Today's Fishkeeper

JUNE 2004 £3.2

PASSIONATE ABOUT FISH

WIN A COMPLETE POND SET-UP FROM LAGUNA

BEGINNERS' GUIDE TO TANKS AND EQUIPMENT

FISH COLLECTING IN BELIZE

THE BLUE GOURAMI
An old favourite

DON'T BE SCARED...
African cichlids

POND FILTERS
Your questions answered

LAKE TANGANYIKA SHELL-DWELLERS

BUILD YOUR OWN INDOOR TROPICAL POND
Step-by-step guide

INCORPORATING
AQUARIST AND POND KEEPER
The magazine for aware fishkeeper - since 1904

Designed & Published by

PS Magazines Ltd
7 The Rickyard
Clifton Reynes
Olney, Bucks
MK46 5LG
Tel: 01234 714644
Fax: 01234 714633

Editor
CHRISTINA GUTHRIE
(01234 714784)

Advertisement manager
ALEX MACLEOD
(01234 714637)

Production director
MICHELE EMMLES
(01234 714644)

Designer
RACHEL WOOD
(01234 714644)

Publisher
KAREN PICKWICK
(01234 714644)

Group sales manager
MARK LIGHTFOOT
(01234 714604)

SUBSCRIPTIONS
01234 714644

Printed by
NEWMAN THOMSON

Distribution to the news trade
COMAG SPECIALIST
01895 433800

 ISSN 1475-8709

Cover picture:
www.photomax.org.uk
Butterfly cichlid

EDITORIAL CONTACT INFORMATION
Tel: 01234 714784
e-mail: editor@todays-fishkeeper.com
Fishkeeping answers:
questions@todays-fishkeeper.com

Welcome!

Is it me, or do most British people moan about the weather? I for one wish for sunny days only to find myself complaining about the heat and having to water the garden plants every day. There's no pleasing some people! However, what about when we're trying to please our fish?

Unless you have an air conditioning unit hot weather raises the temperature in tanks. This isn't a problem for most tropical fish but some, such as White cloud minnows, are from cool mountain streams, so they don't appreciate the warmer temperatures. Also, because temperature has a direct effect on immunity, any raising or lowering outside the preferred range can depress the immune system and cause health problems. Marine fish are even more susceptible to fluctuations, so next time you're hot and bothered think about your fish....maybe it's time to invest in a chiller.

If you've always wanted to keep African cichlids but you've been put off by their bully boy reputation, Mary Sweeney's feature on page 14 is a must. Of course, there are always going to be a few hardcore rogues but you'd be amazed how, with a bit of expert knowledge, you can be successful in keeping a wide range of these colourful cichlids. We're always told that you shouldn't attribute human characteristics to pets, but when it comes to territorial cichlids needing their own space, it may not be a bad thing!

You aquarists are a passionate lot! On page 66 Anthony Calfo creates an indoor tropical pond which, if you're anything like me, is my ultimate goal in terms of fishkeeping. I envisage a light room with a natural-looking, lushly planted pond. See-through acrylic sides showing a plethora of large happy fish. A large comfy chair. OK, I'm dreaming, but maybe one day...

See you next month

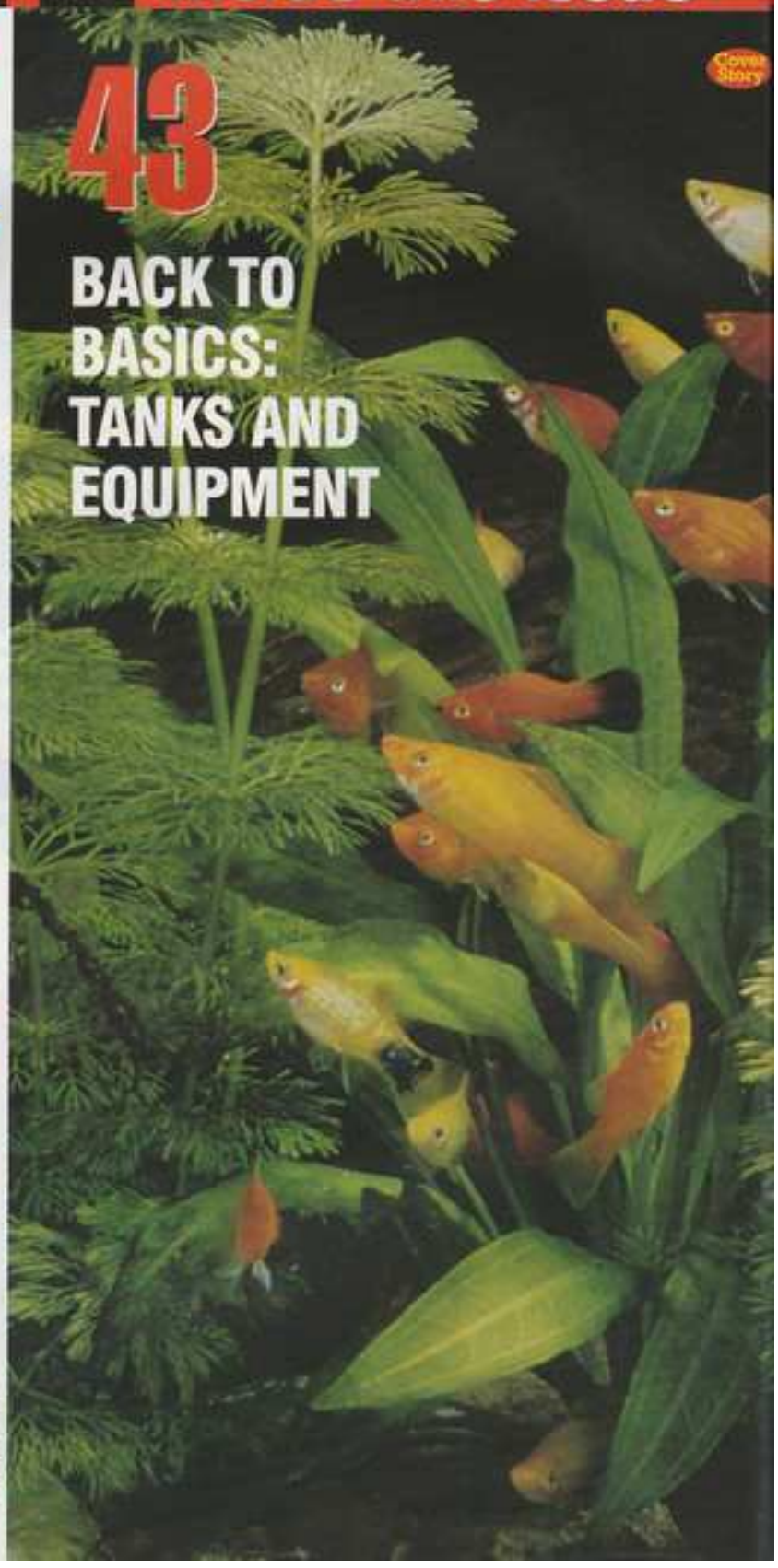
Christina

JUNE inside this issue

TROPICAL/MARINE/COLDWATER

MARINE

PONDS & COLDWATER



Today's Fishkeeper

TROPICAL

TODAY'S FISHWORLD

PLANTS

REPTILES & AMPHIBIANS

REGULARS

CUT OUT AND KEEP

BEGINNERS

NEWS

KEY TO SYMBOLS:
Keep an eye out for these handy symbols to help you with your fishkeeping.

Starting Point...

Just beginning in the hobby? **Pat Lambert** writes especially for you

One for the community, the Red-finned shark

Have you noticed that fish tanks are like cupboards? There's never enough space for all the fish you want to keep. There are many interesting fish out there and many need different types of set-up so it's inevitable when you're hooked on fishkeeping that expansion is quite rapid – often happening faster than you think it will.

Daily observation is essential to successful fishkeeping

Too many tanks in the house can lead to protests from the non-fishkeeping members of the family and unless the tanks are placed in a designated area there can be problems with maintenance. Is this the time to move out? No! Not you – the fish.

A spare bedroom might seem the solution but several tanks full of water are heavy and a friend who did this found the tanks had migrated through the floor to his entrance hall. It gave him quite a shock when he came home from work.

It's quite surprising the spaces that some fishkeepers utilise. One had his tanks in a large space under the stairs. Another who

The black shark, *Labeo chrysophekadion*, is definitely one for a large tank

Think carefully before purchasing a Black shark

lived in a large block of flats in central London kept his fish on a balcony in a greenhouse. Most use garages or garden sheds as fishrooms, these are well insulated and have electricity with nearby water supply. Our first fishroom was at the end of a long garden and we had to use hoses to take the water there. It's surprising the lengths you go to when you're keen.

When I visit anyone's fish room, however small, I always look to see if there is a stool, chair or large box for the fishkeeper to sit on. This is not for a lazy fishkeeper but the observant one who not only maintains his fish well but sits in there and does a spot of fish watching.

A couple of sharks

Many a tank has the Red-tailed black shark in it. What beautiful fish they are in the right conditions but what a menace they can be in the wrong tank as many of you will have found out.

The following two sharks also make stunning occupants for the right tanks. It is best to only keep one of these sharks in a roomy tank as they are very territorial and aggressive towards their own kind although with the right companion fish of comparable size the Red-finned shark enhances the community aquarium.

The Red-finned or Rainbow shark has a more streamlined body than the other sharks being more cylindrical and it is a swift mover through the water. It's a frequent swimmer in the mid-water regions browsing on the algae on plant leaves. Its large, beautiful fins are bright red and the body greyish-blue. The Red-finned's mouth is not quite so underslung as its cousins. Likes live and frozen foods and some vegetable matter which it picks at. Needs rocks and plants in which to hide although this is not a shy fish. This is the smaller of the two only growing to 12cm.

An essential piece of kit

OK here I go again, talking about quarantine but this is one subject that bears repetition.

When you start out in fish keeping and you've bought your first tank with all its trappings the last thing you think of is another tank – but by heck you need it. A quarantine tank is a truly essential piece of kit. If you don't have one you may live to regret it as your beautiful community, so carefully nurtured, is decimated. It may not happen if you're lucky, but it can.

So why do you need this tank? It is very important when purchasing new fish that are going to be placed in an established tank that quarantine conditions should be carefully maintained in a tank kept specially for isolating new purchases, this tank will also be useful for isolating sick fish.

The fish may look perfectly healthy when purchased but stress related problems may arise and a hidden disease may be slow to manifest itself.

The quarantine tank should be bare bottomed and contain water maintained at the correct temperature for the species. Many people use a sponge filter and I also include a bunch of plastic plants. If treatment is necessary it is much easier to treat a bare tank.

The fish should be closely observed for a period of two weeks to see that all is well. Signs to look for are rubbing or flicking against the tank or other surfaces, failure to eat, cloudy eyes, increased respiration and abnormal movements through the water for that particular species.

All equipment such as nets and syphon tubes should be used only in this tank.

After the quarantine period is completed and the fish are safely in their new permanent home, the quarantine tank and all its equipment should be carefully cleaned ready for the next inmates.

Remember always that it's better to be safe than sorry!

The quarantine tank also makes a good isolation tank for sick fish

The Longnose elephant fish, *Gnathonemus petersi*, uses electrical impulses to find food and communicate

LOST FOR WORDS

Binocular vision: The eyes of predatory fish are located side by side for ease of focusing on their prey. Non-predators usually have eyes on the sides of the head, this is known as monocular vision which enables the fish to see all round to see approaching danger.

Electric organs: Some fish can generate their own electricity and fish such as the Elephant nose which lives in murky waters uses electrical impulses to locate food and to communicate as sight is of little use in its natural environment. Some, such as the electric eel, give off much more powerful high voltage electricity which is used for defence and for stunning its prey.

Filter media: These are all the materials that are used in a filtration system to perform mechanical, biological and chemical filtration. The most widely used for general purposes are filter floss,activated carbon,ceramic pieces and sponges. Other filter media are used to perform specific jobs.

Heating mats: These are mats placed underneath the aquarium from which the heat rises through the substrate. They are useful for small tanks or very shallow tanks where bulky heater-stats just don't fit. They work well in temporary homes like quarantine or hospital tanks. An external thermometer can be used to monitor temperature.

Ichthyophthirius: This is quite a mouthful for one of the most common diseases to attack aquarium fish. You'll more often see it mentioned as 'ich', but it is most widely known as whitespot. This is a very good name as it describes the small white spots that cover the fish in a bad case. Signs to look for are flicking against aquarium object in order to rid itself of the irritation. This disease is likely to occur when the fish is stressed after moving. Easy to cure, easy to spot but can sweep through a tank like a flu epidemic if ignored.

Mercury vapour lights: These lights have very high light intensity and need to be suspended above the tank. Their light is cast as a spotlight. Very useful in deep open-topped planted aquaria.

Pancaking: This is an action most usually found in flat-sided fish like Silver dollars. It's a sign of stress or panic when the fish lies on its side and skims across the surface

River sand: This round grained sand does not compact and is a good substrate for fish that like to sift and burrow.

THE LAKE KUTUBU RAINBOWFISH

This beautiful fish will only display its glorious colour as it matures. With the top half of its body glowing an intense turquoise blue and white underside it truly is a real beauty. At 12cm long and displaying an active swimming action this fish is a perfect beginners fish for the larger community. These large rainbows co-habit well and are not fussy eaters. A tank 120cm long will be great for these fish. These are shoaling fish and look good with a small group of the same species. They make a magnificent display when combined with a group of other rainbows of similar size. Don't be put off by the lacklustre colour of young specimens in the shops, you need patience as you wait for them to mature and show their true glory.

The stunning *Melanotaenia lacustris* showing off its colours

The 10 golden rules of fishkeeping

Read all about it

Take the first steps in fish keeping by finding out all you can about caring for your fish.

a) Manufacturers often provide free booklets about fish care.

b) Inexpensive books provide information on setting up.

c) *Today's Fishkeeper* experts are on hand with help and advice and sections of the magazine are devoted to beginners.

THE WATER

Testing: Before introducing any fish to your new tank test the water for ammonia, nitrite and nitrate. Safe water ready to receive fish should have zero readings of ammonia and nitrite and almost zero nitrate. Test the pH, pH7 is neutral, above this is more alkaline and below 7 is more acidic. Read up on pH requirements for any fish you intend to purchase.

Temperature norms:
Freshwater tropicals 21-27°C
Marines 26°C
Coldwater 13.5-21°C
Some delicate species have very specific requirements, read up on them before you purchase.

Filtration cleans the water in your tank. Choose the filtration most suitable for the fish you intend to keep. Some species do not appreciate being blown around the tank, others that come from fast flowing waters like more turbulence. Large tropicals, coldwater and marines require larger filtration systems.

THE FISH

Stocking levels: For freshwater tropical we recommend 12cm² of surface area per 1cm of fish.
Marines: For a fish only setup we recommend 2.5cm of fish for 9l of water and for Reef only setups we recommend 2.5cm of fish per 27l of water.
Ponds to a maximum of 250cm of fish per 4500l of water.
Measurements should be based on the optimum adult size of the species not the size at the time of purchase. **NEVER OVERSTOCK**

Knowledge: Find out as much as you can about any fish you hope to buy before purchase.

Introducing fish: Fish should be added a few at a time over a period of several weeks to new setups. This allows the filter system to mature.

Quarantine: All new purchases should be quarantined for established tanks for at least two weeks.

THE ROUTINES

Feeding: Twice daily feeds are the norm for most adult fish. Try to feed at the same time each day as this establishes a routine. Only offer as much as the fish can eat in a few minutes.

Water changes: Freshwater tropicals 10-20% weekly
Marines no more than 20% every two weeks.
Pond fish also appreciate an occasional water change. Keep an eye on ammonia, nitrite and nitrate levels. They should be zero in a mature pond.

