blow sand backwards over their shell. The fish will return to the shell to clean out the opening and continue blowing sand until it is level with the opening.

Male shell-dwellers have a very strong territorial defence and will take on much larger adversaries, including the hands and arms of the fish keeper if they come too near! Females are also territorial but tend to retreat into their shell when threatened, except when defending a brood, in which case they are much like males in their fierceness. Females tend to live near the males but also do not appreciate living near each other. The males may have one or more female in his harem but females can come and go at will or may be ostracized by the male due to space constraints, or if he perceives her to be a danger to his offspring being reared.

Jaw locking territorial disputes
Photo: Jennifer Hamlin

In their natural habitat, shell-dwellers eat mainly small invertebrates that drift by the shells, so in captivity they do best with high-protein slow sinking foods and regular feeds of live foods such as brine shrimp, cyclops, mysis shrimp, and daphnia. Floating foods and pellets that settle immediately on the tank floor are not as readily accepted.

Setting up a tank for shell-dwellers is fairly simple using fine sand and at least two shells for each fish. The best shells to use are escargot shells which are commonly found in gourmet food shops. Shells that are too small can provide a hazard in the fish may get stuck inside. Males have territories of about 30 square centimetres around their shells. If multiple males are kept, breaking lines of site is important unless the tank is large enough to prevent conflicts. If a conflict does occur, it can be easily solved by quickly plunging a hand into the tank and startling the fish so that it retreats into the shell instead of vigorously defending it. The shell can then be quickly moved to a new location and the inhabitant will stick with its shell and begin defending its new territory. If conflicts continue to occur, re-scaping the tank and breaking lines of sight can be helpful.

Breeding

Shell dwellers live and bred in harems but can also be kept in pairs as well. A good diet of live foods as well as relatively hard water and plenty of shells is all that is needed to trigger spawning. During courtship, the female will curl her body and fan her tail at the male. She will lead the male to the shell and when she is ready she will enter the shell and lay her eggs. She will then come out and the male will go in to deposit the milt. The male may instead just fan the milt into the shell from the opening, or he may enter

the shell with the female during the egg laying process, presumably to deposit milt at the same time. The egg laying process can take place all at once, or in stages over a half hour period. The female will then tend the eggs, fanning them regularly until they hatch in only 72 hours. The microscopic fry are not seen for another 7-10 days when they eventually emerge to feed. Both the male and the female will defend the territory vigorously during this time.

within the female's wide territory and by 4-6 weeks, the female will be chasing them away as she prepares for another brood. Fry are not at risk of being eaten by the parents or by other nearby adults however, adolescents will attempt to eat the fry if they get a chance!

To remove the fry, they must be removed in their shell within the first few days or they will have spread out and will be nearly impossible to catch until they are much larger.

Female and fry
Photo: Jennifer Hamlin

In the first few days after hatching fry don't venture far from the shell, quickly retreating at any sign of danger. As such, feeding fry can be a challenge. The female's fastidious fanning will often funnel any small foods away from the feeding area so frequent feeds of microworms and baby brine shrimp are useful to ensure the fry get access to foods often. A useful trick is to use a pipette to squirt food into the shell at least twice a day. Within 5-10 days, the fry will be venturing farther from the shell and even taking up residence in nearby shells. Within 1-2 weeks, they are nearly fending for themselves

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FISH MINI PROFILE

The common Kribensis *Pelvicachromis pulcher* is an easy to keep dwarf cichlid originating from Africa. Unlike most other common African cichlids, the Krib's native habitat is rivers near coastal Camaroon and southern Nigeria where the water is soft, warm (24–26 °C) and neutral in pH. In the aquarium, Kribs can tolerate a range of conditions, once they are slowly adapted, and they eat most community foods readily. Kribs are best kept in pairs, or singly but must have enough room to establish a small territory. Multiple males should not be kept in cramped conditions as they will fight. Kribs are generally peaceful toward other tank inhabitants but will fiercely defend their territory when breeding or raising fry so the tank must be large enough to provide other fish with refuge.

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Preparing your pond for *Spring*