Cleaning filters: These should be cleaned once a week. If they work by biological filtration (bacteria break down the waste) and have a sponge in them, this must be cleaned in old aquarium water that is then discarded. Never use any household detergent or soap on aquarium equipment or tanks.

OBSERVATION: Daily observation is the key to successful fishkeeping. Look for any abnormal swimming patterns, bullying or listlessness. See that the fish are eating well and that all are getting their share. If fish are in difficulties test the water.

Today's news

All the latest news and products from the world of aquatics

Fish Atlas at your fingertips

By the time this issue of TFK is on the shelves the 'Atlas of Species' on The Goldfish Bowl's website should be up and running. It's an ambitious project but well worth it as it will provide visitors with an invaluable reference point for thousands of fish.

It's a hands-on website which is dedicated to providing people with all the information they need to start out in the fish hobby. You'll find articles on a wide range of topics covering marines, tropicals, coldwater and invertebrates.

There's also a virtual tour of the 3,000 sq. ft shop which contains exotic fish from all over the world and a huge selection of equipment. One word of warning, if you visit the website you'll want to visit the shop, so be prepared for a trip to Oxford! Visit www.thegoldfishbowl.co.uk and see for yourself.

Making waves

Tsunami Aquatics is proud to announce it has just opened its new premises next to Chepstow Garden Centre. Sited in a 250 sq m building with a high vaulted roof, the light, open premises have been given a modern feel. The three-tier systems display the tropical freshwater fish off to their best and this together with the coldwater section and wide variety of aquarium plants means there's something for every freshwater hobbyist.

Proprietors Chris Lewis and Lee Hulford have many years of experience and will be on hand to give you expert advice. The business is going so well they are already planning phase two next year which will include tropical marines and high grade koi. For directions and opening times call 01291 620720.

A newly imported Tophesus kalombo

EVERYTHING AFRICAN

If you've got a passion for African fish then African Aquatic could be just the place you're looking for. They are one of the very few, or indeed the only, company to import fish directly from Lakes Malawi and Tanganyika.

African Aquatic offer a number of rare species, most of which can be viewed on their revamped website at www.africanaquatic.com Newly completed, expect to see some stunning graphics. The web designer also does graphics for Walt Disney Corp!

Eel wins advertising contract

A German eel that has lived in the Richter family's bath for 34 years has won an advertising contract. In exchange for appearing in the adverts for a German pet food store, 'Eelfie' the eel has been promised a life-long supply of mosquito larvae.

Eelfie was caught 33 years ago by Paul Richter and has been in the bath ever since as his children refused to let him cook it. He has now become like one of the family.

Marine-life expert Dr Wolfgang Gettmann said eels were not normally suited to life in a confined space but added that the Richter's pet eel seemed healthy and well fed on a diet of red gnat larvae.

CONTROLLING PHOSPHATE

Aqua Medic has just brought out a new ferric hydroxide based phosphate remover. Ferric hydroxide is very useful for controlling levels of phosphate in reef aquaria, helping to limit unwanted algal growth.

Antiphos Fe permanently removes phosphate from aquarium water, 'locking' it up so it can't leach back. Due to the coarse particle size of Antiphos Fe there is no need to fluidise this media and there's little chance of it compacting. Antiphos Fe is completely non-toxic to the plants and animals we keep in the hobby.

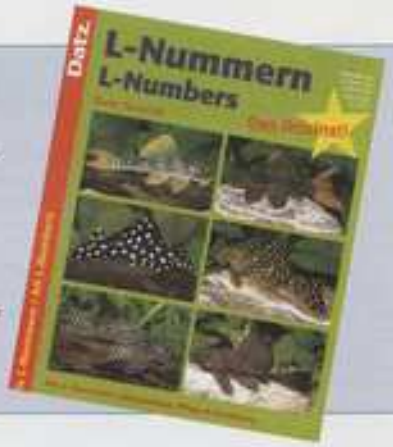
The binding capacity is approximately 10g phosphate per kg. 1000ml of Antiphos Fe will treat a 600l aquarium for three to six months. It is currently available in two sizes – 500ml RRP £20 and 1000ml RRP £32.

HOOKED ON L NUMBERS?

Tropical Fish Finder is pleased to announce that the German company, DATZ, has granted its the right to sell the its *L Numbers* book. This is the most up-to-date reference guide to Loricariidae with listings of all the L Numbers up to the very latest L387.

Every entry is accompanied by a photograph which makes this a must have guide for L Number enthusiasts. The book is in soft back form only and is available for £17.50 plus £2 postage and packing. However, *TFK* readers can buy the book at a discounted rate of £17.50 including postage and packing.

Please quote the reference number 1921 when applying for the DATZ *L Numbers* book. To buy your copy visit www.tropicalfishfinder.co.uk and click on the link or send a cheque for £17.50 payable to TFF Ltd and to: TFF Limited, PO Box 39244, Blackheath SE3 9WE.



Sterilise water safely

If you want to sterilise your tank water, the use of type C ultraviolet radiation (UV-C) is one of the most effective ways. No chemicals are involved and there is no risk of dangerous overdosing. Another benefit is that long process times are not required as sterilisation is instantaneous.

The highly concentrated UV-C energy exerts a lethal effect on living organisms. The germicidal properties of UV-C radiation are therefore extremely beneficial in destroying bacteria, viruses, protozoa, algae, yeasts and mould spores.

Many people are aware that quartz is 96-98% transparent to UV-C and that normal glass reduces its transmission by approximately 50%. This is why UV sterilisers have a quartz sleeve between the water and the bulb.

What many people are not aware of is that conventional sterilisers produce the UV radiation from a conventional glass tube, therefore half of the intensity is lost before it even leaves the tube.

The D-Deltec Professional UV Sterilisers feature a pure quartz bulb as well as a quartz sleeve so 98% of the UV-C produced can be utilised. In effect the D-Deltec Professional models produce approximately twice as much UV-C per watt than a conventional unit with a glass bulb.

With the remote electronic ballast for flicker-free operation, extending the bulb life to 9,000 hours and the UV resistant plastic body, preventing degradation over time, these units are the modern way forward for UV-C sterilisation. D-Deltec have a complete range of Professional UV Sterilisers for every size of aquarium or pond.

■ For further benefits please visit the D-Deltec website at: www.d-daquariumsolutions.com

D-Deltec single tube (top)
UV-C and twin tube UV-C (bottom)

NEW MARINE FOOD FROM INTERPET

Interpet has added to its range of fish foods with a specialist granular food for marine fish. Interpet Marine Granules are available in two sizes: 55g and 130g. They have been manufactured specifically to meet the dietary requirements of even the most demanding marine fish species.

Included in the ingredients are Spirulina, an algae that is one of natures most effective colour enhancers. Also added is Beta-glucan, which is widely recognised for its effect as an immuno-stimulant. Beta-glucan aids the fishes' immune system thus reducing the risk of disease and aiding the recovery of any afflicted fish.

The granules have a high vitamin C content, and contain all the necessary proteins, fats and carbohydrates to ensure a balanced, complete diet for marine fish.

Interpet Marine Granules are slow sinking, ensuring that fish feeding at all levels in the aquarium will receive food. The food is ideal either as a complete diet or as part of a mixed feeding plan, which may include frozen or freeze dried foods. 55g Mrrp £3.99, 130g Mrrp £7.99 a high vitamin C content, and contain all the necessary proteins, fats and carbohydrates to ensure a balanced, complete diet for marine fish.

ENERGY EFFICIENT LAMPS

General Electric has launched a range of energy-efficient, long life lamps for the aquatic and reptile market. The range has been developed to stimulate, promote colour and contribute towards the health and well-being of plants, coral, fish and reptiles.

Four light spectrums provide pet owners with the right product for the right application. The Fresh Aqua spectrum, Fresh and Salt Aqua spectrum, Salt Water Blue spectrum and Reptilegrow spectrum.

"All of our products were designed with the customer's needs as our first priority," explains James Fleet, business development manager for GE Speciality Lighting. "Customer feedback has shown that the product ranges offered today are over-complicated and expensive. In response to this information GE will be launching a range of low cost, high quality T5, T8 and metal halide products."

Two specialist distributors have been appointed to service both the public and trade. For information on prices, brochures and merchandising stands please contact: Aqualight on: www.aqualight.com or The ARC on: www.thearc.co.uk

MISSING MILLIONAIRE

There are few people in the aquatics hobby as famous as American millionaire Herbert Axelrod. A federal judge issued an arrest warrant for the 76-year-old pet products tycoon when he failed to show up at court on charges that he hid income from the Internal Revenue Service. Axelrod was charged with using Swiss bank accounts to hide income from the IRS. He is now believed to be in Cuba.

A biography posted on the *New Jersey Symphony* website begins: "As an author, university professor, lecturer, publisher, editor, explorer, adventurer and scientist, Herbert R. Axelrod is the world's best-known tropical fish expert."

He began the business that eventually became TFH – publisher of the *Tropical Fish Hobbyist* magazine – in 1950, according to legal papers filed by Central Garden & Pet Co, which bought TFH in 1997. The selling price was reputedly at least $80m.

Axelrod found his niche when he got a job caring for the aquariums at the American Museum of Natural History. It was there he developed his love for fish. He wrote a training manual for the aquarium, which turned into his first book, *Tropical Fish as a Hobby*, published in 1949.

Keeping koi happy

To meet demand from koi keepers, Tetra have introduced a new range of koi foods. This includes Tetra Koi Pellets which are a larger food, specifically designed for large koi. They contain all the nutrients, colour enhancers, and immunostimulants needed to promote excellent health, condition and colour.

If you want to encourage koi to the surface to feed then Tetra Koi Floating Food Sticks could be the answer. They're made using Tetra's advanced extrusion process, meaning that not only are they highly digestible and nutritious, but they quickly soften in the water (without falling apart) making them easy for the fish to eat. They contain additional levels of natural colour enhancers to ensure optimal coloration and are correctly formulated and balanced to maximise growth and condition.

Most koi keepers strive to get the best growth in their koi throughout the summer months so Tetra have responded to this by offering Tetra Growth Sticks. This gives fish the extra protein that is needed to ensure excellent growth rates for the warmer months of the year.

Tetra has also added to its Tetra Variety Sticks range with a new 18-litre size. Currently available in 150g, 600g, 1020g, 1650g, the new 18-litre size is available with immediate effect from pet and aquatic wholesalers nationwide. This new pack size has been specifically designed by Tetra to cater for those fishkeepers with larger ponds. Variety Sticks consist of a blend of different food sticks to give pond fish a varied and nutritionally complete diet.

FISH FOOD RE-LAUNCH

Having recently acquired the Philips brand, Nishikoi has re-launched Philips Goldfish Flakes and Philips Tropical Flakes. The re-launch involved improving the packaging, updating the design and enhancing the formula, bringing one of the UK's oldest aquarium food brand into the 21st century.

The new improved formula offers both palatability and digestability to all coldwater and tropical aquarium fish, providing complete and balanced nutrition. The range is also priced competitively and Nishikoi believe this, together with the high quality, means it's great value for money.

Pond maintenance is now even simpler

PRESSURISED UV+BIO FILTERS

- Combined UV & biological filtration for crystal clear, healthy water
- Models available featuring Powerclean - automatic filter cleaning at the turn of a knob
- Slim-line lid makes unit inconspicuous when buried
- Easy installation above or below ground level
- Includes SUPRA bio media
- 3 year guarantee

Clear Water Guarantee

POND PUMPS

- Anti-clog filter design
- Pondlife friendly slots may be enlarged to handle solids
- Solids-handling turbine
- Ceramic bearings
- Low running costs
- 3 year guarantee

Products available from all good aquatic and garden centres

For further details please contact:
Pet Mate Ltd, Lyon Road
Hersham, Surrey KT12 3PU
Tel: 01932 700 001 Fax: 01932 700 002
Email: info@pet-mate.com Website: www.pet-mate.com

FISH MATE®

Keeping the peace

Julidochromis ornatus, commonly known as a Julie

All photos by www.photomax.org.uk

Mary Sweeney says that African cichlids may not be the aquarium 'bad boys' you think they are. You just have to know how to handle them...

Some of the most famous photographs in the fish world involve stand-offs between males of a little fish known as *Neolamprologus leleupi*, the Daffodil, or Lemon cichlid. The males do this glorious open-mouthed face-off, a kind of "I'll bash your head in if you take one look at my woman", mating ritual. This imagery – and a certain well-earned reputation – often leads people to believe that all African cichlids are just too horribly behaved to ever be kept together in peaceful tolerance. The problem though is that these fish are just so handsome (the males anyway – and yes, sometimes the females as well) that they are very sought after. The fish often come to a sad end when incompatible combinations prove out the bit about the aggressive behaviour. Don't give up too soon, though. The cichlids of Africa's Great Lakes, Tanganyika, Malawi, and Victoria, live with each other in realistic neighbourhoods in nature, and in many ways seem to me – all anthropomorphism aside – to possess many almost human attributes in their cohabitation.

Most of the classic Mauna, a special group of ruffians from Lake Malawi, are just plain misunderstood. When they are kept their way, they are perfect dotes. This involves one dominant male, a variable number of highly submissive females, and countless children that are generally seen but not heard. Sounds like a familiar family set-up to me... not mine, mind you, but I've seen it on TV, okay?

The African cichlids I have in mind for this set-up are found in Lake Tanganyika, and are a bit more socially acceptable than most. If they are kept with a bit of care, they should present an aquarium with the high eye-appeal for which African cichlids are so admired and some gracious behaviour for which they are not particularly well known.

Getting along with Tanganyikans

For this community, I have in mind the lovely *Cyprichromis leptosomus*, a male and two or three of the infamous *Neolamprologus*

The Lemon cichlid, *Neolamprologus leleupi*, is a colourful fish so make sure you feed it well so its colours really shine

FEEDING TANGANYIKANS

This very special collection of brightly coloured species requires an equally high quality diet. Don't expect the dazzle and brilliance of these star quality fishes without feeding them like the aristocrats they are. Yes, they'll accept flake food, vegetable pellets, and frozen food – mysis, bloodworms, and glassworms are special favourites, but don't forget to add in living prey as well to keep them lively and active. Be sure that they get plenty of carotene-rich foods to enhance the leleupis' colour especially. A little fresh vegetable matter helps a lot with colour. A pea with the outer layer slipped off is a special treat that will keep these fish in dazzling colour and vitality.

leleupi, the same ratio of *Julidochromis ornatus*, commonly called a Julie and perhaps a *Synodontis angelicus* (or a less expensive species if you must, but remember, there's only one *S. angelicus*!). Actually, other Julidochromis and Neolamprologus species can be added, but when more species start to join the group, consider using only males, as more than one or two single pairs of any type of cichlid in the same tank can cause havoc.

As I see this tank, the *N. leleupi* and *J. ornatus* are separate little families. If you want to keep more than a single family of some of the mouthbrooding African cichlid species, use only males. One dominant male can cause a lot of trouble when there's a female in residence. A tank full of bachelors doesn't really have much to say about anything.

The Cyprichromis are the scholars of the group. They will shoal in the middle of the tank in a group of eight to a dozen. In nature, they form huge schools, but for the aquarium, a dozen or so will suit us perfectly. It's difficult to think of these fishes as cichlids; they are so low key and easy-going. As they occupy mid-tank, they are not going to get in the way of any of the bottom-dwellers like Neolamprologus or Julidochromis.

Shoal of Cyps

Now, many people are put off the Cyprichromis when they see them in the shops, especially the price tag. These beauties are not cheap, but you get what you pay for, especially if you can find the variety known as 'Blue Flash'. One problem is that you generally won't see their glory until they are completely comfortable with their surroundings – unfortunately this is not always the case in the local fish shop. The photos that accompany this article should help you make your decision, not the out-of-sorts fish on display in the shop. Take them home and give them the right conditions, and you will soon see them come into their own. Just be sure you have a mix of sexes as the males are the ones with the high colour (especially in the presence of a female). These are polygamous maternal mouthbrooders, so expect to see the females' mouths bulging with eggs and fry quite frequently. The males will often display heightened colour as females become 'available'.

Cyps, as the Cyprichromis are commonly called, are usually about 8-10cm, which

Cyprichromis leptosomais a shoaling cichlid that is usually very well behaved

Lake Malawi cichlids with *Synodontis* catfish in an unplanted rocky landscape

TANK DECOR

An aquarium for Tanganyikan cichlids should be very well outfitted with territories. In the lake, of course the territories are all rock, but in the aquarium you may choose from many authentic decorations. Your goal in aquarium decor is to create plenty of hiding places and territories. A territory is made when an object blocks the line of sight between fishes. A cave, a rock, a piece of driftwood, flowerpots, pipes, all these create territories. Shells, large and small, are wonderful additions to African cichlid aquaria.

allows the size of school needed for them to look and feel best in a tank of 150 litres and up. The larger the aquarium, though, the more room there is for the fry that invariably appear when the females take such good care of the young.

Julies, like *Julidochromis ornatus*, are tolerant of most other fishes (except rival males of their own kind). They are worthy tankmates of the Cyps. Their needs are similar and it would be highly unusual for there to be trouble among them.

The leleupis operate in much the same manner as the previous two species. Again there's the rival male situation, but that is often easily controlled by decor. Many of the fishes called rogues simply haven't been kept properly.

The best tank set-up

Tank size is always the first consideration. Sorry to break it to you, but if the tank is too small, it's a complete nuisance in terms of fish population and maintenance chores. I'm talking about community tanks now, not the desktop aquarium that is devoted to very few and very small fishes. What I have in mind for the following list of fish is more like 150 litres (minimum) and up. There are at least two good reasons for this...

Many of the Tanganyikan species are easy to mix and in time you may find other suitable tankmates for this community that you just must have. Lone males are the best choices, and though you may feel a little natural sympathy for them in their bachelor lifestyle (or not!), temper this compassion with the knowledge that as soon as there are two males of the same species, one will be an underdog that never gets to show his glorious colours or spread his fins widely in case there is an unseen female observing his display. Secondly, the tank size is not so large that maintenance is an all-day chore, nor so small that a slight overfeeding causes a huge rise in the ammonia in the high pH water.

Since tank floor space is more important than height, rectangular-shaped tanks hold more fishes. If you choose a designer aquarium with more height or an odd shape, reduce the number of fishes slightly to accommodate the loss of territories.

This is one time I am going to recommend light-coloured aquarium substrate. Usually fishes are more comfortable and show best over darker gravel, but Tanganyikans are found over light sand.


Synodontis angelicus

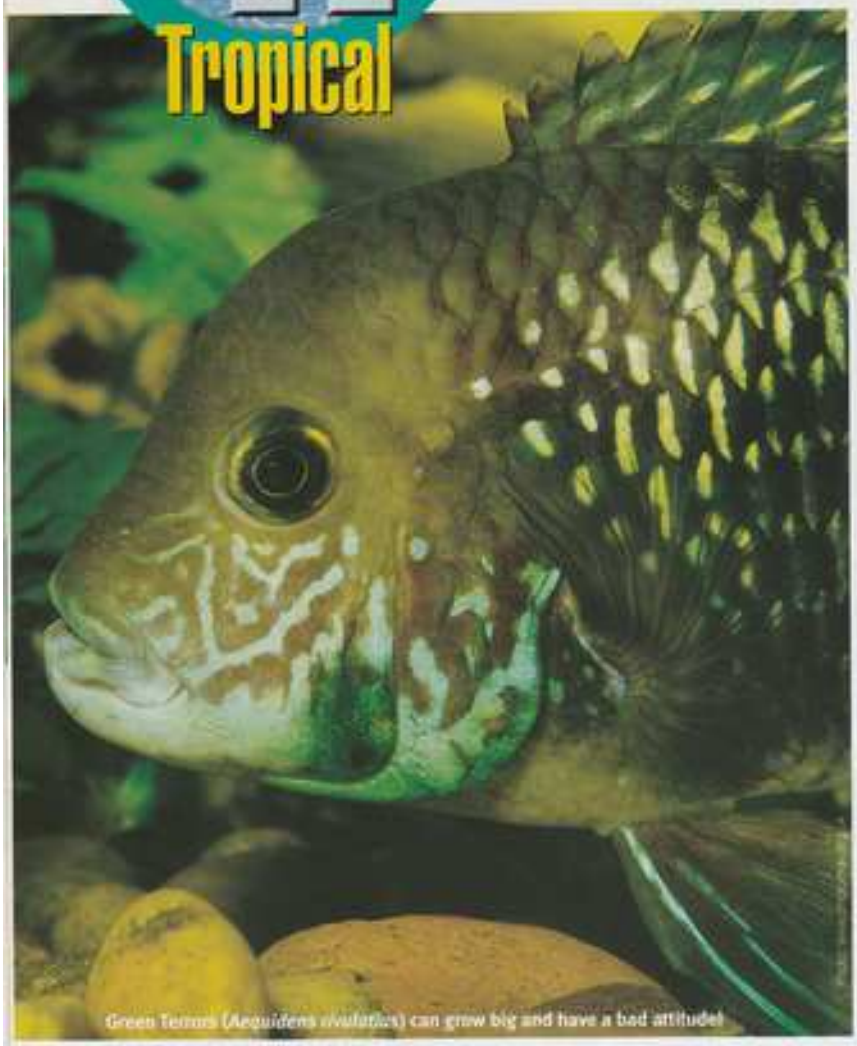
Water conditions

The pH of the water in this tank should be kept above neutral. If you can manage it, a pH of 8.5 is not out of order. There may be some problems with the necessary warm (25°C) high pH water. You must be very careful that there is no opportunity for ammonia to form in the water and there must be very good aeration at all times. Ammonia and nitrite are more toxic in high pH than in low pH and a good ammonia test kit is very important. It would not be frivolous to stock some ammonia-absorbing resin in case of accidental increases in ammonia.

FIND OUT MORE
Turn to page 48 for an indepth look at Lake Tanganyikan shell-dwellers

Filtration and aeration should always be exaggerated in high pH aquaria. The fish need to eat and the end product of the food business will always be ammonia, nitrite, and nitrate. Fortunately, there are many excellent filtration options for the modern aquarist and a little reading on filtration will prepare you to keep these sanitary arrangements in good working order. ■

Q&A Tropical



Green Terrors (*Aequidens rivulatus*) can grow big and have a bad attitude!

South American cichlids

Q **I have a tank which is 48 x 18 x 18in and I would like to keep South American cichlids. Can you give me some suggestions as to which varieties I can keep and how many? Are there varieties which I should steer clear of?**
James Banks, age 13, Lancaster

A I'm glad you're considering South American cichlids – they are among my favourites. You can keep several different cichlids in a tank like yours.
So, get a good book about cichlids and start reading. There are a lot of Dwarf cichlids you could keep like Apistogramma, Nannacara, Biotecus and dwarf Cremicichla. Bigger cichlids you could consider are Aequidens like Blue Acara or the smaller *Laetacara dorsigerus*, Laetacara sp. 'Buckelkopf', *Laetacara curviceps* and Bujurquina types – there are many fish to choose from. I suggest you buy five to six small ones and let them grow to adult fish and they will select a partner – then you can swap the rest with a friend.
Of course there are fish I would avoid, Oscars (*Astronotus ocellatus*), Green Terrors (*Aequidens rivulatus*), Caquetaia and there are more. But as I said, buy a good cichlid book which will tell you information about size and other requirements for the fish. You could also contact with British Cichlid Association (BCA) who will be happy to help.
Alf Stalsberg

HOLIDAY WORRIES

Q **I have recently set-up my first aquarium and am quite proud of the results. I tried to do everything by the book and as a result I have a planted tropical community tank which is thriving. My worry is that my wife and I are going on holiday at the end of July for two weeks and I don't want the tank to suffer. As we have recently moved house into a new area there is no-one who can 'look after' the tank when we're away. What can I do to minimise any problems so I can enjoy my holiday?**
Steven Holmes, Burnley

A It sounds as though you have the ideal aquarium for going away on holiday. I have a similar well-planted aquarium (CO_2 injection etc.) and in my opinion these are the best aquaria to have when going away on holiday. This is because the thriving plants will provide your fish with lots of browsing opportunities and also help to keep them occupied. The dense planting will also help to keep any bullying to a minimum. When I go away on holiday, I do not arrange for any one to feed the fish, but give the fish two weeks 'browsing and grazing' on the plants. I set the lights on a timer (quite useful to leave them on until the late evening as it give the impression that the house is occupied) and carry out a partial water change and filter clean two to three days before leaving. For your own peace of mind you could add a 'vacation' food block but I have found that in a densely planted aquarium, fish will manage very well for two weeks without additional feeding.
I hope this allays any fears you may have and I hope you have a good holiday.
Ben Helm

THE MILLION DOLLAR QUESTION!

How many koi you can stock in a pond depends on how much you feed and the type of filtration

I have just built a 1,200-gallon koi pond complete with pump-fed filtration and UVC. I have been asking various koi dealers how many koi I can keep in this pond but I am getting so many different answers. I am hoping to stock larger fish of about 10-12in, so how many would you recommend I could keep?
Dave Middle,Cardiff

This is really the million dollar question! Actually the number of fish that can be stocked in any pond is directly related to the capacity of the filtration system to remove the ammonia waste. So for example, if you were running an intensive fish rearing farm, you would calculate how much feed would be consumed by the fish at optimum temperature, in the case of koi or carp at 20˚C. Having made this calculation, the size of filter needed to break down the waste is worked out allowing 1m² surface area of filtration medium for every kilo of food consumed and then stock accordingly. I should add that these intensive rearing units really do pack the fish in huge numbers, each tank is just a mass of swimming fish. However, these working methods are rarely, if ever applied to koi systems – dare I say because it takes a bit of maths to work it out and most folk run shy of figures.
The stocking level rule of thumb for ponds is 2kg fish weight per 1,000 litres of water. Converting the volume of your pond to metric shows you have 5,455 litres of water and therefore your pond can hold 11kg fish weight of koi. Remember that this figure is the TOTAL fish weight for your pond and while a 25-30cm (10-12 in) fish weighs about 800g-1kg, you must allow for your fish to grow and a female 45cm (18in) koi can weigh 3kg. It might therefore be better to allow 1kg per 1,000 litres to allow for the fish to grow. You might also realise this may mean stocking with only five or six koi but these will grow big as there will be less competition for resources, particularly oxygen in the summer.

Bernice Brewster

CAN I KEEP HALFBEAKS IN FRESHWATER?

I am really fascinated by livebearing halfbeaks but I get confused about keeping them as some books tell me some need saline conditions and others pure freshwater. I have also read that they are delicate. I have a freshwater tropical tank and I would like to try less delicate halfbeaks that would adapt well to my freshwater tropical tank. Could you give me some information please?

Many of the halfbeaks live in marine habitats and brackish waters but there are some livebearing halfbeaks which are found in fresh water and do not prosper in tanks with salt added. It really depends which halfbeaks and where they come from. The Nomorhamphus species all come from freshwater and all are found in Sulawesi (Celebes) and are generally all called Celebes halfbeaks in the shops. These have torpedo shaped bodies with dorsal and anal fins set well back, the large pectoral fins are wing like. They grow to about 7cm, some females reaching 10cm. They are relatively peaceful but due to their predatory nature and their love of live food they are best kept with fishes of a similar size, as small fish might be considered a tasty meal. They need plenty of live food and will not flourish without it, although mine have taken other foods including frozen foods and flake. They love fruit flies. They need well-oxygenated freshwater and a temperature of about 24˚C, medium hard water and a neutral pH. They are quite a colourful addition to a community of fishes comparable in size and swim in the upper tank level just below the surface. Many males will have a black, thickened down-turned lower jaw. This is not natural as it means the beak has been broken at some time. This is easily done as they race around the tank. If you can provide them with the right conditions these are interesting fish that provide activity in an area of the tank that is less populous.

Pat Lambert

Today's Answers Expert Panel

Alf Stalsberg Cichlids
Pete Liptrot General questions on tropical fish and oddballs
Andrew Caine General questions on marines
Ben Helm General questions on coldwater plus equipment and technical advice
Lance Jepson Health
Tony Sault Discus
David Armitage Anabantids
Pat Lambert Livebearers, Rainbows and breeding fish
Ian Fuller Catfish
Andy Gabbutt Killifish
Stephen Smith Goldfish
Bernice Brewster Koi and ponds
Val Davies Reptiles and amphibians

Questions by Post

Please indicate clearly on the top left-hand corner of your envelope which person you wish your query to go to.
All letters must be accompanied by a SAE and addressed to: Fishkeeping Answers, *Today's Fishkeeper*, 7 The Rickyard, Clifton Reynes, Olney, Buckinghamshire MK46 5LQ

Internet Service

Fishkeeping Answers is also available via email. Most of our experts can be contacted via the internet. A few are still not on-line so we will have to pass your messages on to them by snail mail (we will tell you when this happens) but otherwise you should receive a reply to your questions in a few days rather than weeks.
Send your emails to: questions@todays-fishkeeper.com

WHAT SHOULD I FEED MY PEACOCK BASS?

The Peacock cichlid (*Chromidotilapia kingsleyae*) shouldn't be a fussy eater

Q **I have recently acquired a very handsome peacock bass. I've only had him a few days now and he seems to be getting on well. The problem I'm having is knowing what food to give him, I know they are highly predatory and will take live fish but I've heard so many different opinions on the matter I don't know what to believe. I did as much research as I could before I bought him but most of the web searches that came up were on fishing for them in Brazil. What do you suggest I feed him and how do I wean him on to other foods?**
Ben Sharp

A I'm assuming your Peacock Bass is a *Cichla sp.* as it's from Brazil. The following information goes for several of the Cichla.
Cichlids can get pretty big, so you need a rather large tank with a temperature of approximately 26°C and soft, acid water. However, your fish is quite hardy, so if you avoid extremes, the water parameters are not that important, but keep the water quality good, which means changing water every week. These fish eat a lot which means a lot coming out again, so if you don't change water often, the water will get polluted and this will harm the fish.
In my experience these fish eat nearly everything, and variety in the food is also good. You must give the size of food necessary and increase the amount and size of the food, as the fish grow.
Alf Stalsberg

Is my goldfish a comet?

Q **One of my goldfish in my garden pond has an elongated body and a very long divided tail fin. It's different from my other goldfish which are fatter. My neighbour thinks it might be a Comet, is she right?**

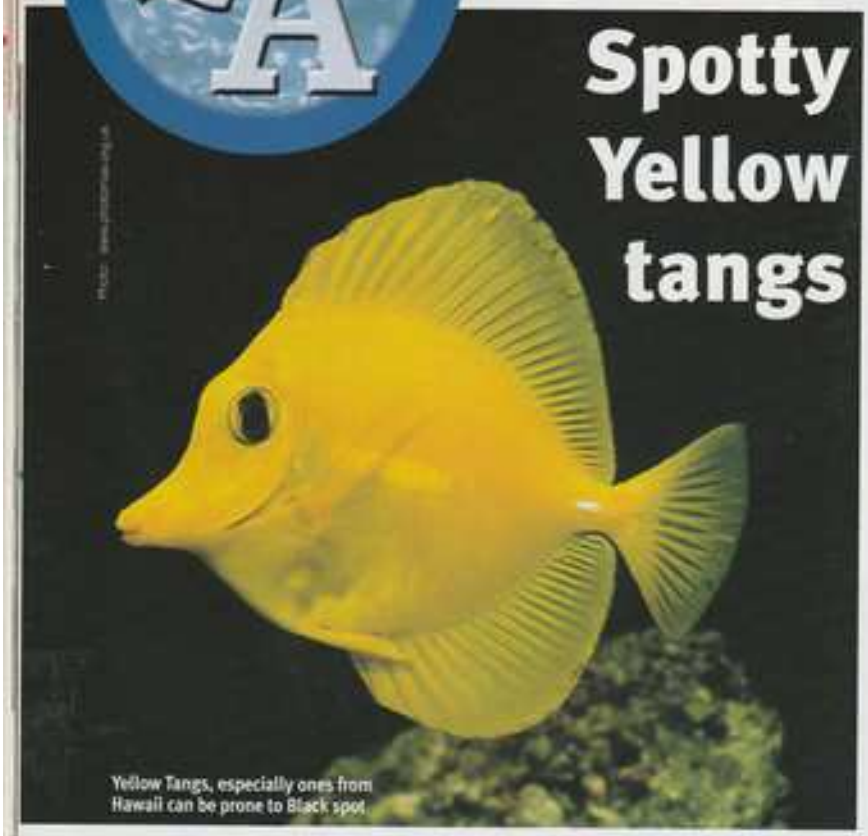
A Yes, she probably is. Comets have slimmer bodies than the common goldfish and the dorsal fin is high. The deeply-forked caudal fin in the best specimens is as long as the body. The ones commonly found commercially however have much shorter caudal fins about half the length of that found in the most desirable. The most common colour is yellow but they are also found in deep orangy red and all the other colours associated with the Common goldfish. The Sarassa which is silver underneath and red on the back is a very popular colour form. The Comet is a streamlined fish built for fast movement through the water and is more suitable for a garden pond than the aquarium.