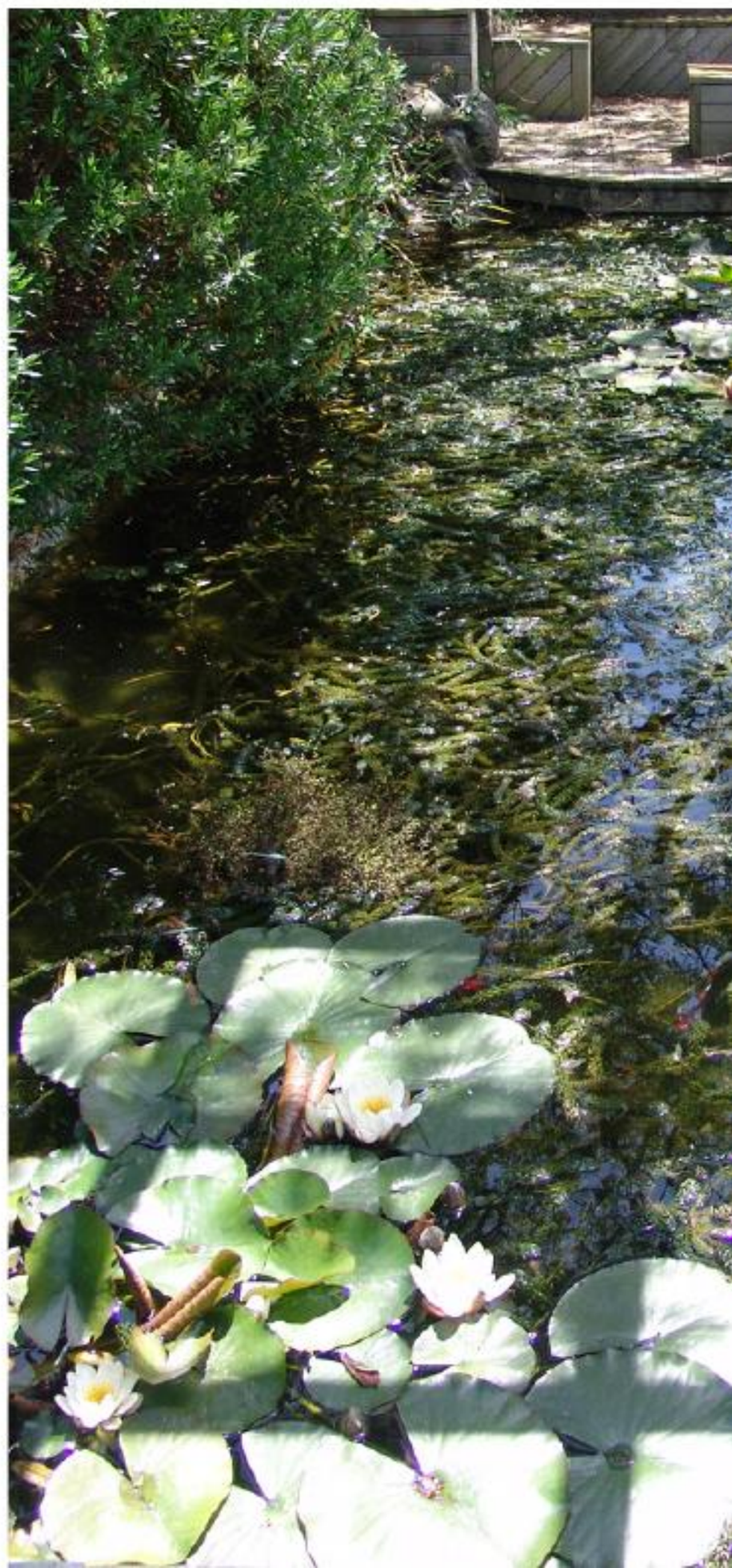
by
Adrienne Dodge

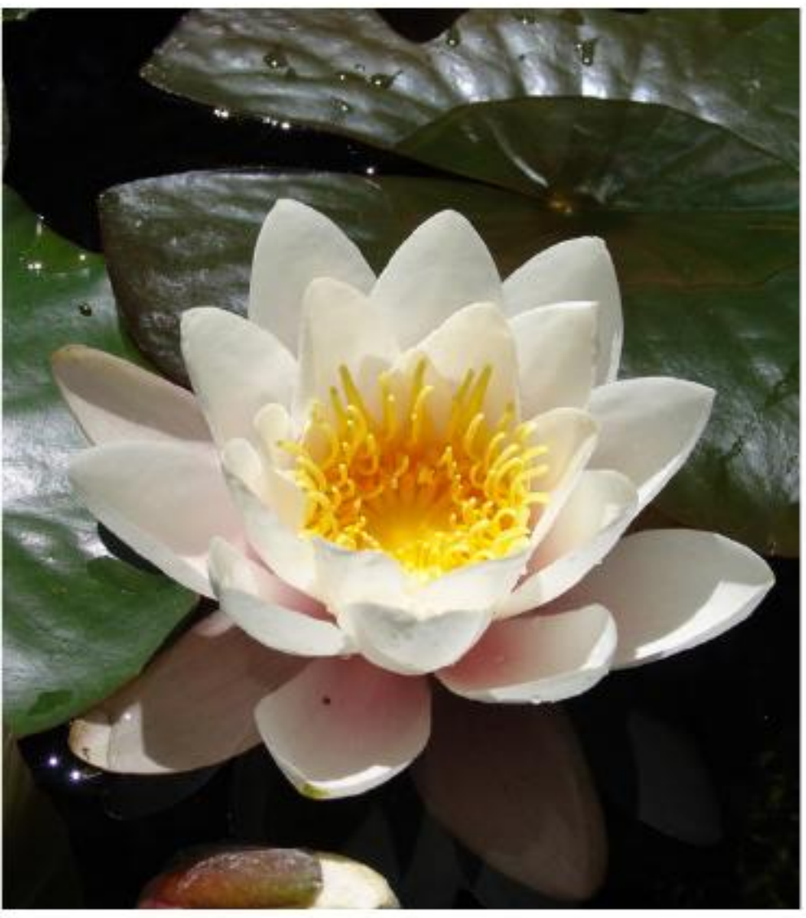
Photos by
Caryl Simpson

Yes - it is winter and no one feels much like going outside on a cold damp or frosty day, much less do anything about their pond, but if you take a little time now you will be rewarded with a pond that requires a lot less effort come Spring to make it look sparking and clean.

Most pond keepers notice that their ponds experience an increase in algae once early Spring (which is not really that far away) arrives. The cause of this is the pond plants ie the beautiful water lilies, which gave so much pleasure over summer have died down in the water or become dormant. If there are lots of dead leaves on the bottom of your pond combined with fish waste rotting over winter, the algae is going to feed on the nutrients when the days start to lengthen and get a good head start over new plant growth. If you remove the dead and rotting leaves and debris off the bottom of your pond over the winter you are going to slow this process down. Leaves can be removed with a skimmer type net that has a square end which enables you to push it across the bottom of the pond. There are also pond vacuums available for this purpose however they require high-pressure cold water for them to be effective. You can also rearrange decorative rocks and make plans for new plantings in the area around the pond while you are working away.

A water feature is a popular addition to a pond and August is a good time to clean it out. Completely emptying it and removing all the sludge and debris from inside it with a scrubbing brush will make it look like new!





Once the weather begins to warm and all signs of frosts have passed then it is time to turn your pump back on (if you live in the colder areas of New Zealand and turn it off for the winter). You can begin to feed your fish again albeit sparingly once the water temperature has reached a constant 10°C increasing the amount you feed back to your normal feeding routine when the temperature of your pond reaches around15°C.

If you chose not to venture out in the colder weather to do some remedial clearing out of your pond now may be the time for you to decide whether or not you need to do a complete water change. This is not desirable as it will affect the balance of the pond and upset your algae control but if your pond is full of rotten leaves and sludge it may be your only option.

This is the method I suggest if you are going down this route –

- Pump or place water from your pond into a large bucket, tub or container
- Place your fish in this container and cover it with netting to prevent fish jumping out
- Pump out as much water from your pond as you can and remove any potted plants.
- Use a dustpan and brush to remove all the sludge
- Refill your pond being sure to remove chlorine with a de-chlorinator (pond de-chlorinators are available and go a long way)
- Add some of the de-chlorinated water to the container your fish are in and wait half an hour (about 1/3 of new water to the existing water)
- Return your fish to the pond along with the water from the container they were in
- Return your plants

Now is also the time to fertilise your plants. Plants such as water lilies require fertiliser every four weeks during the growing season.

If your water starts to turn slightly green turn on your UV sterliser if you have one. NB. There are other options available aside from a UV steriliser to help you keep your pond water clear, such as algae removers and barley extracts, however the UV steriliser is the most reliable method of removing green water and keeping it clear.

Your filter is also going to require cleaning. If you have a pre filter you will most probably need to check and clean this weekly. If you have a biological filter this will need cleaning when the flow reduces due to all the debris accumulating in it. Clean the filter sparingly by removing only enough debris to return the flow to normal.

Happy Pond Keeping!

Feisty African

If you are an African cichlid fan and are looking for a challenge, this could be it. The Five-barred Lamprologus *Neolamprologus tretocephalus* is a small species of carnivorous African cichlid originating from the sandy northern shores of Lake Tanganyika. These fish form pair bonds for the breeding season and will spawn in a cave and jointly care for and guard the young. In the aquarium, this species is particularly territorial and will not tolerate conspecifics so are usually kept in single pairs and housed only with other medium-sized cichlids that occupy other areas of the tank.

Photo: Robert Beke

NZ NATIVE

An Octopus's Garden

Darren Stevens introduces us to some of the octopus species found in New Zealand waters

In the last issue we introduced the cephalopods and looked at a handful of the 90+ squid species found in New Zealand waters. We also have about 40 octopus species in our waters, including representatives of all twelve octopus families.

Octopus are among the most intelligent of all invertebrates (animals without a backbone) and many shallow water species are masters at camouflage being able to change their colour and texture to suit their surroundings using chromatophores (pigment filled sacs under individual nervous control). This is despite the fact that they are colour blind. Most octopus species live on or close to the bottom, however there are several pelagic (live in the water column over deep water) species, many of which are found in New Zealand waters. Pelagic octopuses tend to have a gelatinous body and are often small. An exception is the rare pelagic species *Haliphron atlanticus*, which may be the largest of all Octopuses. The single incomplete specimen collected in New Zealand waters is the largest specimen known and is estimated to have weighed 75 kg's and to have been about 4 metres long. The other contender for the world's largest octopus is the giant Pacific octopus (*Enteroctopus dofleini*) which reaches at least 71kg. In stark contrast, the world's smallest known octopus is the tiny star-sucker pygmy octopus (*Octopus wolfi)* which grows to only 1.5 cm in length and weighs less than 1 gram.

Octopus are dived into two main groups: the incirrate octopus (Suborder Incirrata) which resemble our large common inshore octopus, and the cirrate or 'dumbo' octopus (Suborder Cirrata) which are much more bizarre. In this article we will look at a selection of the octopus species we have in New Zealand waters.

Graneledone taniwha
Photo: TAN1108, OS20/20 Biogenic Habitats on the Continental Shelf, DTIS camera, NIWA
Darren Stevens

Incirrate octopus

Our large common inshore octopus, *Pinnoctopus cordiformis* (also sometimes called *Octopus maorum*) is a typical incirrate octopus with a sac-like, often lumpy body, two eyes, and four pairs of arms. There are a number of New Zealand cirrates with this general body plan. Here's a selection.

Common octopus

This large long-armed light to dark brown or red octopus needs little introduction. The common octopus grows to about 1.5 metres in total length (end of head-like body to tip of longest leg) and about 10 kg's. Its inquisitive nature and coastal distribution mean it is frequently seen by divers and is a common display animal in large public aquariums. As juveniles common octopus are often found in tidal rock pools but as they mature they move out to deeper water.

Common octopus, ***Pinnoctopus cordiformis***
Photo: Darren Stevens, NIWA

It is found around North, South, Stewart, and Chatham Islands, and Southern Australia from the intertidal zone to about 300 metres depth.

Yellow octopus

The yellow octopus (*Enteroctopus zealandicus*) is striking large (to 1.4 metres total length) yellow to orange smooth-bodied octopus. It is found on the East Coast of the South Island from the Chatham Rise (an undersea ridge between the South Island and the Chatham Islands) to the sub-Antarctic Auckland and Antipodes Islands. It is generally found in deep water (300–522 metres), but in southern waters juveniles are found in the intertidal zone. The yellow Octopus is closely related to the giant Pacific octopus (*E. dofleini*), one of the world's largest octopus species.