Sarrassa comets are silver underneath with red backs


Incredibly small
but amazingly powerful.
The new RENA® i1 Internal Filter.
Its compact, easy-to-hide size makes creating your beautiful underwater world easy,
but its remarkable power gives you fantastically efficient filtration.
At just 11.5 centimetres high, it generates a massive 300 litres per hour output.
The best of both worlds!
THE NEW RENA® i1 INTERNAL FILTER.
FILTERS 2300 TIMES ITS VOLUME EVERY HOUR!
RENA

Q&A

Spotty Yellow tangs



Yellow Tangs, especially ones from Hawaii can be prone to Black spot

Star Letter

Q **I bought three Yellow Tangs a few weeks ago and they all have little black flecks all over them. I phoned the people who sold them to me and they said to treat them with Myxazin. They also said that this is a problem prevalent in Tangs imported from Hawaii.**

Sarah Simms, Via e-mail

A This infection is commonly known as Black spot, or Black Oodinium. It is actually Turbellarian worms which attach themselves to the skin of the fish. Heavily infested cases will show signs of attachment over the gills as well. This is fatal if not treated, as in the later stages, skin haemorrhaging occurs resulting in secondary bacterial infection.

To treat the poor fish you must remove it from any aquarium containing invertebrates, as a copper based medicine is required, such as Cuprazin. Another course of action is to perform freshwater dips for 10-15 minutes for five days, however, this must be monitored closely so you do not over stress the fish.

For some reason fish originating from Hawaii are most at risk, possibly a high Turbellarian population exists in these waters. If you know that your intended purchase is from this area, utilise a hospital tank and treat the fish as a precautionary measure before adding to your reef.

HELP ME GET RID OF ALGAE!

Q **I have had a marine tank set-up for five months now, after keeping tropical fish for a number of years. My tank is 36 x 18 x 15in, it has a Fluval 304 external filter, three powerheads for water movement, Fluidised bed filter, and a Prism deluxe skimmer. Lighting is two marine white and one blue actinic flourescents 25W. There is 10kg of live rock and a thin layer of coral sand. I have two clowns, one green chromis, one boxing shrimp, five turbo snails, one brittle star, one red-legged hermit, one minithrax crab, three tubeworms and one anemone.**

At present my readings are: ammonia 0, nitrite 0, pH 8.2, SG 1.022 and nitrate 20. I have put in Polyfilters and Rowaphos (250ml) into my canister filter and am using a Nitragon to filter my water.

I now have small patches of hair algae on my rocks. What is the best way to combat this problem? Should I buy a UVC? And how can I reduce my nitrates?

Mr K Wong, Camborne

A Hair algae on your rocks is probably due to your lack of cleaners allowing a toxin accumulation in what is known as the 'boundary layer' within your aquarium. Even if you have perfect water quality you can have an algal problem due to this. This is too much to cover in this section but if you go to my website www.aqua-world.co.uk you can print off the 'Boundary Layer' article.

You will need to add the following to have a good cleaning crew. As you have a Boxing shrimp already it may well be territorial so any more shrimps may be not a good idea so I would concentrate on your hermit levels. Add at least another 20 – they will then start to clean up the small particulate uneaten food and waste which is causing this problem. You must also test for phosphate levels – don't assume you have none present as phosphates are generated within the aquarium.

If you are only using a Nitragon for your water changes then you might consider using a Reverse Osmosis unit instead, the prices have fallen so much recently that this unit is a must for all marine keepers.

Soaring nitrate levels


A Scarlet serpent starfish, Ophiomyxa species, will help get rid of excess food

Q **Over the last few months I have seen a steady rise in my nitrate level – it is now up to the 50-60ppm mark. Could this be due to the media in the filter not allowing the live rock to do its work? Should I remove some of the media (ceramic rings etc) and replace it with filter floss to make the live rock work better and reduce the nitrates?**

Tank details:
- **55 gallons, 8 watt U/V & Prism skimmer**
- **A few soft corals i.e. Star polyps**
- **1 Yellow tang, 2 Percs, 4 Damsels**
- **15 Turbos and Hermits**
- **Fluval 404 & Fluval 203 with Eco Aqualizer**
- **Ammonia and nitrite levels all zero**

David, via email

A Your nitrate levels are quite high but not deadly to the inhabitants of the aquarium as they will have acclimatised to the levels over time as they increased. However, it is not recommended that you add any stock until they have been reduced.

First of all make sure you clean the skimmer every two days regardless of what it has accumulated, the brown scum on the riser tube to the cup reduces skimming efficiency. Skimmers remove organics before they are allowed to be reduced to nitrates.

The thing with external filters is that they have a pre-filter – particulate waste is caught in this and most people clean externals every four weeks or so. The problem we have here is that all the waste in the pre-filter over this time is rotting down to produce nitrates so really your external filter should be cleaned every week.

You do have enough live rock to filter biologically so you could utilise your externals as mechanical and chemical filters thus reducing nitrates over time.

I would like to see another 15 hermits, four shrimps and a serpent star to reduce the uneaten food and waste that collects thus removing further nitrate sources. Feed in small amounts and often, say six times a day, but do not increase the total amount of food given just spread it out. Also perform six x 25-litre water changes over the next 12 days – this should result in a drop in your nitrate level.

DELICATE CORAL?

Q **I would like to try *Acropora sp.* in my marine aquarium and I have all the hardware and water quality for this. People are always telling me they are very delicate and difficult to keep. Is this true?**

Bob Henesey, Bournemouth

A *Acropora sp.* are a very hardy animal when it comes to repairing themselves. However, that doesn't mean they will tolerate poor water quality. In the wild, storms snap off pieces, these fall down the reef until they wedge into a crevice, and soon they will establish themselves and start growing. So they are very hardy in this respect, but bad water quality, not enough or too much light and low water movement will soon kill them off.

Feeling blue?

Attractive, hardy and with graceful movement, the Blue gourami makes an excellent addition to an aquarium

Their smaller cousins have been favoured in the aquarium but you should definitely take another look at Blue gouramis, says **Kathy Jinkings**

As more and more new species of fish arrive in the shops, and already popular species appear in ever more vivid colour variations, it is easy for the aquarist to forget some of the old favourites, and the reasons why they were so popular. One of these fishes is the Blue gourami, *Trichogaster trichopterus*. This fish is still easily available in the shops, but has lost some of its popularity to the brightly coloured dwarf gourami, *Colisa lalia* – a smaller fish that may often seem a better choice for the aquariums of today's space-constrained aquarists. The dwarf gourami is indeed a beautiful fish, but has been highly interbred to achieve the almost luminous colour forms now available, which has had the end result of producing fish that can be extremely shy and delicate. The blue gourami, on the other hand, continues to have the extreme hardiness that made it so popular with earlier aquarists.

Air breathers

All anabantoids are air breathers, and with this modification have been able to adapt to life in very still, stagnant, almost anoxic waters. This is one of the reasons that so many representatives from this group of fishes achieved popularity before filtration and aeration had been developed to the fine art it is today. The Paradise fish and Blue gourami are both labyrinth fishes that were reputed as easy to keep with a bare minimum of technology. Now, with all the gadgets and gizmos at our fingertips, the Blue gourami is just as easy to keep today, requiring only a reasonably calm area of water to swim in, a pH between 6-8, and a temperature between 22-28°C. With these adaptable preferences, a Blue gourami can be accommodated in most homes without too much upheaval.

Although easy to keep, this should not be translated as meaning that the blue gourami is unattractive or boring. To start with, in its natural form this is an attractive fish, which is also sold as the 'three-spot gourami'. This is a slight misnomer, as one of the spots is in fact the eye – the other two occur midway along the flank and just before the tail. The body has numerous narrow bands, on a general blue theme. The 'Cosby' or Opaline gourami is a hybrid form in which the spots are smudged out into blotches or absent altogether.

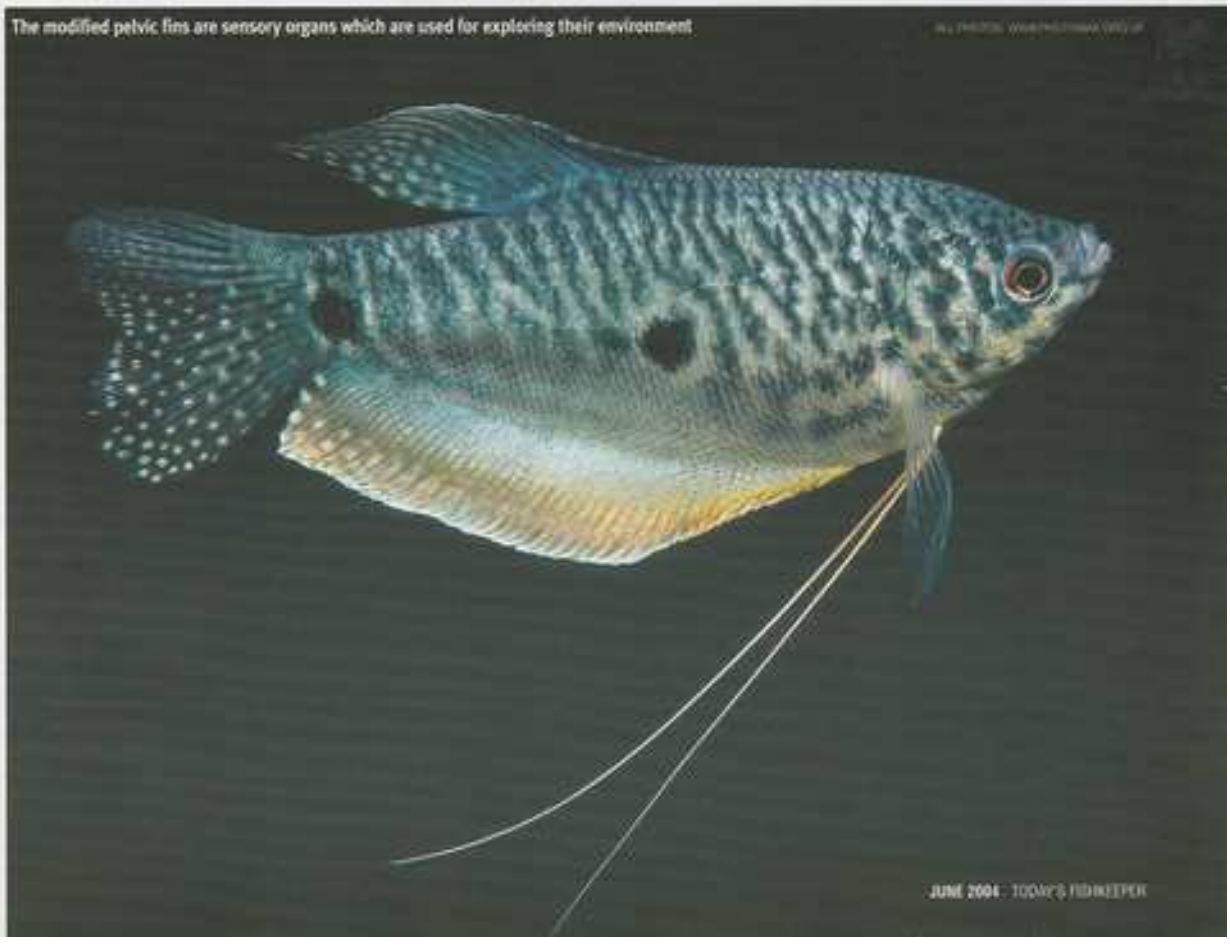
Instead the upper half of the fish is a marbled slate blue on a paler background, with the blue fading out towards the fish's stomach. This fish is sometimes known as *Trichogaster trichopterus sumatranus* or even just *Trichogaster sumatranus*. It is, however, the same species as the standard three-spot! Another variant of the fish is the Gold gourami. This is similar to the opaline in appearance, but the colour is an orange gold rather than blue. The marbling is still present, but not as distinctive. Yet another variation is occasionally seen under the name of silver or platinum gourami, which is a more or less uniform white-silver colour. With all these variants to choose from, at least one should fit into your preferred colour scheme!


They are called three-spots but the third spot is actually the eye

Graceful swimmers

One of the most appealing characteristics of the gouramis for many aquarists is their demeanour and swimming style. The laterally compressed body cuts through the water without any apparent effort, so that the fishes appear to glide. This impression is enhanced by their modified pelvic fins, which have become extremely long and thin. These trail behind them languorously as they swim, adding to the general air of ease. However, the modified fins are not just a trailing decoration, but are sensory organs used by the fish to help it investigate its environment. In one experiment, when Blue gouramis were offered a sequence of new, strange, plastic objects of differing shapes and colours, the fish explored them using these long fins. Surprisingly, the fish appeared to indicate a preference for using the left fin to investigate inanimate objects, while either fin was used for animate objects. Perhaps this is an early form of left-handedness!

Although in their swimming the fish look


The modified pelvic fins are sensory organs which are used for exploring their environment

extremely placid and laid-back, the males can be very territorial. It is best to keep only one male, although there can be several females (several is better, as it avoids one getting all the males' attention, and therefore harassment!).

The male can be easily identified by his long, pointed dorsal fin. The females have a shorter dorsal that is rounded, and as they become ready to spawn will grow distinctly fatter in the front of the stomach. As the male enters spawning condition, he begins to build a bubble nest, by sucking in air at the surface and then blowing it through his gills to make mucous-covered, relatively long-lasting bubbles. These pile up until he has a good area of bubbles, at which time he begins to try to entice the female to visit him underneath the nest. If she is unimpressed or not ready to spawn, the male can become aggressive, so a selection of hiding places, and several females to diffuse aggression, should prevent domestic violence getting out of control. Finally, when the female is ready, she joins the male under the nest and they wrap their bodies around one another in a 'spawning embrace', falling slowly through the water as they do so.

The proud father

As the eggs are produced they float up from the mating fish into the bubble nest. After the mating, the female remains motionless for a short time, before she is chased off by the male. During this period he uses the time to round up any eggs that have gone astray and spits them into the nest. This entire process is repeated many times until the female has no more eggs left – this could be after several hours and thousands of eggs. Once the spawning is complete, the female has no further role in the rearing of the family and the male will chase her away if she approaches the nest, along with any other intruders. If the fish are in a spawning tank she can now be removed – in a community there should be sufficient room and hiding places to allow the other inhabitants to get out of the way of the proud father. He will maintain the nest, guard the eggs, and round up any that fall out, returning them to the oxygen-rich safety of the bubbles. Sometimes he will also spit streams of water at this time. About 30 hours later the tiny eggs hatch. If the fry are being reared, the father should now be removed and the miniscule fry fed on infusoria and baby brine shrimp. If the spawning occurs in a community tank, all the fry will be polished up soon after they become free-swimming – they are not big enough to have any realistic expectation of any surviving in a community without intervention. During the third week the labyrinth organ develops, and the fry must have easy access to the water surface, and a humid atmosphere for their first breaths of air.