Yellow octopus, *Enteroctopus zealandicus*
Photo: Darren Stevens, NIWA

The real Octopus

Along with the large common and yellow octopuses there are also about 7 true *Octopus* species in New Zealand waters. Most New Zealand *Octopus* species are small ranging in size from about 13 to 40 cm in total length.

Some of the smaller species would make great subjects for a saltwater aquarium and can be found in shallow water. *Octopus huttoni* grows to about 24 cm in total length and is found around New Zealand from the intertidal zone to 386 metres depth. *Octopus kaharoa* (pictured) grows to about 40 cm in length and is found from 7–540 metres depth on the east coast of the North and South Islands from the Poor Knights Islands to Kaikoura. *Octopus gibbsi* grows a little larger reaching 68 cm in length and is found on the northeastern coast of the North Island from the intertidal zone to about 40 metres depth.

Octopus kaharoa
Photo: Darren Stevens, NIWA

Along with these more 'typical' looking octopus there are few deeper water incirrate octopus that are a little more unusual. Here are a couple.

Deepwater warty octopus

These unusual stocky octopus have clusters of cartilage-like warts on the head, mantle, and arms giving rise to their common name of deepwater warty octopus. There are 2 species of deepwater warty octopus (*Graneledone* species) in New Zealand waters found in 450 to 1500 metres depth. *Graneledone taniwha* also features as the title photo for this article.

Graneledone taniwha
Photo: Darren Stevens, NIWA

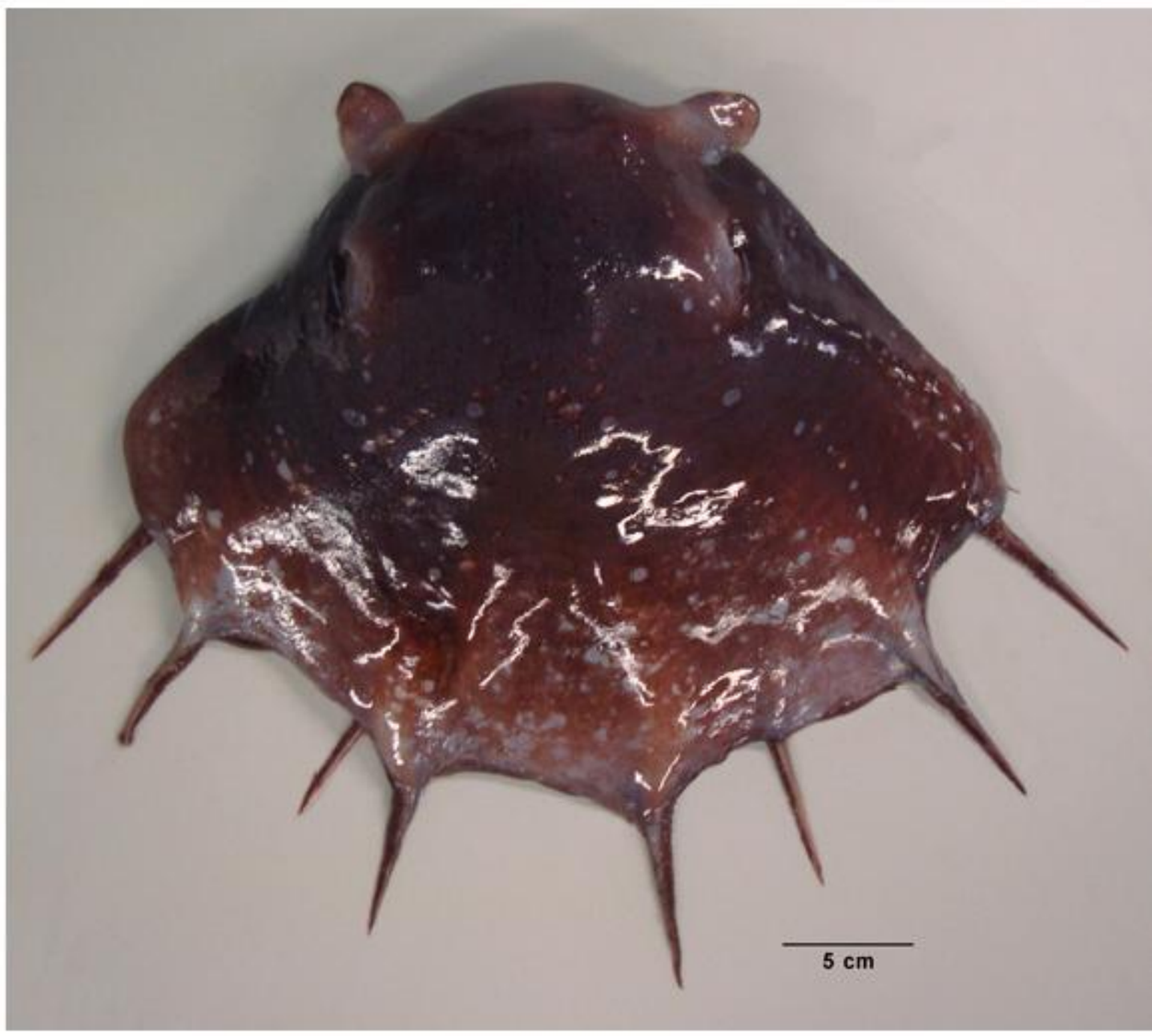
Thaumeledone zeiss

This endearing little octopus (to 12 cm total length) with short arms and big eyes doesn't have a common name and is only known from a handful of specimens captured in very deep water (1000–1400 metres) off the east coast of the South Island. A related species is found in even deeper water.

Thaumeledone zeiss
Photo: Darren Stevens, NIWA

Cirrate octopus

These spectacular deep-sea octopus are anything but typical and come in a variety of bizarre forms. All species have a semi-gelatinous body, a pair of fleshy 'fins' on the mantle (head-like body), strong webbing between the arms, and a row of cirri (minute fleshy finger-like projections) along each side of the suckers on a leg. Most species are an orange/red/purple colour and all species lack chromatophores, so they are incapable of changing colour. Most species live close to or on the sea floor and generally feed on small, slow moving prey, such as small crustaceans (amphipods - like the sand-hoppers found at the beach, and shrimps) and polychaetes (sea worms). Unlike the more typical-looking inshore octopus which can move rapidly by jet propulsion, dumbos generally



Umbrella octopus, ***Opisthoteuthis robsoni***
Photo: Darren Stevens, NIWA

move at a sedate, energy efficient pace; crawling along the bottom, drifting with the current, swimming using their large fins, or by pumping their webbed arms. There are about 9 species of dumbo octopus in New Zealand waters. Here are a couple of types:

Umbrella octopus

The bizzare gelatinous umbrella octopus (*Opisthoteuthis* spp.) look a little like a flattened jellyfish. However as with all cirrate octopus they have a pair of ear-like fins and eight strongly webbed arms, each with a single row of suckers. There are 3 species of umbrella octopus in New Zealand waters, which grow up to about 30 cm in length and depending on the species they can be found from 360 to 1700 metres depth.

Dumbo octopus

***Cirroctopus* spp.** from the Ross Sea, Antarctica
Photo: Peter Marriott, NIWA

With its large muscular fins resembling ears and plain coloration it's not hard to see why these octopus are sometimes called dumbo octopus. The New Zealand species *Cirroctopus hochbergi* is found off the east coast of the North Island in 700 to 1350 metres depths. The remaining 3 species are found in Antarctic waters (including the one pictured above).

So there we have it. An introduction to New Zealand's cephalopods. So next time when see a common octopus or a broad squid during a dive in the sea, or dive into a feed of squid rings at your local takeaway just think of the many other cephalopods that make up New Zealand's marine fauna.

There are lots of other cool invertebrate critters on the NIWA Invertebrate Collection Facebook page:
www.facebook.com/NIWAInvertebrateCollection

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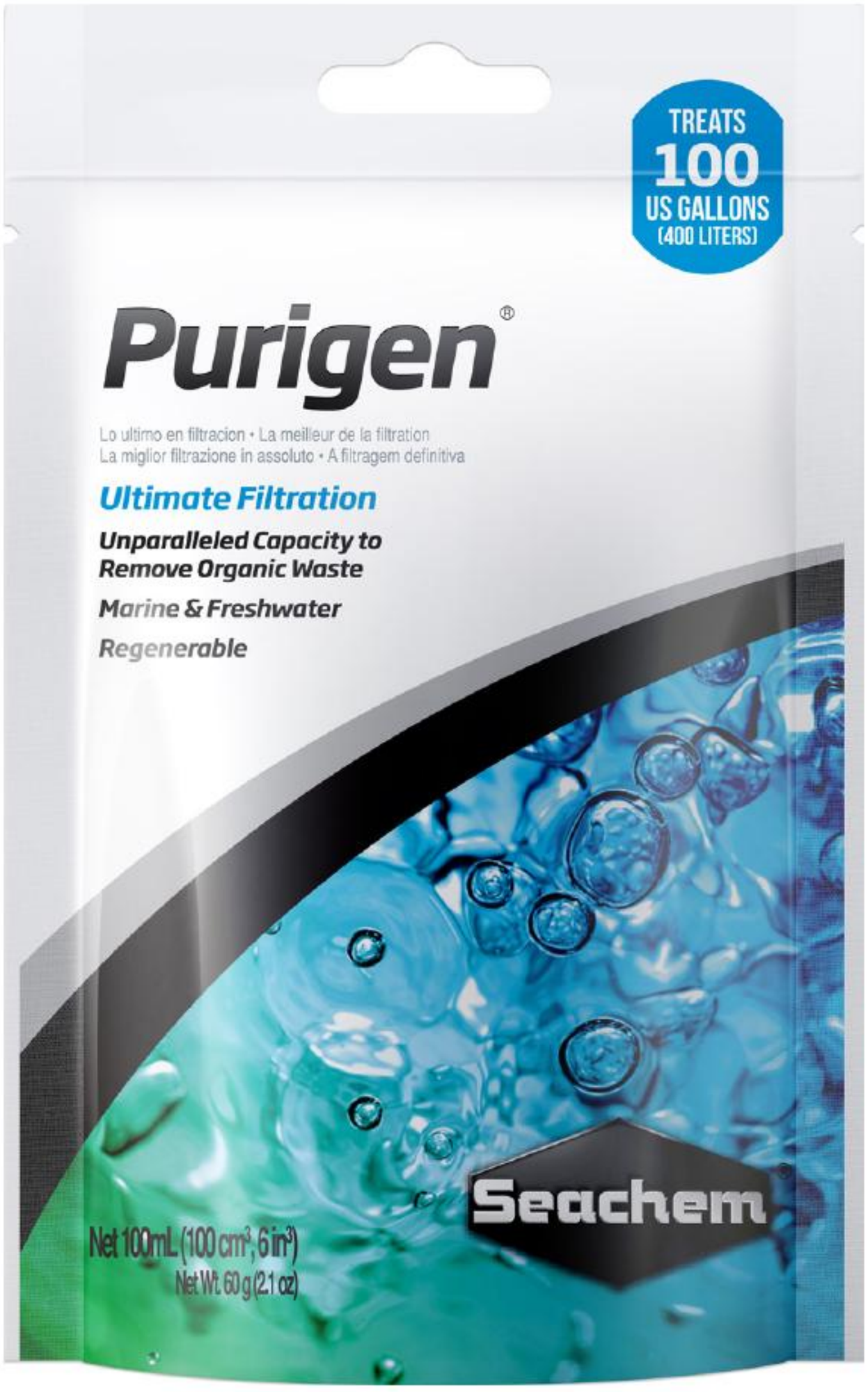


According to their description, Seachem claims that Purigen is a premium synthetic adsorbent that is unlike any other filtration product. It removes soluble and insoluble impurities from the water, controls ammonia, nitrites and nitrates by removing nitrogenous organic waste that would otherwise release these harmful compounds and also polishes the water to unparalleled clarity.

Each 1L of Purigen is suitable for up to 4000L of water. It can be used in both freshwater and marine. It comes in various sizes from 100mL up to 20L. The 100mL product comes in a pouch ready to put into your filter. The other sizes all require a special fine mesh bag aptly named by Seachem as The Bag. They claim it will last up to 6 months and can be regenerated once it indicates that it's exhausted by turning dark brown to black.

I gave it a go in a freshwater planted community tank. It's a 350L tank so I've got the 100mL pouch for my filter. I have quite a lot of tannin in the water due to some bamboo I have in there. After 24 hours, I noticed the tannins in my water reducing and the water becoming clearer. After a week without doing a water change, my nitrates are holding pretty steady and the water is clear.

It is able to do this because Purigen is a synthetic polymer that is specifically created to bind nitrogenous and other organic based particles to it. It works the same way carbon does, except carbon is far less picky about what it removes from the water. Carbon will remove both organic and inorganic compounds (trace elements). Purigen has further advantages over carbon as when it is exhausted, it won't leech the compounds back into the water and it changes colour to let you know this. Carbon always looks the same.

The regeneration process is simple. Take your exhausted Purigen and put it in a 1:1 bleach to water solution for 24 hours in a plastic bucket. Then simply rinse it well and soak in a solution containing 2 tablespoons of dechlorinator per cup of water. Rinse it well again and it should be ready to go. I tested this process on an older bag of Purigen I had and used Prime as my dechlorinator. The bag has gone from a dark brown to an eggshell white and is now ready for use.

In summary, Purigen is a product I will now run on all my tanks, especially when I head away on holiday. Apart from making the water look great, it's also piece of mind knowing that I have something else working away to keep the unwanted nitrogenous compounds in check.

Zarah Green

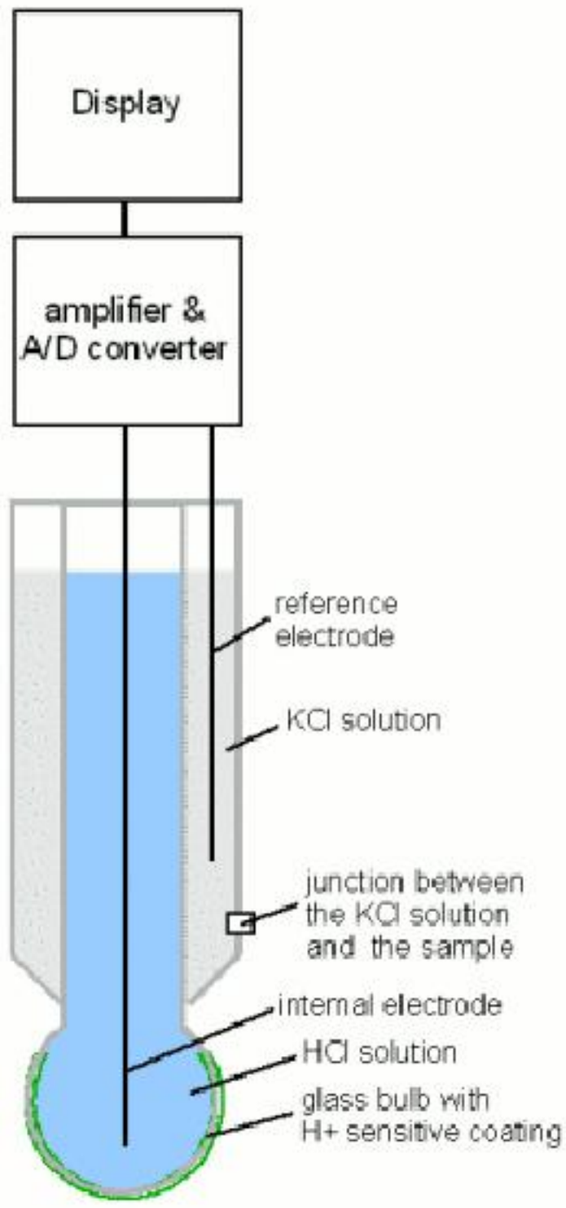
The pH Probe

By Paula Brooksby

The pH probe is a useful piece of equipment used to measure the acidity or alkalinity of water in the aquarium. The probe itself contains a glass bulb that comes in contact with the water. It is the thickness of this glass bulb that affects the measurement and hence the accuracy; therefore, anything that damages the glass should be avoided (scratches, exposure to chemicals, algae, etc.).

The glass bulb is special in that it can sense acid/hydrogen ions. When the bulb is exposed to water, the alkali ions in the glass bulb exchange with hydrogen ions in the water and this process generates a potential (voltage) difference. It is this potential difference that is measured and converted to a pH value that we understand when measuring our water acidity or alkalinity.

Inside the body of the glass bulb in most typical combination pH probe units there are two electrodes separated by a junction. These two electrodes include a measuring electrode which gets immersed in aquarium water and



Typical combination pH electrode

a reference electrode sealed in its reference solution (whose potential is always constant). The potential generated at the junction of these two electrodes is a consequence of the hydrogen ion concentration in the aquarium water and the difference between them gives the measurement of the aquarium water.