Of course, the Blue gourami makes an excellent aquarium fish even if you don't intend to breed them. A male is fine on his own, or with a group of females. Two or three males, though, are a bad plan – unless you can keep a large enough group to cause the territoriality to break down and be diffused, then the weakest individuals will be bullied. With an adult size of around 4in, and only a small mouth for its size, the Blue gourami is not large enough to eat many small fish, and will be fine with most community inhabitants of a similar size or slightly smaller. The Blue gourami can be expected to live around four years, and is an enthusiastic eater of anything offered. Although they are keen insect eaters and will enjoy live food, they also relish flake and other proprietary fish foods. One surprising taste is for hydra, the pests that often manage to colonise aquaria, and a Blue gourami is an ideal solution if you become afflicted with these.

An old favourite

All in all, the Blue gourami richly deserves the longstanding popularity it has enjoyed in the aquarium hobby, as a fish that is hardy, interesting and attractive. Next time you are looking around for something new and exciting in the shop, why not consider trying an old favourite instead? The blue gourami is unlikely to disappoint you. ■

NATURAL HABITAT

In their natural waters Blue gourami inhabit ditches, canals, ponds, swamps, rivers, and lakes in Malaysia, Thailand, Vietnam and Burma. These habitats are naturally thickly-grown with vegetation, and in the aquarium the gouramis are seen to their best advantage against a backdrop of plants, especially tall ones that they can glide through. In the wild they often migrate into flooded areas and flooded forests, especially in the Mekong floodplain, during the rains, and then return to the permanent water bodies as the floodwaters recede.

The dwarf varieties such as this Neon dwarf gourami (*Colisa lalia* var) have proved to be more popular with aquarists

BLAGDON

THE POND MASTERS

HYDRATECH MULTI

Beautiful pond water features without the hard work

Hydratech Multi is packed with features that bring you the ultimate in effortless maintenance and significant improvements in pump performance and reliability.

Low maintenance

Hydratech Multi has a low maintenance foam free clam cage system and unique barrier base to protect it from debris and sludge. So no more messy foam pre-filters that need frequent cleaning.

Reliable

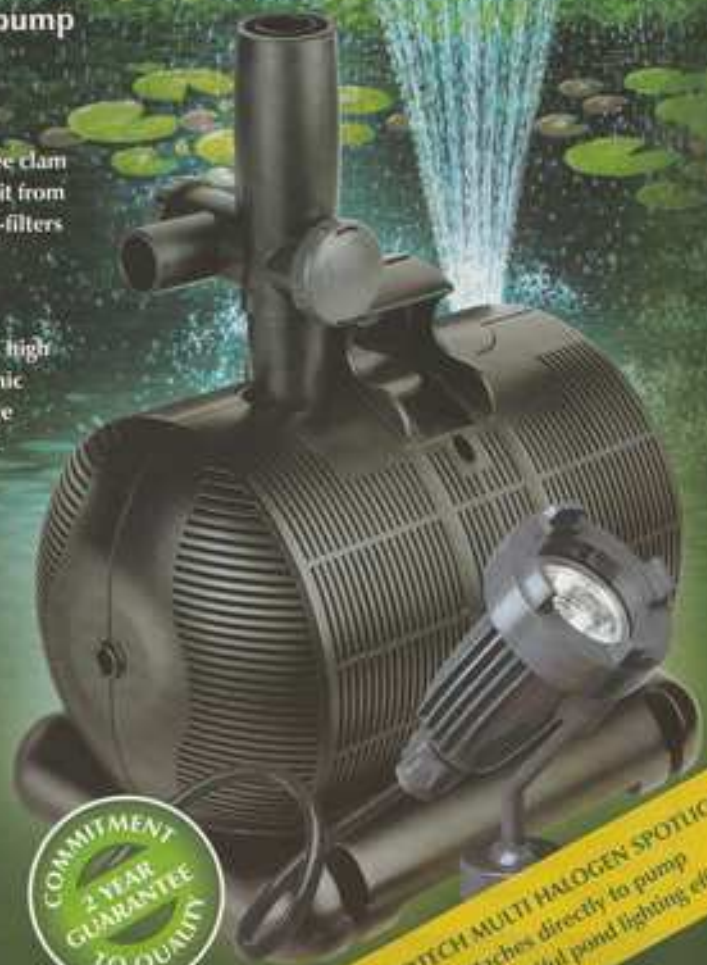
At the heart of every Multi there is an advanced, high performance impeller and hard wearing ceramic shaft, guaranteeing years of outstanding service for all waterfalls, fountains, and filter systems.

Versatile

Each Hydratech Multi includes a host of accessories to allow you to create the water feature of your choice. Hydratech Multi - the multi-talented pond pump!

All Blagdon products have full after sales support – spare parts and accessories freely available.

For The Pond Master's Guide To Choosing a Pump write to: The Information Desk, Interpet, Vincent Lane, Dorking, Surrey RH4 3YX



COMMITMENT 2 YEAR GUARANTEE TO QUALITY

PHOTECH MULTI HALOGEN SPOTLIGHT
Attaches directly to pump
Create beautiful pond lighting effects

So you've fallen in love with marine fish but do you know what to look for in a good retailer? **Andrew Caine** has some suggestions

The best way to judge a retailer is by his tanks

First impressions

Last month we were looking at different aspects which improve your aquarium: time, guidance, knowledge and a good retailer. This month we'll look at the latter and before you all scream... yes I am a retailer and I like to think I am not bad at it, but every good retailer needs good staff too.

You've read the adverts in the press, you've heard the word of mouth, and searched on the internet, but nothing beats going to the shop itself. So what are the telltale signs of a good outlet? Well, first impressions are always important and nothing puts a shop to the test more than its livestock. Not the amount of livestock (they could have sold loads the day before) but the health and quality of what you see. There is no better indication of health in marine fish and inverts than the coloration displayed or polyp extension in the corals. The livestock should 'jump out' at you and not be drab. Also, look at the condition of the aquariums – they should be nice and clean. A display aquarium is exactly that, it must impress you as this shows that the shop can look after an aquarium, not just sell aquatic goods.

Then look at the range of dry goods displayed. Is there a range of different manufacturers? This is a must as then you have a choice and are not restricted to what the retailer wants to sell. Does the range encompass all aspects of the hobby from the smallest-priced goods up to the big items? Having said this, not all good retailers have the room to stock a large range of goods but they will have a few and can obtain the others on an order basis.

Good advice

Next is the advice you get – it should be backed up with facts not opinions. Look around the shop and listen to people working there giving out such advice – are the customers happy or not? Remember that a retailer makes his living out of this and has to sell goods to pay for the overheads. However, they should be just as happy to give a few words of wisdom and not sell a product as when they give advice and take a large system order. You should be prepared to wait your turn during busy times as the time taken to talk to people should not be hurried – you will get your turn and then be given as much time as you need.

You cannot tell a good retailer with one visit – trust comes with time but if you follow the above rules you will have a good indication from the start. Also never shop with one retailer. A fun part of the hobby is visiting different shops, but do try to stick to three as this will give you differing philosophies without giving you an information overload.

A fish for you

The Regal angelfish is a real beauty but it can be rather partial to your large-polyped stoney corals

REGAL ANGELFISH, PYGOPLITES DIACANTHUS

What a stunner! Beauty abounds when a full-bodied individual displaying intense vitality swims out of the rockwork and into view. It's an unrivalled sight in the marine fish-only aquarium. "What?" I hear you say. "I have one in my reef." Yes it is possible, but there are many risks. The individual fish is a time bomb which will be fine in the reef for a year or so but then it can strike its deadly blow.

Most individuals will consume large-polyped stoney corals, pulsing xenia and other soft corals. Your highly-prized clams are also under threat so beware. Now, if your aquarium is full of small-polyped stoney corals you should be ok as they tend to leave these alone. When you see a picture of this fish in a reef aquarium behaving itself, what you do not see is the 100 pictures of reefs where it gorged itself and caused the owner to strip down the aquarium to get it out.

Our baby will do well in a fish-only environment with plenty of open swimming spaces to display its beauty, and plenty of hiding places to retreat for a bit of 'quiet time'. It's not an aggressive fish but it can handle itself if threatened. However, no-one likes aggression in a tank as it causes stress, so play safe with its tank mates, and only keep one Regal per tank.

When you see one of these fish in a dealer's tank always ask to see it fed. They can be quite difficult to get feeding and that is not your job but the dealer's. Once it takes food you won't be able to stop it, so do persevere and you will be rewarded. Specially-prepared angel frozen mix laced with vitamins is a must for this beast.

PROFILE

Family:
Pomacanthidae

Name:
Pygoplites diacanthus

Location:
Red Sea and Indo Pacific

Feeding:
Vitamin-enriched meaty foods

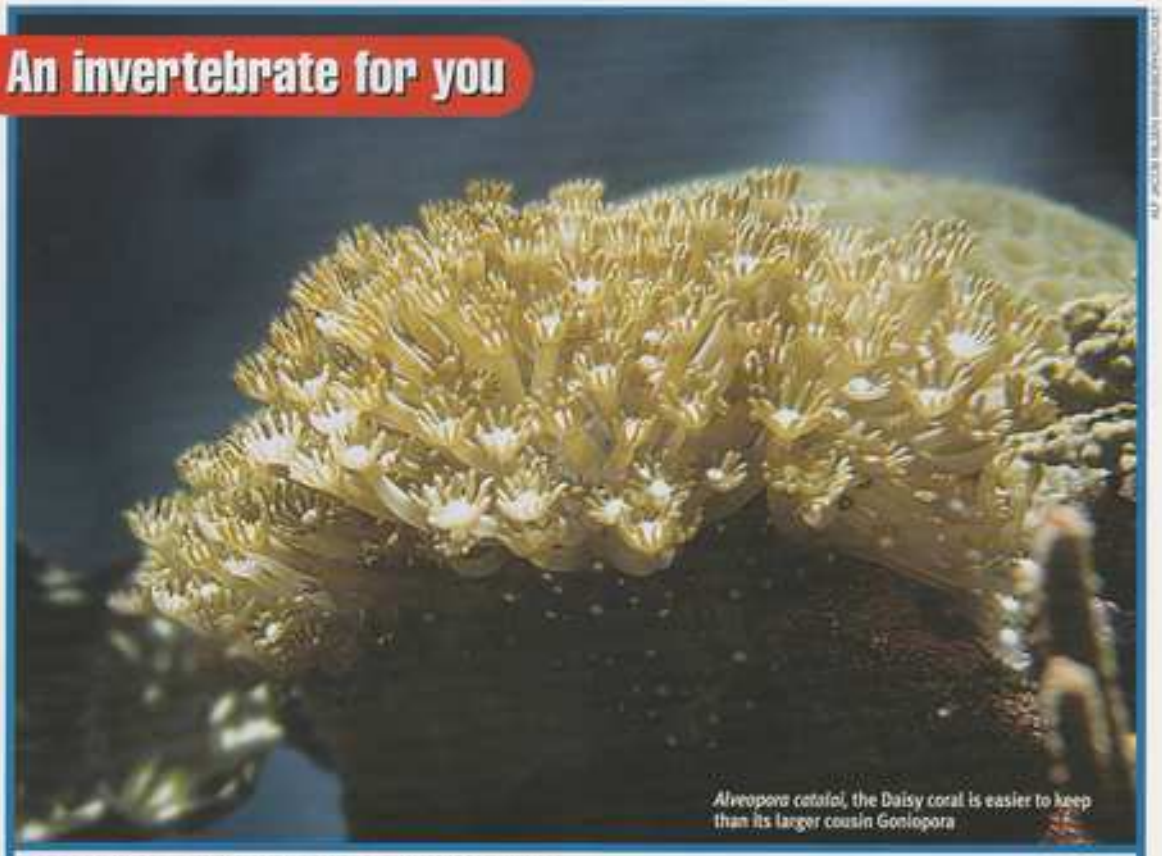
Size:
25cm

Reef compatibility:
Not recommended

Tank mates:
Peaceful companions

Difficulty:
Quite difficult as it can be hard to get them feeding. They are also partial to large-polyped stoney corals

An invertebrate for you



Alveopora catalai, the Daisy coral is easier to keep than its larger cousin Goniopora

DAISY CORAL, ALVEOPORA CATALAI

When is a Goniopora not a Goniopora? When it's an Alveopora! I have lost count of the amount of times I have seen this beauty on sale described as a Goniopora, and identification could not be more simple. Just count the tentacles which surround the polyp, if you count 12 then it's an Alveopora, if there are 24 then it's a Goniopora. Both are traditionally quite hard corals to keep. Note I use the word 'traditionally' as we are now increasing our success with both genera, yet our Alveopora is proving easier than its larger relative.

The question I get asked the most is, "I want a coral that is colourful and flowing. What should I buy?" With this in mind our little beast must be one of the most attractive corals you can think of... graceful flowing polyps with tentacles resembling flower petals. To top this, some grow in a branching form so you get a mini flower-covered tree stretching into the current from a rocky outcrop.

To keep our coral in top condition what do we need? First is high intensity lighting such as halides or T5s – any lesser will not do. Moderate water flow with pumps on a surge control so the polyps get blown back and forth allowing mucus removal and higher food acquisition. As our baby is termed a large-polyped stoney coral we are dealing with a coral with a demand for trace elements along with calcium and others. Keep an eye on your water quality as any depletion will not be tolerated.

I feel that the biggest breakthrough for the longevity of corals in aquariums is the amount, delivery and diversity of coral foods being applied to aquariums all over the country. Gone are the days when only one type of food was added once a week – now we are seeing a diversity of foods being given at least daily with some added continually. Suddenly many impossible corals are now thriving because they are not being starved to death.

PROFILE

Phylum:
Cnidaria

Name:
Alveopora catalai

Location:
Red Sea, Indo Pacific

Feeding:
Good range of animal-based foods

Size:
Commonly 6-12cm

Water flow:
Moderate is best

Lighting:
Medium to high

Difficulty:
Medium as they need very good water quality

The Labouring Creek at White Water Lagoon, a remote place with crystal clear water, lush aquatic plants and wonderful cichlids

Our guide William holding an adult *Ictalurus furcatus* catfish caught by anglers at the White Water Lagoon

A Belizean adventure

Juan Miguel Artigas Azas tells us about his magical trip to White Water Lagoon – and why he hasn't been back

After reading Jean Claude Nourissat's account on his journey to White Water Lagoon in Belize with his soul companion Patrick De Rham, I decided I had to visit one day. It was where the elusive red *Vieja synspila* could be found, swimming alongside the Red Bay Snook, *Petenia splendida*, in clear water with lush aquatic plants blooming. A surreal place almost untouched by humans that I just had to see.

It was several years later that my good friend Ad Konings asked me if I wanted to go to Belize to take underwater pictures of cichlids. He suggested we should visit White Water Lagoon, as Patrick De Rham had told him about the beauty of the place and the clearness of the water. It was then we knew we had to find it.

Ad and I decided to drive to Belize across Mexico and after some great days travelling through Mexico and visiting cichlid habitats we finally arrived at the northern Belize border at Corozal. After facing Belizean immigration we headed south to cichlid paradise by the only paved highway we found during our trip.