The junction between these two electrodes can become blocked by particulates and occasionally some metal ions can precipitate in the junction. If this occurs the electrode needs to be soaked in warm tap water to dissolve the material and unblock the junction.

In order to operate correctly, the pH electrode needs to be kept moist at all times as this keeps the glass hydrated. Hydration is required for the ion exchange process. Ideally the electrode should be kept in a buffered solution at either pH 4 or 7. It should never be stored in alkaline pH (as this can dissolve the glass) or distilled or deionized water (as this causes migration from the reference solution). If the pH electrode dries out it is best practice to recondition the glass by placing it in some tap water for 30 minutes prior to usage. All pH electrodes can run down

with time and use (just like a battery) and as the electrode ages there are changes to the glass resistance. This in turn changes the electrode potential and affects accuracy of the results which is why they need regular calibration to correct for this gradual and continual change.

It is important to read the instructions specific for each meter but generally the pH electrode should be calibrated before each use and standard buffer solutions should always be used. Buffer solutions or tablets can be purchased for this purpose. Standard buffers come in three pH values: 4, 7 and 10. buffers should be stored away from heat and in tightly sealed containers. Always use freshly poured solutions for each calibration.

There are two types of calibration: one-point calibration (done at a single pH point provided that point is close to the expected pH of the tank water) or dual calibration (between two range points) which gives greater accuracy.

One-point calibration:

- Calibrate the meter using only one buffer. The value of the buffer should be close to the anticipated sample pH value.
- Two-point calibration: Calibrate the meter using two buffers. One buffer is pH 7 and the other is pH 4 or 10. Choose the second buffer based on whether you are measuring an acidic solution (chose the pH 4 buffer) or an alkaline solution (choose the pH 10 buffer).

Dual calibration method:

- If there is a temperature setting, the meter must correspond to the temperature of the buffers.
- Place electrode into fresh pH 7 buffer at room temperature.
- Adjust meter to read 7.00 using the zero offset dial (for the one-point calibration method, at this point the electrode would be placed into a solution with a known pH value e.g. pH 7).
- Withdraw the electrode from the solution and rinse with water.
- Wick the electrode dry by dabbing it briefly against a clean paper towel (do not rub dry as this can cause a static voltage to setup between the two electrodes).
- Place the electrode into the second buffer solution (pH 4 or 10) and adjust the meter with the slope or gain controls to make it read the same as the known buffer (refer to manufacturer instructions if needed).
- The pH electrode is now calibrated and ready to use.

A pH electrode is designed to operate at room temperature, which is nominally given as 25 °C. If probes are to be used at other temperatures, then the measurement observed needs to be corrected for the temperature variation. Tables are available if precise measurements are necessary, otherwise, when the temperature is anything other than 25 °C and the pH is anything other than 7, the correction is: 0.03 pH error/pH unit/10 °C. For example, in going from 25 to 35 °C and pH 7 to pH 4, the error is +0.09 - generally not a concern for most practical aquarium applications.

After each use, rinse the electrode with water and store it in soft (low salt) acidic solution. Commercial soaking solutions are available or you can make your own by mixing 1 M KCl (~0.75 g / 10 mL) adjusted to pH 4 with a few drops of concentrated acid. The level of filling (if this is an option for your electrode) should be kept at least 2/3 full and be open during use.

The life-span of a typical pH probe depends on the conditions in which they are used and the care with which they have been stored. For a probe that is only used occasionally and which is stored properly, it can continue to operate for a number of years but a probe in continuous use may last as little as 6 months. Even electrodes that are never used still age and deteriorate with time. When an electrode is failing it can typically be characterized by sluggish response, erratic readings or a reading that does not change. When this occurs the electrode can no longer be calibrated.

Reference: http://www.omega.com/Green/pdf/pHbasics_REF.pdf
Diagram: Wikimedia commons

FNZAS Conference 2013

Geoff Haglund's Big band tiger plecos *Peckoltia* sp. L140
Photo: Caryl Simpson

This was the smallest conference ever, with just 14 attendees, but what we lacked in quantity we more than made up for in quality. Despite the low numbers, the majority of clubs were represented and a quorum was met.

All praise for the planning and execution of this weekend must go to Adrienne Dodge who did the majority of it by herself. AFA went in to recess in March but Adrienne was determined that conference would go ahead anyway and ploughed forward although she had never attended a conference so did not know what was expected. With Conference Guide in hand, and many email conversations, she put together a wonderful weekend.

Grant and I arrived early on Friday and were picked up from the airport. We were staying with Adrienne and hoped to be of assistance but she had everything under control with minions (husband, daughters and their boyfriends) doing the heavy work. Jennifer flew in later in the day and an informal get-together was held at Adrienne's that evening with other attendees stopping in for a drink and to chat and admire Adrienne's stunning rainbow aquarium.

The next morning we headed to the Rayland Motel, Conference Central. We met up with the other attendees, making new acquaintances and greeting old ones (some older than others) over more food and a cuppa. I was pleased to meet some regulars from the The Fishroom forum as I love putting faces to names.

Guest speaker, Geoff Haglund, spoke on the subject "A Happy Fish is a Horny Fish". He breeds L numbered catfish and is known around the world for his breeding success on some very difficult species. In his fishkeeping history he has kept over 700 species with new ones being purchased all the time. During his talk, Geoff spoke about how catfish get imported into New Zealand and the difficulty of naming them correctly. The allowable fish list for New Zealand

is based on scientific names but some fishes have several names or have been re-classified recently, so there are many incorrect names.

A lot of information about L numbered catfish is in German so language can be a barrier when investigating information about these fishes. Geoff has travelled to Germany to talk with others about catfish, meeting many breeders around the world both private and commercial. He also finds the internet helpful in finding information, often with translations of papers available.

Geoff loves gadgets and uses them to track the humidity, air pressure, and water conditions. He has detailed notes that go back for years on what he has done, and the fishes' response. This helps him work out what different fish need to thrive and breed. He also observes his fish a lot and this makes it easier to work out what they like or dislike in light, food, substrate, cave size and dimensions. Geoff says his philosophy on keeping catfish is to do everything he can to have his fish thrive, to understand what is best for each one and then provide everything they need. If they are happy and healthy, they will breed and it is through this philosophy that he has had success with species where nobody else in the world has.

After Geoff's entertaining talk we had a delicious morning tea then the AGM began. I must say I appreciate the much shorter AGM's we have these days, instead of the long rambling discourses of previous years, often off-track and not pertinent to AGM business, we quickly got through the business, awards and elections and were able to move on to the exciting developments that are to take place this year with the FNZAS.

Lunch was equally delicious and the new executive had a quick meeting before everyone prepared to visit Geoff's fish room in the hinterlands of Auckland. On the way we stopped to visit Ron at the Pupuke Aquarium Centre. A number were impressed by some wild discus he had there and one member purchased a King Tiger pleco. After a good look around, and a chat, we continued on to Geoff's.

Conference attendees - left to right: Grant Simpson, Gael Eastwood, Liam Winterton, Michael Northcott, Paul Munckhof, Geoff Haglund, Sam Hendriske, Gabrielle Heaslip, Jennifer Hamlin, Darren Stevens, Caryl Simpson, Adrienne Dodge, Paul Young
Photo: Mike Dodge

Geoff's fishroom is a converted garage chock full of tanks with breeding plecs and catfishes. Many of these fish were partially hidden in caves or

Wild discus at Pupuke Aquarium Centre

Geoff Haglund and Adrienne Dodge look at some of Geoff's fry tank setups in his fishroom
Photo: Caryl Simpson

under logs and hard to see because of the dim lighting but with the aid of a torch we got to view, and photograph (although not well), quite a few. Geoff also had a tropical tank in his lounge and a wall tank above the dining room table. We eventually left him in peace and headed back to rest before dinner that evening.

The dinner was held at Spices Indian restaurant, not far from the conference venue. There was a good choice of dishes from very mild to super hot so something for everyone and a good time was had by all.

Sunday dawned bright and sunny and we piled into the Dilworth School van and headed off to Kelly Tarlton's, where we met up with the other attendees and their families at the entrance. The weather was perfect and the view across the bay was lovely. I have been to Kelly Tarlton's a few times but not for several years. The biggest change I noted was that the journey past the penguin enclosure was no longer in a snow cat, and instead you walk the path. They still have the whiteout simulator which is the cylindrical tube spinning around the walkway as you walk across. I took one step and was immediately disorientated. I had to hold the rail with one hand and shut my eyes while Jennifer took my other hand and pulled me through. I was pleased to hear others having similar difficulties!

We went quickly through the rest to meet up with our guide who was taking us behind the scenes. We were taken past rows of different filters, skimmers, and other equipment. Having over 30 live animal exhibits from over 80 different species it takes a lot to keep the water quality top notch. We studied the quarantine area and then got to feed the fish in the main tank. Because they knew we were fish enthusiasts, our tour was twice as long as

standard and our guide went into more depth with his technical explanations.

From here we had free time to wander where we liked and admire all the exhibits. It wasn't as crowded as it has been on previous visits so it was easy to wander about, see everything we wanted, and take lots of photos.

Surfacing back at street level again it had warmed up even further and while some chose to drive to Mission Bay for lunch, others of us decided to walk. There were plenty of people out and about driving, walking, jogging or biking and we soon arrived at Mission Bay with a large selection of eateries from which to choose. We all decided fish and chips on the beach would be good so ended up sitting on a low wall protecting our food from the seagulls. The weather, food, and company, could not have been better!

After lunch we headed to Hollywood Fish Farm (Mt Roskill branch) and had a wander around and admired the new signage. I was impressed with the cleanliness and tidiness of the shop. Divided into two sections, one part had all the equipment and other fishy requirements like food, meds etc while the second part had the fish for sale.

While here, Sophia said she lived just around the corner and, although her place is only small, she would like to show us her tanks.

In Sophia's lounge were two small aquariums. A 54L Juwel Rekord was set up as a riverbed tank with 6 peppered cories *Corydoras paleatus*, 4 dwarf chain loaches *Ambastaia sidthimunki*, 3 Corydoras loxonus and 2 Otocinclus sp. The other tank was around 40L and had Celestial Pearl danio *Celestichthys margaritatus* fry Sophia had raised, 5 Ember tetras *Hyphessobrycon amandae*, 1 Mosquito rasbora *Boraras brigittae*, and a dwarf Honey gourami *Trichogaster chuna*. There were also 40L tanks in the garage being used as a breeding project for celestial pearl danios.

Outside there was a small 80L pond but it was only housing snails at the time. It usually has aquatic bugs to feed the fish though.

Once back at Adrienne's we relaxed while waiting for the evening event – a BBQ. We all managed to squeeze into her dining room and had a lovely meal, all cooked to perfection and just as good as any restaurant. There was a lot of attention given to her rainbow tank and many photos taken. Rainbows are very hard to photograph as they don't stay still!

Caryl Simpson

Parkinson's Rainbowfish in Adrienne's tank - *Melanotaenia parkinsoni*
Photo: Liam Winterton

What food should I feed my fish?

"In terms of fish food, variety truly is the spice of life. Just keep it fresh and feed it lightly"

Ted Dengler Coletti

This is a question that commonly pops up on the FNZAS Fishroom forum. What you feed your fish is as important as the aquarium conditions you provide for them.

The type of food you should feed your fish depends largely on the following:

- The size of your fish and the size of its mouth
- Whether your fish is a herbivore (eats plants), a carnivore (eats animals), or an omnivore (eats both)
- Whether your fish is a surface feeder or a bottom feeder
- Whether your fish feeds during the day or at night
- Whether your fish is a grazer (eating only small amounts at a time)
- Whether your fish is an ambush hunter (eats mostly just live foods)

It is important to do your research and find out what foods the species prefers so that you can provide it with suitable nutrition to enable it to thrive in your care.

Types of Commercially Available Foods

There are a huge number of commercially prepared fish foods available in your local fish shop (LFS) so that you can choose the ideal food for your type of fish and your personal feeding routine. Most of the commercially available foods are dry formulations that include a complex recipe of ingredients designed to meet the fish's nutritional needs. Dry foods come as pellets, flakes, wafers, sticks, crisps, crumbles, tabs, and wafers and there are formulations developed especially for herbivores, omnivores and carnivores. There are even species specific foods for fishes like Betta, African cichlids, goldfish and Arowana which have more specific nutritional needs.

Each dry food type has its pros and cons – sinking wafers are great for catfish but not good for surface feeders like Hatchet fish or Pantadon butterfly fish. Flakes can be crushed or crumbled

for smaller fish like Guppies and Neon Tetras but may not sustain large bodied fish as they do not contain enough bulk. Large pellets are great for big chiclids, but too large for small fish with tiny mouths such as Mosquito Rasbora, or rocket pencilfish. Some pellets will float and others will sink very slowly making these the preferred food for a community tank.

For vegetarian fishes, sinking vegetable wafers and tablets are an important addition to the tank. Vegetable wafers are commonly, and inaccurately, called algae wafers and they usually contain high quality vegetable matter which has a small amount of protein and fats. Algae wafers, like spirulina tablets, should only be fed once in a while as they are not a complete diet. Just assuming that your Siamese algae eater will be able to thrive on the algae in your tank is not good care for these fish who need a high-fibre diet to maintain optimal health. Many omnivorous fishes like loaches and bristlenose catsfish require a large volume of vegetable matter to maintain healthy digestion and prevent problems like bloat so feeding a good quantity of vegetable wafers is advised.

Golden black eyed ancistrus eating a vegetable wafer
Photo: Jennifer Hamlin

The brand of food can also be important. Paying a little bit more for a good brand can promote healthy fish with vibrant colours and will also help to keep the tank water clear. Ask around from some experienced fishkeepers or your LFS for advice on the best brands and always try to ensure that the food is as fresh as possible – a jar that has been in your cupboard for 3 years is not ideal as the essential nutrients will have degraded over time.

Frozen and Freeze-dried Foods

It is important to remember that regardless of the type of food you feed your fish, varying the diet to ensure balanced nutrition can be beneficial. Many people feed a combination of both frozen and dried foods. The majority of frozen or freeze-dried foods are harvested organisms like brine shrimp or bloodworms. Some people believe that freeze-drying these organisms retains more vitamins than freezing but both freezing and freeze-drying results in

Frozen Bloodworm, brine shrimp and Cichlid mix
Photo: Diane Wilkie

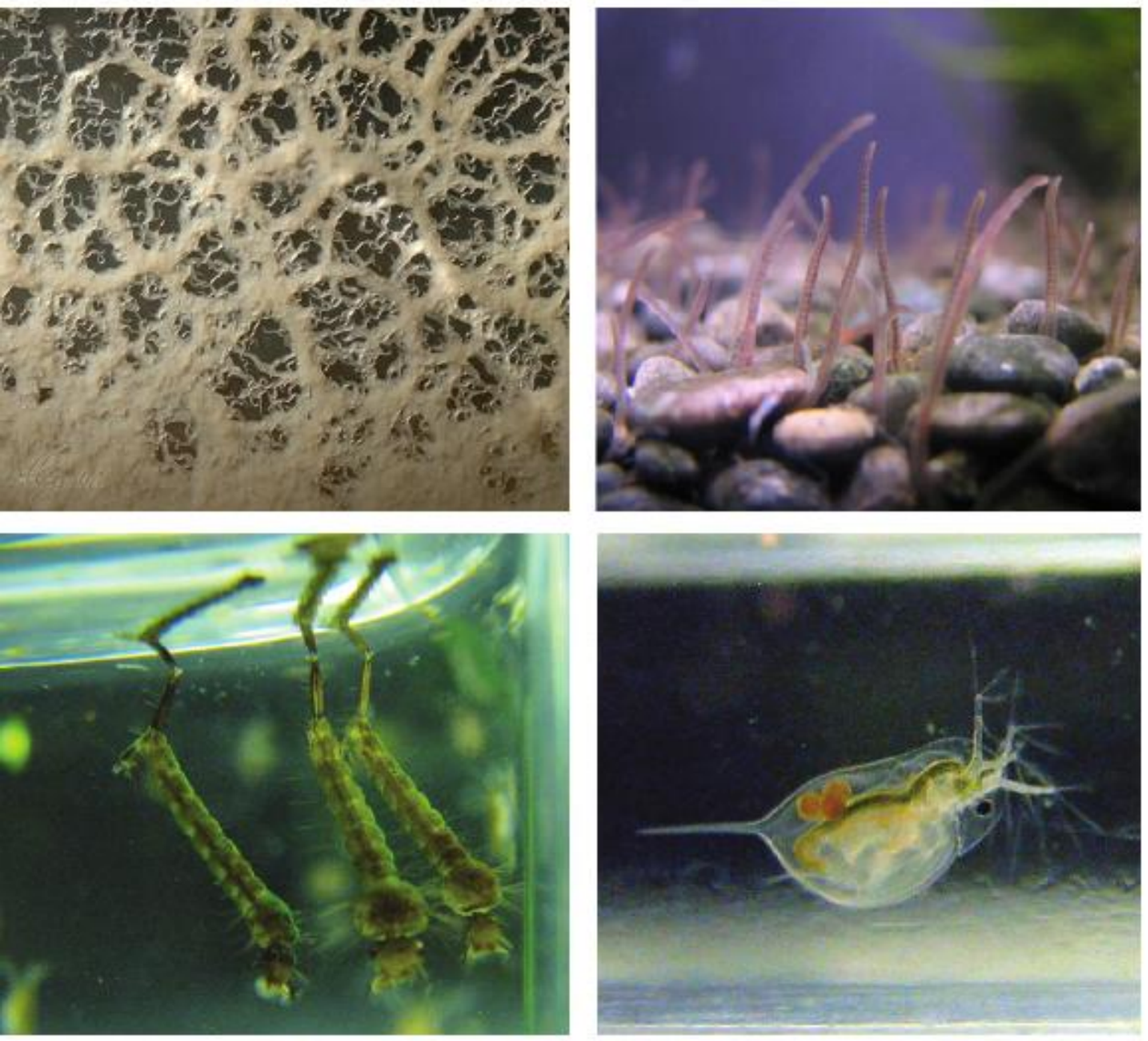
some loss of nutrition compared to feeding the organism live. Most fish prefer frozen foods over freeze-dried but freeze-dried are more easily crumbled for smaller fish. Commonly available freeze-dried foods found in NZ are Tubifex, bloodworms, daphnia, Cyclops, and de-capsulated brine shrimp. Brine shrimp, bloodworms, daphnia and mysis shrimp are some of the frozen foods available from your LFS.