Marsh lagoons

On the way to our first destination, the town of Orange Walk, we stopped at marsh lagoons with clear brownish water,

EGG AMBUSH


Red *Vieja synspila* male in breeding coloration

Astyanax aeneus, the common Mexican tetra, was also present and big groups of them broke in the waterscape here and there. I came across a breeding pair of *Vieja synspila* laying their eggs on a sunken trunk, what a sight! The eggs were neatly laid by the female in circular rows on the surface of the wood, while the male divided his time between fertilising them and chasing away intruders. Vieja species are exceedingly shy, so I did my best to move slowly and not to create a commotion. However, I couldn't resist the temptation to get even closer to them to try to photograph them while spawning. But it didn't work! When I got close enough they felt the threat was too big to save their eggs and decided to flee before my saddened eyes! I never meant that! I retreated but it was too late – the loss of coordination in the pair caused my by unexpected presence was enough for the Astyanax to take their chance and simultaneously make a quick attack on the eggs without any mercy, the pair desperately tried to stop them from eating them without any luck. I watched with remorse at what I had caused! No eggs were left after a few seconds. A breeding effort had been lost.

This time more carefully, I approached another pair I saw among the vegetation in the distance, this pair seemed more committed to their nest, soon I found out why, the pair already had wrigglers moving inside a little hole in the wood. The advanced stage of their breeding effort made them braver as they had more to lose. After a patient wait the pair finally allowed me to get a little closer, and it was then than I managed to get some pictures. Ad had the air tank at that moment so I held my breath and got close to them, focused and took a picture. That was a magical moment for me.


Cichlasoma salvini female in breeding coloration – this population shows very little red on the belly of females

belonging to the Hondo river basin. There we spotted several interesting fish. Among them *Cichlasoma salvini*, *C. urophthalmus*, *Vieja synspila* and *Cryptoheros spilurus*. We also saw several groups of large *Belonesox belizanus*, *Poecilia kikkerii*, and big groups of *Astyanax aeneus*, but we did not do a careful check on the species present. We were told about the five metre-long crocodiles (*Crocodylus moreletii*) which lived in these marshes so I was happy the water wasn't sufficiently clear to take pictures!

After our arrival to the city of Orange Walk we searched for rivers with clear water but had no luck and ended the day slightly disappointed. Next day we continued to search for the elusive White Water Lagoon. We had directions given by Jean Claude Nourissat and so we headed off to look for Percy Flowers, a local gentleman we knew had taken Patrick and Jean Claude in his canoe through the jungle up the Labouring Creek (a Belize river tributary) to the elusive White Water Lagoon a couple of years back. To our dismay we finally discovered Percy was not available as he was on a trip.

We were getting desperate to find a solution when a young man told us he could take us to White Water Lagoon and we wouldn't even need a boat! It was all a matter of following a logger's path for just over an hour and then a walk through the jungle for 45 minutes. This contradicted our previous information that it was only accessible by river. We were so excited by this possibility and set the trip for early next morning.

On our way

The following day our guide William drove ahead and we followed him through an almost impossible-to-see track in the jungle, he explained to us it had been built by illegal loggers. We drove down the track for over an hour and when we got to the end of it we got out the diving and photographic equipment. This turned out to be too heavy to carry along the jungle path so we had to split the diving equipment and started walking the 4km to the lagoon.

The path, built through a jungle swamp by poachers, had been cleared with the help of a machete, and the cut vegetation was razor-sharp. I carelessly brushed my arm against a tree and felt a warm sensation. It wasn't until we got to the White Water Lagoon that I realised that I had several pin-long spines inserted all the way into my arm. I pulled them one by one, amazed at their size, but the last was completely inside and I could not pull it out – that one was to become part of me, as a souvenir from White Water.

After much walking and sweating we came across White Water Lagoon – a calm and wonderful place. The Labouring Creek

Fishermen's catch showing mostly *Ictalurus furcatus* and *Petenia splendida*

was about 40-50m wide at this point and water was slow flowing and clear. The shores were lined with trees and vegetation, and small marshes were present at the turns of the river – it was a magical place.

Much to our dismay, there were other people there. We had expected the place all to ourselves, but a boat with fishermen had previously arrived and they proudly showed off their magnificent catch: several wonderful adult cichlids. Colourful *Vieja synspila* and *Petenia splendida* among them, as well as some big *Ictalurus furcatus*. I was amazed to finally see the red *V. synspila* habitat!

Clear beyond belief

Ad was the first to jump into the water and I quickly followed. What a magnificent underwater view, like nothing I had seen before in Central America. The water had an incredible visibility of over 10m and a warm (approximately 28°C) temperature. The banks and river bed were covered by aquatic vegetation, *Vallisneria gigantea* was overwhelmingly abundant and at points over 2m high! There was no single area where you could see the soft muddy bottom of the river. I had not recovered from the shock of this beautiful habitat when I saw a fantastic red *Petenia splendida*, the Red Bay Snook, dashing its 40cm-long arrow-shaped body beside me. This was the place where Jean Claude Nourissat had originally found them.

I started exploring at the river banks when I saw my first red *V. synspila*, what an amazing fish! An adult swam beside me and then hid inside the Vallisneria forest while I was trying to take a picture of it. Compact groups of the Mayan tetra (*Hypessobrycon compressus*) were also a sight to behold; this diminutive tetra is the northernmost representative of the Hypessobrycon south American genus. They had their characteristic black blotches on the dorsal fin.

> ***"After much sweating and walking we came across White Water Lagoon – a calm and wonderful place"***

After a while I decided to explore the marshes at the river bends. There the plant life was much more diverse, with many aquatic plant species present. In this area *Thorichthys meeki*, *Cryptoheros spilurus* and *Cichlasoma salvini* were common. Passing some plants I was able to see a very rare event – a pair of Guapotes, in this case *Parachromis friedrichstalli*, with babies. Most Parachromis are so shy that you can hardly ever approach them underwater, and having swam among them numerous times in the past, this was the first time I had seen them breeding. As soon as the pair were aware of my presence they quickly led their thousand-plus babies to the deepest part of the vegetation. Several hours went by and time had come for us to take the route back before we lost the little daylight left, so reluctantly we had to depart. I will never forget that place.

A return trip

A few years later Ad Konings and I tried to reach the White Water Lagoon again so we could take more pictures. We looked for William to guide us again and he happily offered to take us back to White Water. Under his request we were set for the next morning so we waited at Belize City for the night.

Next morning we arrived early at William's house – it seemed that his father, uncle, brothers, cousins and friends had decided to join us as well. They tried for hours to start an old pick-up truck for the journey. The truck produced very loud engine explosions when started – Ad and I exchanged unenthusiastic sighs. We bought some gas for them, but it took a turn for the worse when most of our fellow companions-to-be pulled out all sorts of old guns – it would be a hunting trip! They all jumped into the back of the truck while the engine was re-started. We followed them by road in silence and when they took the jungle path Ad and I simultaneously said it was better to call it a day and get back to Mexico at once. We sadly took this decision but at least we got away safely – we could still hear the loud engine explosions in the distance. White Water Lagoon had been opened up to us, but would remain mysterious and elusive. ■

A breeding pair of *Thorichthys meeki*

Our readers write

Dick Mills is 'in the chair' for your opinions

We all have a fish surplus at times, whether it's down to breeding or running out of space for new fish. Why not give them to a good cause?

Following on from last month's 'Homes for Surplus Fish' item, we've received information about a similar service with a slightly different slant to it.

As we all know, fishkeeping is therapeutic in many ways (some might say it has a detrimental effect on plastic credit cards, but that's another story!) and evidence of this is to be found up and down the land in countless medical practitioners' waiting rooms and childrens' wards in hospitals. News of an aquatic 'recycling service' The FishOrphans Fish Rescue Service' has come from Gerald Jennings of the Calypso Organisation. Gerald writes:

'Unlike its larger and more well-known and publicised sister services, such as the PDSA and the RSPCA (neither of whom truly cater for fish) it attempts to re-house and re-home unwanted fishes, aquariums and aquatic pet collections into environments where these will be warmly received and looked after. It maintains, from its own limited charitable budget, all tanks and aquaria re-homed in hospitals and retirement homes.

The service is countrywide, but most effective in south and south-east England where the majority of its voluntary helpers are based. All of these helpers are expert fishkeepers, aquarists or ichthyologists – many of whom are able to call upon their lifetimes' experiences and expertise in the maintenance of aquaria and specialised fish species.

All donations welcome

Formed in 1999, FishOrphans is sponsored by the Calypso Organisation and by the International Federation of Online Clubs and Aquatic Societies. It relies on donations without which it cannot function. Donations of fish food are always very warmly received.

No fishes or aquaria are refused and it has saved many hundreds of fish that have been relocated to display aquaria for public benefit. Some caring owners who have had to part with their pets have made considerable journeys to ensure they get safely to a FishOrphans tank. So far, the 'record' is a 300 mile return journey to save an 8in (20cm) Plecostomus catfish that had seen better days. It now happily resides in the Whittington NHS Trust Relatives Room and could easily survive another couple of decades."

FishOrphans is a deserving cause that you should support wholeheartedly. It also works in two ways – either you can 'inform' on any unwanted fish or, conversely, you can advise of any location that could benefit by receiving an aquarium. Give Gerald a ring on 020 7281 4948 email him on: gerald@calypso.org.uk or visit www.aquaristsreunited.fslife.co.uk/Fishorphans/index.htm

Too much about ponds?

It is only to be expected that with a large readership there is bound to be the odd dissenting voice. Step forward, Dennis Garbutt of Harrogate. He starts of quite promisingly...

"TFK is a great magazine but I felt that the April issue spent too much time on ponds. I would like to see more on tropical fish and cichlids. I feel there enough magazines about ponds already, so more tank fish please and less coldwater."

Points of View

Having had the dubious privilege (actually it was quite an honour) to have sat in the editor's chair of this magazine when it was *The Aquarist and Pondkeeper* I know (only too well) of the agonies of trying to please all the people all the time.

It's not just a question of balancing all the various aspects of fishkeeping throughout the year but there's also the wide ranging levels of expertise of the readers to be considered. There will always be beginners at one end and experts at the other who require satisfaction. Then, as even Dennis will have to concede, there are the seasons of the year to be taken into consideration as well.

All this means that if a magazine decides to embrace all the 'disciplines' then there will be articles that appeal less to some readers some of the time. If one should decide to narrow one's interest (and there's nothing wrong in doing so) then it is then logical to take advantage of membership of the relevant specialist society – and its own publications – for that particular fishkeeping aspect. Look at it this way – it's only a couple of months a year that coldwater gets a deserving look in.

See you next month,
Dick Mills

It's difficult to deny the beauty of a well-planted pond

Last month you talked about the varying prices of fish in your area. I thought I'd take it upon myself to ask my local retailer (he's used to my ramblings!) why fish prices vary so much. Indeed I've seen it in his shop – prices for the same fish can change drastically. I thought what he said might be of interest to readers...

Basically he told me it's all about supply and demand. We're dealing with livestock which comes from all around the world. Most retailers buy from fish wholesalers and to a large extent they dictate what they have to sell their fish for. It stands to reason that if a fish is harder to get hold of then it will cost more, and that even goes for some of the common fish varieties at times.

Also, if fish are more rare then the freight costs alone can make a huge difference. If there are say 30 fish to a box then it will be cheaper than if there are 10 fish per box - and some of the rarer specimens will mean that the numbers per box are low. This together with the airport bureaucracy can add quite a sum onto the final price – which is of course paid by us aquarists.

Then there's the different types of outlet. A fish may be cheaper at a small retailer's premises or someone selling from home as they don't have the same overheads as a large company. However, if you find a larger retailer is cheaper then it may well be because they have greater buying power... There's no easy answer.

He also said that in all his years in the fish trade he had come across very few people who just hiked up the prices for no reason. Yes, there will always be those who have a higher mark-up but in the end of the day they still want to sell fish and they know that most of the general public will do their homework and visit a few shops before they buy any goods. After all, they all want to make a living.

I for one won't be going back to the bread n' butters! I'd rather have a few unusual fish than more of the cheaper ones. It just means everyone knows what to get me for Christmas!

JOHN SMALL from Teddington

Thanks for the insight John – I'm sure there will be a few retailers nodding their heads. There will always be rogues but I always stick with the adage, 'Once bitten twice shy'.

June's show, auction and club meeting dates

Pike cichlid *Crenicichla lepidota*

Copy for Today's Diary Dates

Copy for Today's Diary Dates should be sent to *Today's Fishkeeper*, 6-7 The Rickyard, Clifton Reynes, Olney, Bucks MK43 5LQ. Telephone 01234 714784, fax 01234 714633 or e.mail editor@todays-fishkeeper.com. Copy deadline for July issue June 14.