Live Foods

Most fish enjoy live foods. Foods like microworms, whiteworms, and blackworms are easily cultured at home. Daphnia can be found in water troughs and ponds exposed to the sun while mosquito larvae can easily be cultured by leaving a bucket of water with a handful of grass added for the mosquitoes to lay their eggs in. Larger predatory fish will also enjoy earthworms, mealworms and crickets. More experienced fish keepers and breeders also hatch brine shrimp to feeding to their newly hatched fry or to fish with small mouths. Decapsulated brine shrimp can also be fed – these are brine shrimp eggs that have not hatched but the tough outer shell has been removed so that fish can easily digest them.

Fresh Vegetables

For vegetarian fishes like some African cichlids, and even most omnivorous fishes, fresh vegetables are a welcome addition to the diet. Even fishes like neon tetras can be seen to nibble a piece of cucumber if added to the tank at a suitable level. Some vegetables need to be blanched in hot water to soften them enough that the fish can eat them. Weighing down the fresh vegetable with a metal skewer or fork will help to keep it on the bottom for bottom feeding fish. For fish that feed higher in the water column, a vege-clips can be purchased from your LFS, for around $11 and these are easily secured to the side of the tank to hold leaves and prevent them from floating around the tank. Some vegies are better than others, usually the dark green leafy vegetables and soft squash and cucumber are preferred. Take care though as these can decompose rapidly in the tank and cause a bacterial bloom so should be removed after about 12-24 hours.



Top - Microworms ***Panagrellus redivivus*** and Blackworms ***Lumbriculus variegatus***
Bottom - Mosquito larva and ***Daphnia***
Photos: Diane Wilkie

Calico longfin bristlenose ***Ancistrus cf. cirrhosus*** eating zuchinni
Photo: Jennifer Hamlin

Feeding Guide for Beginners

The majority of new fish keepers tend to start off by purchasing fish such as guppies, neons, and the danio species (all small tropical fish), or mountain minnows (coldwater fish). Bristlenose catfish dwarf gourami and corydora (cory) are also fish commonly purchased by new fishkeepers.

Young Oranda and Blackmoor goldfish
Photos: Diane Wilkie

Goldfish are a cold/temperate water fish which new fish keepers often purchase. The type of goldfish you buy largely determines what sort of food you should feed, as does whether or not it is to be kept in a pond or a tank. If you have a goldfish like a Comet or a Shubunkin, which are the original shaped goldfish, then a high quality flake or sinking pellet food will be good for them. However if you purchase a fish like a Blackmoor, Oranda, or any fancy goldfish for that matter, you are better to feed them a sinking pellet food. The reason for this is that the swim bladder in fancy goldfish is packed in tightly and when they come up to eat flake foods it is common for them to suck in air while eating and this can pose serious problems since the location of the swim bladder makes it very difficult for this air to be released.

Adrienne Dodge

TYPE OF FISH	TYPE OF FOOD
Guppies	Flake food (crushed finely), micro granules, decapsulated brine shrimp, finely chopped frozen bloodworms, mosquito larvae
Neon Tetra/Cardinal Tetra	Flake food (crushed finely), micro granules, decapsulated brine shrimp, finely chopped frozen bloodworms
Zebra Danio/Leopard Danio	Flake food (crushed), decapsulated brine shrimp, finely chopped frozen bloodworms, micro granules, daphnia, blanched spinach, zucchini (courgette)
Harlequin Rasbora	Flake food (crushed), micro granules, daphnia, finely chopped frozen bloodworms, blanched spinach, zucchini (courgette), skinned peas
Dwarf Gourami	Flake food (crushed), micro granules, frozen bloodworms, mosquito larvae and daphnia.
Bristlenose Catfish	Blanched zucchini (courgette), carrot or broccoli, vege wafers, pellet or flake food high in vegetable content
Corydoras	Shrimp pellets, algae/vege pellets, frozen blood worms
Mountain Minnows	Flake food (crushed finely), micro granules, daphnia, mosquito larvae, decapsulated brine shrimp

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5 cold freshwater
13 tropical marine

Organism is arguably one of the smallest dedicated fish shops in New Zealand but what it lacks in size, it makes up for in substance. The shop itself is owned and run by John Ottley and his friendly and knowledgeable attitude is enjoyed by regulars and newbies alike. On display in the shop are dozens of species of fish, plants and corals and while the tanks are small, they are spotlessly clean and enjoy daily water changes and knowledgeable care. The betta barracks and

coldwater sections are well stocked with quality specimens and the two very nice marine display tanks offer a welcome addition especially the pico marine which provides a temptation to anyone considering a mini reef for their desktop. Catfish and cichlid lovers will really enjoy the species on offer here. On the day we visited, there were stunning Blue Panaque (Baryancistrus beggini), Sunshine Pleco (Scobinancistrus aureatus) and medium-spot Gold nugget Pleco (Baryancistrus xanthellus) as well as an impressive selection of uncommonly seen corydoras, synodontis and whiptails.

A highlight of this shop is the well-organised displays and professional labelling making it easy for the shopper to find what they are looking for. There is a surprising array of dry goods packed into the small space with an excellent selection of heaters, filters, accessories and reputable brands of both dry and frozen foods. While pond supplies are limited, aquascapers are especially catered for with a broad selection of hardscape, lights and fertilisers. A dedicated marine area is stocked with quality supplies and there are a number of Jewel and Fluval tank kits on the premises for those wanting to try something new.

Overall, this is a quality shop that provides just about everything that a fishkeeper would need and it is a good example of a shop that I'd be happy to call my local. - **Jennifer Hamlin**

Interesting species

Vermiculated synodontis $34.90
Super red cockatoo $44.90
Golden rams $34.90
Fire eels $39.90
Six bar distochodus $49.90
Red spot severum $49.90
Eight banded glass barb $12.90
Rio Salinos Cory $15.90
Green neon tetra $8.90
Borneo Tiger $99.90

Rank	
Tropical fish	★ ★ ★ ★ ★
Catfish	★ ★ ★ ★ ★
Cichlids	★ ★ ★ ★ ★
Oddballs	★ ★ ★ ★ ★
Coldwater fish	★ ★ ★
Marine fish	★ ★ ★
Marine inverts	None seen
Marine corals	★ ★
Display tanks	★ ★ ★
Pond plants	★
Tropical plants	★ ★ ★
Dry goods	★ ★ ★
Pond supplies	★

SHOP TOUR

New Pupuke Aquarium Centre

1 Lydia Avenue
Northcote
Auckland 1627
09 480 6846

Hours: 10am – 5pm daily

The New Pupuke Aquarium Centre in Northcote is a fairly small dedicated fish shop. The current owner Ronnie Ng took over the shop around 14 months ago. Ronnie is a long time Discus, Betta splenden and Gold fish specialist with a reputation for breeding quality fish and being willing to share his knowledge and experience with everyone he talks to.

There are 46 tanks in the shop with a variety of tropical freshwater fish, Goldfish, and small coldwater fish. A beautiful display tank sits near the counter of the shop and at the time of my visit there was a group of stunning Coari Green

Wild Discus swimming in it. Also of note were the Betta splenden in the shop, some of them 2nd generation Dumbo or Elephant Ear fighters that have been bred by Ronnie himself. There was also a good selection of betta of other tail types as well.

To the left of the entrance are the goldfish tanks housing Oranda, Blackmoor and Shubunkin to name a few. Several tanks are dedicated discus tanks, home to a selection of lovely discus. The majority of the remainder of the shop tanks house selections of tropical freshwater fish; Guppies, Bristlenose catfish and Neon tetra are among these.

The centre isle of the shop is home to dry stock – fish foods, filters, heaters and accessories plus more. Also in the shop were several pieces of lovely looking, twisted driftwood – ideal for larger tank layouts and the type not often seen for sale. There is a fair selection of plants for sale.

The displays in this shop are well organised and clearly labeled making it easy to find what you are looking for.

This is a shop that I always enjoy visiting, reasons being the personable nature of the owner and to look at the beautiful discus, fighters and other fish on display. - **Adrienne Dodge**

Interesting species

Discus pure strain, not cross bred - from $40 for small upwards
Discus Wild Caught $500 each
Discus Imported $160 - $280 each
Fighters – CT, HMPK, EE, PK - from $20 each
African Cichlids – Lwanda, Pink Dragonblood, Orange Dragonblood, Lemon Jack, Aulonocara - $50 - $60 each
Oranda Goldfish - from $9 - $60

Rank	
Tropical fish	★ ★ ★ ★
Catfish	★ ★ ★ ★
Cichlids	★ ★ ★ ★ ★
Oddballs	None seen
Coldwater fish	★ ★ ★ ★ ★
Marine fish	None seen
Marine inverts	None seen
Marine corals	None seen
Display tanks	★ ★ ★
Pond plants	None seen
Tropical plants	★ ★ ★
Dry goods	★ ★ ★
Pond supplies	None seen

FNZAS

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 14 affiliated aquarium clubs around New Zealand:

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

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

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

DUNEDIN AQUARIUM AND POND SOCIETY
CONTACT: dapsdunedin@gmail.com

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

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

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

NZ KILLIFISH ASSOCIATION
Contact: secretary@fnzas.org.nz

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

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

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

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

WAIKATO AQUARIUM SOCIETY
Contact: Zara Titko zarast@windowslive.com

WELLINGTON AQUARIUM & WATERGARDEN SOCIETY
Contact: Sandy Nolden sbn@xtra.co.nz

FNZAS DISCOUNT

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

AUCKLAND

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

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

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

158 Lincoln Rd. Henderson. Ph 09 838 8748.

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

1 Lydia Ave, Birkenhead Ph 09 480 6846

CHRISTCHURCH

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

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

GISBOURNE

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

Grey St, Gisborne Ph/Fax 06 868 6760

HAMILTON

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

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

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

966 Heaphy Tce. Hamilton. Ph: 07 855 2176

World of Water

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

HASTINGS

Aqua Fever Aquatic Shop - **10% discount on fish and fish related products.**

Shop 3 Pacific Boulevard, 103 Market St South, Hastings. Ph. 06 8782 271

HAWERA

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

49 Glover Rd, Hawera Ph 06 278 7525

MT MAUNGANUI

Animal Antics - **10% discount**

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

NAPIER

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

120 Taradale Rd, Onekawa, Napier Phone 06 842 2033

NELSON

Pet Essentials - **5% Discount**

11 Croucher St. Richmond, Nelson Ph 03 544 4379

TAURANGA

KiwiPetz - **10% discount**

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

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

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

WELLINGTON (and Greater Wellington area):

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

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

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

31 Johnsonville Rd. Johnsonville Ph 04 478 3709

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

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

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

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

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

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

The Pet House - **10% discount**

Coastlands Mall, Paraparaumu Ph 04 296 1131

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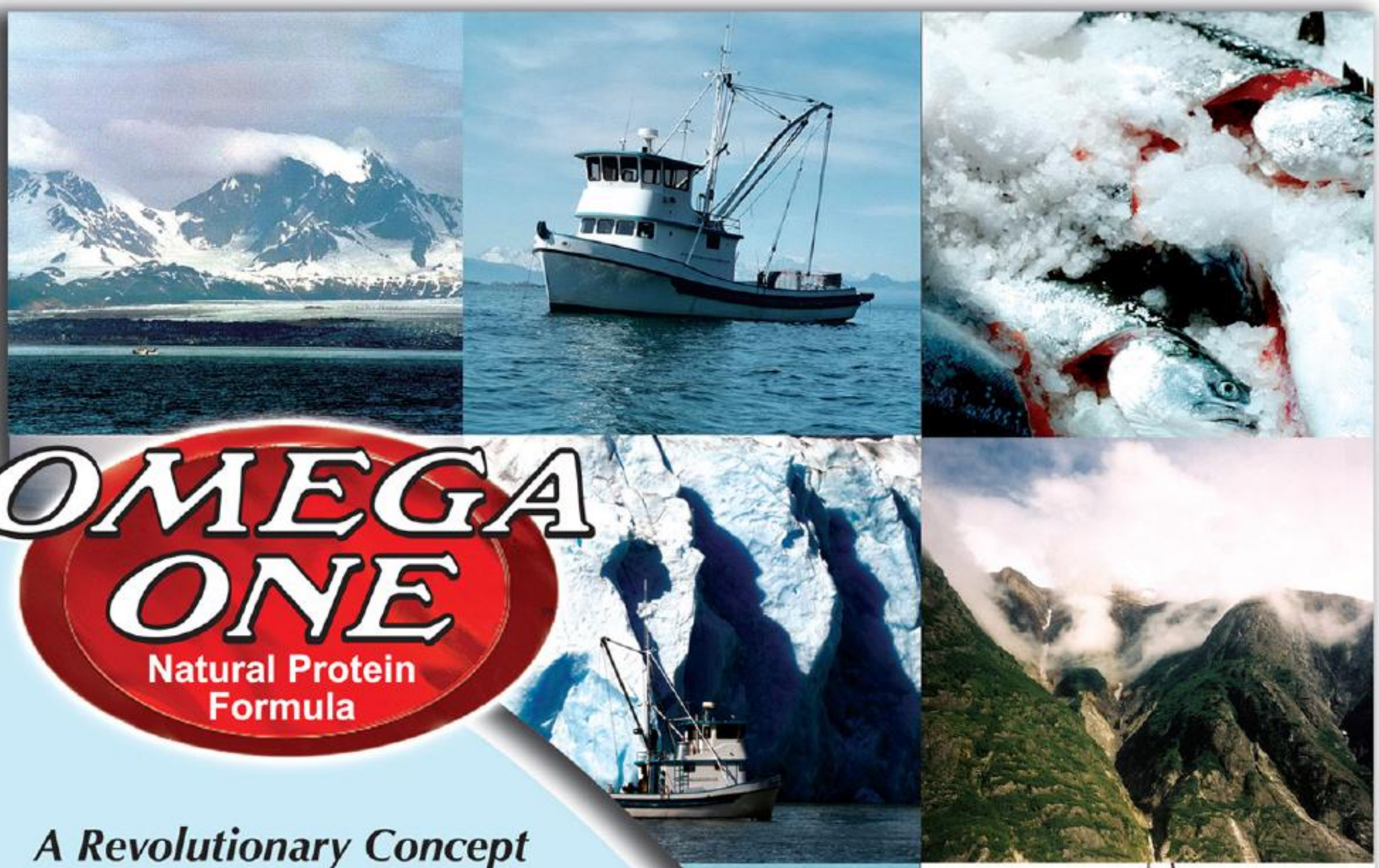
Available from your Aquatic specialist store

NZ distributors : Brooklands Aquarium NP



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