Tues 1st	**Southend Leigh & D.A.S.** Contact 01702 305740
	York & District A.S. meeting. Contact 01904 414272
	Paisley & District A.S. meeting. Contact helenburns@thefreeinternet.co.uk
	The Irish Tropical Fish Society meeting. Contact 01 4561836
	Halton A.S. meeting. Contact 0151 2898190
	North Bucks A.S. meeting. Contact 01908 377333
	Preston A.S. meeting. Contact 01772 321145
	Lang Toun Aquarists & Pondkeepers Group meeting. Contact 01592 595825
	Wyke A.S. meeting. Contact 01482 445543
Wed 2nd	**Corby & D.A.S. meeting.** Contact 01536 790932
	Oasis Fish Club (Sunderland) meeting. Contact 0191 3841433
	Perth A.S. meeting. Contact 01 738 621704 or 01506 510558
	Clacton Fish Keeping Club meeting. Contact 01255 428065
	Portsmouth A.S. meeting. Contact 01673 885352
	Bracknell A.S. meeting. Contact 01189 732874
	Ryedale A.S. meeting. Contact sdmarshall@lineone.net
	Tameside A.S. meeting. Contact 0161 339 6593
	Plymouth & District Aquarists & Pondkeepers Society meeting. Contact 0795 6421510
Thurs 3rd	**Faircity A.S. meeting.** Contact 01738 562291 or 07714 388507
	Mid Sussex A.S. meeting. Contact 01924 602407
	Kings Lynn Fish Club meeting. Contact 01553 769522 or 01553 763743
	Isle of Wight meeting. Contact 01983 721246
Fri 4th	**Basingstoke A.S. meeting.** Contact 0118 970 1461
	South East Marine Aquarist Society. Contact 01279 301542
	Yorkshire Cichlid Group meeting. Contact 01924 367086
Sat 5th	
Sun 6th	**Corby & District A. S. Open Show.** Contact 01536 724 803
	Rydale Open Show, Pickering N Yorks. Contact 01751 472715
	FNAS Convension Chester Zoo
Mon 7th	**Kirkcaldy A.S. meeting.** Contact John Reid on 01738 634689 or Jo Graham on 01592 782964 after 6pm or email: joe@graham40.freeserve.co.uk
	Solway A.S. meeting. Contact 01387 750606
	St Helens A.S. meeting. Contact 01942 671463
	Ayrshire Fishkeepers Association meeting. Contact 01294 605272
	Reigate & Redhill A.S. Contact 01293 781282
	Merseyside Aquarist Society meeting. Contact 0151 260 3664
	Warrington A.S. Contact 01925 483979
	Port Talbot AS Meeting. Contact 01639 770736
Tues 8th	**Darwin A.S. meeting.** Contact 01254 701925
	Northwich A.S. meeting. Contact 01606 882966
	Caer Urfa A.S. meeting. Contact 0191 5237464
	Telford & D.A.S. meeting. Contact 01952 409721 or 01952 616410
	Lang Toun Aquarists and Pondkeepers Group meeting. Contact 01592 595825
	Northern Goldfish and Pondkeepers meeting. Contact 0161 9697567
	Greenock D.A.S. Meeting. Contact 01475 704219
	Bangor Aquarists & Breeders Society. Contact 028 9187 3539
	Clyde Aquarist Society meeting. Contact: john@flamant.freeserve.co.uk
	Hull A.S. meeting. Contact 01964 562387
	Strood & D.A.S. meeting. Contact 01634 221291
	Aberdeen A.S. meeting. Contact: alanandmel@belford.fsnet.co.uk
Wed 9th	**Linlithgow Aquarist Society meeting.** Contact 01506 510558
	Halifax A.S. meeting. Contact 01274 880471
	Bradford A.S. meeting. Contact 01274 652542 or 0113 257 7709
	Hounslow D.A.S. meeting. Contact 020 8890 6933
	Dunstable & D. A. S. meeting. Contact 01582 7505564
	Hambleton & D.A.C. meeting. Contact 01765 640644
	Plymouth & District Aquarists & Pondkeepers Society meeting. Contact 0795 6421510
Thurs 10th	**Glenrothes meeting.** Contact D. Smart, 4 Lochty Ave., Kinglassie, Fife
	Bristol Tropical Fish Club meeting. Contact 0117 973 2145
	Faircity A.S. (Perth A.S) meeting. Contact 01738 562881
	Sandgrounders A. S. Contact 01704 541177
Fri 11th	**Discus Ireland meeting.** Contact 061 318593
Sat 12th	
Sun 13th	**Wyke Open Show.** Contact 01482 473935
	Catfish Study Group members' only show. See website www.catfishstudygroup.org
Mon 14th	**Kirkcaldy A.S. meeting.** Contact John Reid on 01738 634689 or Jo Graham on 01592 782964 after 6pm or email: joe@graham40.freeserve.co.uk
	Bristol Aquarist Society (Goldfish) Meeting. Contact 01792 207467
	Grimsby & Cleethorpe meeting. Contact 01472 349178
	St Helens AS meeting. Contact 01942 671463
	Otley AS meeting. Contact 01274 531418
	Robin Hood AS meeting. Contact mdtalbot@corydorus.freeserve.co.uk
	Derby & District Aquarists meeting. Contact 01332 773416
Tues 15th	**Greater Manchester Cichlid Society meeting.** Contact 01706 810284, 01706 353363, 0161 766 4457 or 01422 942 155
	Midlands Marine Aquarists Society. Contact 0121 359 4469
	Lang Toun Aquarists and Pondkeepers Group meeting. Contact 01592 595825
	Wyke A.S. meeting. Contact 01482 445543
	South Park Aquatic Study Society. Contact Eric 0208 6792680
Wed 16th	**West Yorkshire Marine Aquarist Group meeting.** Contact 01924 420101
	Clacton Fish Keeping Club meeting. Contact 01255 428065
	Tongham Aquarists Society meeting. Contact 01252 25686
	Portsmouth A.S. meeting. Contact Gill Utting, 9 Inverness Rd., Gosport, Hants.
	Perth A.S. meeting. Contact 01 738 621704 or 01506 510558
	Bracknell A.S. meeting. Contact 01189 732874
	Workington A.S. meeting. Contact 01900 67951
Thurs 17th	**Mid Sussex A. S. meeting.** Contact 01273 602407
Fri 18th	**Eastbourne & District Pondkeeping.** Contact 01323 7731369
	West Cornwall Fishkeepers meeting. Contact 01209 614518
	AAGB Weekend 2004 (18-20th June) Visit www.aagb.org
Sat 19th	
Sun 20th	**Preston & D AS Open Show & Auction.** Contact 0151 2898190
	Catfish Study Group. See website www.catfishstudygroup.org
Mon 21st	**North East Yorkshire Killi Group meeting.** Contact 01653 618971
	Kirkcaldy A.S.meeting Contact 01738 634689 or 01592 205565
	Norwich A. S. meeting. Contact 01603 416259
	Solway A. S. meeting. Contact 01387 750606
	Merseyside A.S. meeting. Contact 0151 260 3664
	Ayrshire Fishkeepers Assoc meeting. Contact 01294 605272
	Oldham A. S. meeting. Contact 0161 652 6207
	Port Talbot & District A. S.Meeting. Contact 01639 770736.
Tues 22nd	**Northwich A.S. meeting.** Contact 01606 882966
	Lang Toun Aquarists and Pondkeepers Group meeting. Contact 01592 595825
	Greenock D.A.S. meeting. Contact 01475 704219
	Croydon Aquarist Society meeting. Contact 020 8654 0984
	Strood & D.A.S. meeting. Contact 01634 221291
	Castleford A.S. meeting. Contact 01977 730754
Wed 23rd	**Hounslow D.A.S. meeting.** Contact 020 8890 6933
	Halifax A.S. meeting. Contact 01274 880471
	Workington A.S. Contact 01900 67951
	Tameside A.S. Contact 0161 339 6593
Thurs 24th	**Glenrothes meeting.** Contact D. Smart, 4 Lochty Ave., Kinglassie, Fife
	Bristol Tropical Fish Club meeting. Contact 0117 973 2145
	Faircity A.S. (Perth A.S) meeting. Contact 01738 562881
	Sandgrounders A. S. Contact 01704 541177
Fri 25th	**Eastbourne & District Pondkeeping.** Contact 01323 7731369
	West Cornwall Fishkeepers meeting. Contact 01209 614518
Sat 26th	
Sun 27th	**Workington DAS Open Show.** Contact 01900 67951
	North West Cichlid Group Auction. Contact 01744 884710
Mon 28th	**Kirkcaldy A.S. meeting.** Contact John Reid on 01738 634689 or Jo Graham on 01592 782964 after 6pm
Tues 29th	
Wed 30th	

New FBAS competition

Starting at the 2005 June and September General Assemblies, the FBAS will be staging Championship Breeder classes with a Grand Championship Final at the 2004 Supreme Festival of Fishkeeping weekend at Bracklesham Bay in October. A decorated glass bowl will be the top prize.

■ Contact www.fbas.co.uk for details of rules and further information.

Special announcement

Following the success of the 2003 event when Hounslow & District AS and South Park Aquatic Study Group staged their respective open shows on the same date at the same venue, they will be combining their shows again this year.

Make a note of the date which is September 18 and the venue is Youth Centre, Kingsley Road, Hounslow. Schedules should be available from early June. Open shows are very expensive to run and make a lot of work for one club alone, so it's great to see clubs working together and pooling their resources.

A specialist stand at a show can help you with the more unusual varieties – and a good club show auction (above) is always worth a visit

Scottish aquarists where are you?

The Federation of Scottish Aquarists Societies was formed on May 8, 1958 and consists today of 23 aquarist societies, which hold regular meetings and yearly open shows. So why don't we have news from you?

United Scottish Aquarists, we would also like to hear from you and so would our readers. We have gathered a little information from some of your websites but we really would like more!

■ Greenock & District Aquarist Society was formed in 1950 when fishkeeping was starting to take off after the war so they celebrated their 50th anniversary in 2000. This is one of the larger clubs in Scotland

■ Linlithgow Aquarist Society in West Lothian started in 1997 so is one of the younger Scottish clubs and meets every Wednesday in the Burgh Halls, The Cross, off the High Street, Linlithgow. It's a small club that will give newcomers a warm welcome and a varied programme.

■ Clyde Aquarist Society tends to specialise in breeding fish and its club members will help you keep on track.

Oldest club

Croydon Aquarist Society must be one of the oldest clubs in England as it was founded in 1931. They meet on the fourth Tuesday of the month but have a long winter break from November to March as meetings are held in a hut on an allotment at Glenthorne Avenue off Shirley Road, Croydon, Surrey and the heating is inadequate for the winter months. Call Les on 0208654 0984 for more information.

Otley club

We have attended Otley club open shows on numerous occasions and have always found them helpful. They responded very quickly to a plea for help with show dates and sent the full calendar for 2004 for YAS and FNAS events. Thank you Otley!

This is a small club with about 25 members regularly attending meetings at the Three Horse Shoes in Bridge Street, Otley, Yorkshire on the second Monday of every month. Many people will remember the great tableaux they built for Yorkshire Aquarist Festival at Doncaster Race Course where they won first place on two occasions.

Specialist societies

If you have an interest in a particular group of fish there are specialist societies for Anabantoids, Catfish, Cichlids, Goldfish, Killiefish, Koi, Livebearers, Rainbows and Gobies and there are many experts in these groups. They hold auctions, conventions and produce interesting magazines.

Through these societies you will be able to find many species that are not available through the shops and advice is readily to hand about care and breeding. Some of their leading members write for this magazine. Watch the diary dates for special announcements as renowned overseas speakers often attend their conventions.

Today's Guide to...

AQUATIC SUPPLIERS

All the contacts you need to find any aquatic product

Aquariums

Aquamedic	Tel 08450 903500
Casco	Tel 07000393940
Classic Cabinet	Tel 01482 581666
Clearseal	Tel 0121 7710256
Deltec	Tel 0208 5012492
Dupla	Tel 01306 743747
Fit Filtration	Tel 01332850345
Hagen	Tel 01977 556622
Juwel	Tel 01953 606363
LAC	Tel 0208 981 9117
Seashell Aquarium & Cabinets	Tel 01621 742922
Underworld	Tel 01509 610310

Books

Aquamedic	Tel 08450 903500
Interpet	Tel 01306 743747
Midland Reefs	Tel 01543 684621
TMC	Tel 01923 284151
Underworld	Tel 01509 610310

Cleaning equipment / Maintenance

Algarde	Tel 0115 938 1200
API	Tel 01865 556623
Aquatic solutions	Tel 01553 776788
Aquamedic	Tel 08450 903500
Eheim	Tel 01284 755051
Interpet	Tel 01306 743747
JBL	Tel 01284 755051
Hagen	Tel 01977 556622
LAC	Tel 0208 981 9117
Tetra	Tel 02380 628863
Underworld	Tel 01509 610310

Decor/accessories

Aquamedic	Tel 08450 903500
Interpet /Blagdon	Tel 01306 743747
Hagen	Tel 01977 556822
LAC	Tel 0208 981 9117
Trilcot	Tel 01205 358058
Underworld	Tel 01509 610310

Filters

Algarde	Tel 0115 938 1200
Aquamedic	Tel 08450 903500
Cloverleaf	Tel 01277 366002
Eheim	Tel 01284 755051
Hozelock	Tel 01844 292002
Interpet/Blagdon	Tel 01306 743747
LAC	Tel 0208 981 9117
Rosewood	Tel 01952 883408
Oase UK	Tel 01264 333225
Petmate Pond	Tel 01932 700000
Hagen	Tel 01977 556822
Tetra	Tel 02380 628863
Trident	Tel 02476 669012
Underworld	Tel 01509 610 310
World of Koi	Tel 0208 4629479
TMC	Tel 01923 284151

Fish foods

API	Tel 01865 556623
Aquamedic	Tel 0845 0903500
Aquarian	Tel 01664 410000
Aquatic Solutions	Tel 01553 776778
Dupla	Tel 01306 743747
Esha	Tel 003143632397
Interpet/Blagdon	Tel 01306 743747
JBL	Tel 01284 755051
JMC	Tel 01246 415275
King British	Tel 01427 810231
LAC	Tel 0208 981 9117
Nishikoi	Tel 01371 851424
NT labs	Tel 01622 817692
Oase UK	Tel 01264 333225
Omega	Tel 0208 9496100
Petlex	Tel 020 8501 1033
Phoenix	Tel 01159 614984
PPI	Tel 0115 9823900
Hagen	Tel 01977 556622
Seachem	Tel 07000 393940
Sera	Tel 07976 967618
Tetra	Tel 02380 620500
TMC	Tel 01923 284151
Underworld	Tel 01509 610310
Vitakraft	Tel 01484 866422
Waterlife	Tel 01753 682487
ZM	Tel 01962 856050

Heaters

Algarde	Tel 0115 938 1200
Aquamedic	Tel 08450 903500
Dupla	Tel 01306 743747
Hagen	Tel 01977 556622
Interpet	Tel 01306 743747
LAC	Tel 0208 981 9117
Rosewood	Tel 01952 883408
TAP	Tel 01275 810522
Tetra	Tel 02380 628863
Underworld	Tel 01509 670310

Liners/Underlay

Interpet/Blagdon	Tel 01306 743747
Tetra	Tel 02380 628863
Hozelock Cyprio	Tel 01844 292002

Lighting/Aquarium

Aquatic solutions	Tel 01553 776788
Aquamedic	Tel 08450 903500
Arcadia	Tel 0208 2515522
Deltec	Tel 0208 5012492
Dupla	Tel 01306 743747
Interpet	Tel 01306 743747
Hagen	Tel 01977 556622
LAC	Tel 0208 981 9117
Underworld	Tel 01509 610310
Zoo med	Tel 00180 5542988

Lighting/Pond

Blagdon	Tel 01306 743747
Oase	Tel 01264 386500
Hagen	Tel 01977 556622
Trident	Tel 02476 669012
TMC	Tel 01923 284151

Marine Equipment

Aquamedic	Tel 08450 903500
Aquatic Solutions	Tel 01553 776788
Casco	Tel 07000 303940
D & D Marines	Tel 0208 5012492
Fit filtration	Tel 01332 850345
LAC	Tel 0208 981 9117
Rosewood	Tel 01952 883408
TMC	Tel 01923 284151
Trap-ease	Tel 0151-427 1351
Tunze	Tel 00498 8562022
Interpet/Red Sea	Tel 01306 743747
Underworld	Tel 01509 610310

Medication

API	Tel 01865 556623
Aquamedic	Tel 08450 903500
Esha	Tel 003143632397
Interpet	Tel 01306 743747
N T Labs	Tel 01622 017692
Sera	Tel 07976 967618
Tetra	Tel 02380 628863
Waterlife Research	Tel 01753 682487
Vitakraft	Tel 01484 866422

CO2 equipment

Aquamedic	Tel 08450 903500
Dupla	Tel 01306 743747
JBL	Tel 01284 755051
Hagen	Tel 01977 556622
LAC	Tel 0208 981 9117
Sera	Tel 07976 967618
Hozelock Cyprio	Tel 01844 294528
Oase	Tel 01264 386500
Rotoflush	Tel 01297 560229

Pond Pumps

Aquamedic	Tel 08450 903500
Interpet /Blagdon	Tel 01306 743747
Draper Pond	Tel 01264 386500
Fishmate	Tel 01932 700000
Hozelock Cyprio	Tel 01844 292002
Oase	Tel 01264 386500
Hagen	Tel 01977 556622
Tallis	Tel 0115 9823900
Tetra	Tel 02380 628863
Trident	Tel 02476 669012
TMC	Tel 01923 284 151

Pumps and Powerheads – Aquarium

Algarde	Tel 0115 938 1200
Aquamedic	Tel 08450 903500
Aquatic Solutions	Tel 01553776788
Eheim	Tel 01284 755051
Hagen	Tel 01977 556622
Interpet	Tel 01306 743747
LAC	Tel 0208 981 9117
Tetra	Tel 02380 628863
TMC	Tel 01923 284 151
Tunze	Tel 004 988562022
Underworld	Tel 01509 610310

Reef Tank Supplements

Advanced Aquarium Products	Tel 07976 646976
Aquamedic	Tel 08450 903500
Aquatic Solutions	Tel 01553 776788
Casco	Tel 07000 393940
Deltec	Tel 0208 5012492
Interpet/Red Sea	Tel 01306 743747
NT Labs	Tel 01622 817692
TMC	Tel 01923 284151
Underworld	Tel 01509 610310
Waterlife Research	Tel 01753 682487

Salt

Aquamedic	Tel 08450 903500
Aquatic Solutions	Tel 01553 776788
Interpet/Red Sea	Tel 01306 743747
SEACHEM	Tel 07000 303940
Sera	Tel 07976 967618
TMC	Tel 01923 284151
Underworld	Tel 01509 610310
Waterlife Research	Tel 01753 682487

Tapwater Purification

All Clear	Tel 01277 214911
API	Tel 01865 556623
Aquamedic	Tel 08450 903500
Aquatic Solutions	Tel 01553 776788
Deltec	Tel 0208 5012492
LAC	Tel 0208 981 9117
Nibragon	Tel 01708 744880

Test Kits

API	Tel 01865 556623
Aquamedic	Tel 08450 903500+
Aquatic Solutions	Tel 01553 776788
Casco	Tel 07000 393940
Esha	Tel 003143632397
Hagen	Tel 01977 556622
Interpet	Tel 01306 743747
Koi Vision	Tel 0208 893 2513
NT Labs	Tel 01622 817692
Sera	Tel 07976 967618
TAP	Tel 01275 810522
Tetra	Tel 02380 628863
TMC	Tel 01923 284151
Waterlife Research	Tel 01753 682487
Vitakraft	Tel 01484 866422

UV Clarifiers (Pond)

Hozelock Cyprio	Tel 01844 292002
Interpet/Blagdon	Tel 01306 743747
Oase	Tel 01264 386500
Petmate	Tel 01932 700000
Hagen	Tel 01977 556622
Trident	Tel 02476 669012
TMC	Tel 01923 284151

UV Sterilisers (Aquarium)

Aquamedic	Tel 08450 903500
Aquatic Solutions	Tel 01553 776788
Aquaworld partners	Tel 01925 483979
LAC	Tel 0208 981 9117
TMC	Tel 01923 284151

Water Treatments & Dechlorinators

Advanced Aquarium Products	Tel 01843 299144
API	Tel 1865 556623
Aquamedic	Tel 08450 903500
Aquarian	Tel 01664 410000
Aquatic solutions	Tel 01553 776788
Deltec	Tel 0208 5012492
Interpet	Tel 01306 743747
Hagen	Tel 01977 556622
NT Labs	Tel 01622 817692
Oase	Tel 01264 386500
PPI	Tel 0115 9823900
Schuran	Tel 01923 284151
Sera	Tel 07976 967618
TAP	Tel 01275 810522
Tetra	Tel 02380 628863
Tunze	Tel 004988562022
Underworld	Tel 01509 610310
Waterlife Research	Tel 01753 685696

What will I need?

Last month we went over a few points to consider before buying your first aquarium. Here we look at the equipment you may need for your tank

A furnished tank awaiting some fish!

If your space and budget allows, go for a larger tank. Small tanks are often sold as 'ideal for the beginner', but this is not really true. Larger tanks are more stable in terms of their water chemistry, temperature, etc. Go for a 3ft long tank if space allows.

Unless you are buying a complete set-up (e.g. the Juwel aquarium packages), you need to select the right equipment for your tank. A reputable dealer should be able to help you with this, but it is helpful to have some advance knowledge of what is required.

Basically this means a filter, heater, a lid with lighting, 'substrate' (gravel or sand), backing material and other decor such as rocks, wood and real or plastic plants.

Filtration

There are three major types of filtration: mechanical, biological and chemical.

Mechanical filtration removes particles from the water to keep the water clear and to maximise the efficiency of subsequent biological or adsorptive filtration.

Biological filtration is essential to ensure the breakdown of waste products in the aquarium by 'friendly' bacteria. This occurs most efficiently in porous media such as sponge and specific bio-media such as ceramic tubes and sintered glass. This media should only be lightly rinsed in aquarium water (not tap water) to maintain the bacterial colonies which establish.

Chemical media removes various substances from the water. Examples include activated carbon which removes toxins, medications, dyes, etc. and specific resins which remove ammonia, nitrate, phosphate, etc.

There's no substitute for the real thing! Plants look good and provide a sterling service if treated properly

Lighting

The type of lighting you use in your aquarium depends on whether you want to keep live plants. If there are no plants (or fake ones!) then you only need light so you can view the fish. As a rule of thumb, a light intensity of around 10W per sq ft of water surface area is sufficient.

The most commonly used form of lighting in aquariums is fluorescent tubes. They are available in a wide range of colour spectrums and sizes to suit different tanks and applications.

If you want to have a planted tank you'll need more light than fish-only tanks. Light requirements differ, but generally the light will need to be at least double the amount of a fish-only tank.

Metal halide or mercury vapour lights are often recommended for heavily planted tanks and these are normally suspended above an open-top tank.

TESTING THE WATER

All aquarists should invest in water test kits which will enable you to measure and keep track of pH, ammonia, nitrites and water hardness. Most kits sold are easy-to-use and are based on colour changes in the sample being tested, then compared to a colour standard. Some kits are supplied with liquid reagents, others with powdered ones.

pH kits include powders or liquids to change the actual pH itself, other kits such as ammonia and water hardness, only supply the test itself. If you find a problem, there are specific products available from good retailers or often a simple water change can do the trick. Test kits are the only way to be sure that your water quality is good and they can save you a lot of money and heartache in the long run.

Heating

Maintaining a stable temperature is important to avoid stressing fish. Tropical fish require a normal maintenance temperature between 20-30°C (68-86°F), with many species being kept at the mid range of 24-25°C (75-77°F). There are various ways to maintain the temperature of a tropical aquarium:

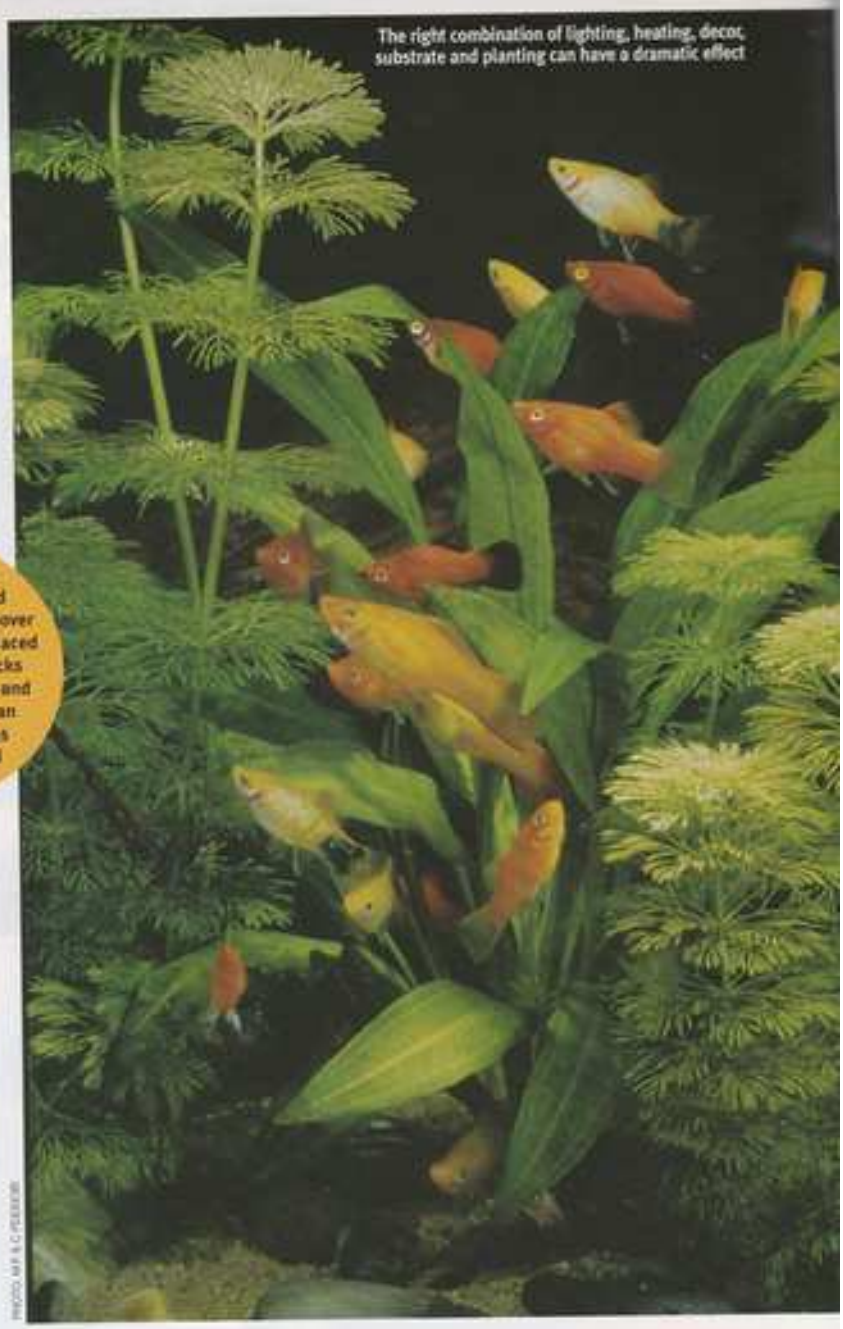
- Rod-shaped combined heater-stats, placed inside the tank are the most common type used. They are available in a number of standard wattages between 25W and 300W and utilise reliable thermocouples to maintain a stable temperature.
- External thermostats can also be used to control heating elements placed in the tank, and have the advantage of a less bulky element inside the tank.
- Thermofilters are external or, more recently, internal canister filters which have a heating element built into them. Many are fitted with a precise temperature controller, which may include a digital readout. Using a thermofilter avoids having an unsightly heater unit inside the tank.
- Heating pads, placed beneath the aquarium, can be used to heat the base of the aquarium. Heater cables do a similar job and these are laid on the base of the tank and substrate material placed above. This is thought to be beneficial for growing plants. Both of these substrate heating devices are normally used in conjunction with a standard heater.

All substrates should be washed thoroughly over and over again before being placed in an aquarium. Rocks should be scrubbed and bought only from an aquarium shop, as should bogwood

Substrate materials

The two most commonly-used substrate materials are gravel and sand. The substrate material used in a tank may be just for decoration, or it may have a particular use such as a rooting medium for growing plants or filtration (under gravel filters).

- Gravel is available in a range of sizes,



The right combination of lighting, heating, decor, substrate and planting can have a dramatic effect

PHOTO: A.P.B.C./FISHBASE

WATER MOVEMENT

An air pump is not a necessity for all tanks. If you have a motor driven power filter this moves the water around and sometimes uses a spray bar which means the surface is constantly moving oxygenating the water and helping to eliminate carbon-dioxide. These are positioned at the surface.

The correct flow for the type of fish you keep is very important. Some fish like little movement in the water and can be stressed by it so make sure you find out what the fish you are buying prefer.

ON TOP OF TEMPERATURE

A thermometer is an important piece of kit and it should become part of your routine to check it daily. These days modern heater-stats are very reliable but you will need to check initially that they are maintaining the correct tempecature in the tank. Make a mental note to check the temperature every time you feed – this means you should notice any change in temperature before it causes a major problem.

CHOOSING SUBSTRATES

colours and textures. Pea-sized gravel is probably the most commonly-used as larger sizes can allow debris to fall between the stones where it will decay and affect water quality. Finer grade gravel is often used for planted tanks but make sure it's the lime-free type. People wishing to keep hard-water set-ups find that coral gravel can be used to help maintain hardness and pH. But beware as it can be sharp-edged and may damage the bodies of fish which like to dig. So if you keep fish like cichlids it is better to use coral sand instead or put the gravel in a filter.

It's best to use two or more heaters to make up the required wattage on larger tanks. This gives a more even heat distribution and, if one heater fails, the other will provide some heat and the problem should be noticed before the temperature drops too much. Also, if one of the smaller heaters should stick in the 'on' position, it will not raise the tank temperature as quickly as one large heater.

■ Sand is also available in different grades and colours. Fine lime-free silica sand, also known as silver sand, is often available from DIY stores and garden centres. Although it will often be graded and prewashed, it is advisable to give it another thorough rinsing before you use it in your aquarium.

Sand is often not recommended by experienced aquarists as the extremely small particle size can result in packing which reduces water flow. Waste breaks down and in the resulting anaerobic conditions generates hydrogen sulphide. There is a sand, however, that is recommended by those who keep sifting and burrowing fish. This is RIVER SAND a non-compacting sand which is based on the sands found in the Amazon. This can only be purchased from an aquarium shop as all substrates should be.

■ Special substrates are often used


Installing an internal power filter

KEEP ON TOP OF HEAT AND LIGHT

A thermometer is an important piece of kit and it should become part of your routine to check it daily. These days modern heater-stats are very reliable but you will need to check initially that they are maintaining the correct temperature in the tank. Make a mental note to check the temperature every time you feed – this means you should notice any change in temperature before it causes a major problem.

A lighting tube being installed in a tank hood

A submersible heater-thermostat is a good choice for the novice fishkeeper

in planted tanks. Some are designed to be mixed with gravel or sand, whilst others can be used on their own. They are usually clay-based and rich in iron and other nutrients and trace elements required by plants.

There are some situations where it may be best to have no substrate. These include tanks for fry-rearing and quarantine tanks, where the tank needs to be easy to clean thoroughly.

Tank decor

The way you furnish your tank is personal to you and taste will dictate the final outcome. However, it can serve other purposes too such as providing refuges for fish to make them feel more secure and in some cases, influence the water chemistry.

■ Bogwood is great for decorating aquariums as it's natural colour contrasts well with light green plants and it provides a natural-looking refuge for fish. When you buy bogwood it should be soaked (preferably for a few weeks) and then rinsed, to allow some of the colour and organic acids to leach out. Although the organic acids and coloration released by bogwood may be desirable in certain set-ups, e.g. South American 'Amazon' tanks, where the 'blackwater' effect is desired, the leaching may be very heavy at first, if not presoaked.

It's a good idea to clean a new aquarium before you set it up, to remove any unwanted fingerprints, dust, dirt and possible contaminants. A small amount of washing-up liquid and lukewarm water will be fine, but remember to rinse thoroughly afterwards to remove all traces of it

■ Plastic plants, while they can't beat the real thing, they do have many uses in an aquarium.

1. They provide shelter and security for fish.
2. They serve as an additional surface for bacterial colonisation.
3. They require considerably less maintenance than real plants.
4. Some of the newer types are quite realistic and can move fairly naturally in the current.

Real plants in a well planted tank are a stunning site and are what many aquarists are striving to achieve. They also help maintain a balanced water chemistry in the aquarium and oxygenate the water. However, a well-planted tank does require frequent maintenance to look its best and it's necessary to provide the correct lighting conditions, substrate and fertiliser for them to thrive.

So know you know the basics you're likely to need it's up to you to do a bit of research. For some people, deciding what type of tank to have is one of the most exciting parts of the hobby. Good luck! ■

Clean bogwood, and indeed all decor, thoroughly before adding it to the tank

All photos from *A Practical Guide to Setting up your Tropical Freshwater Aquarium* by Gina Sandford.
Published by Interpet at £5.99
ISBN: 1-902389-94-8
For further information contact 01306 873822

THE GOLDFISH BOWL

www.thegoldfishbowl.co.uk

VISIT OUR WEBSITE FOR:

- Comprehensive atlas of species:
  Marine – Tropical – Coldwater – Invertebrate
- Expert health advice in our fish clinic
- Detailed product information
- Fish articles
- Photo gallery

Visit our shop at:

118-122 Magdalen Road, Oxford, OX4 1RQ Tel: 01865 241825

Shell dwellers

Neolamprologus brevis is one of the most common shell dwellers

Roy Osmint takes a look at these fascinating cichlids from Lake Tanganyika in East Africa

The ornate shells of long expired aquatic snails are the unlikely home and refuge to a fascinating group of fishes found along the coastal shores of one of the great Rift Valley Lakes of East Africa.

Strong mineralisation of the lake's water ensures that the empty shells are preserved in near perfect condition for a much longer period than would be the case in other chemical compositions. In some areas the substrate is littered with them.

Bordered by the Democratic Republic of Congo to the West, Zambia to the South and Tanzania and Burundi to the East, Lake Tanganyika covers an area of some 12,000 square miles and is the deepest lake in Africa. It presents an extremely stable environment maintaining a temperature of about 26.5°C throughout the year.

Home to a wonderful diversity of aquatic life, many of the fish species in Lake Tanganyika are endemic to it. A high percentage of these are members of the Cichlid family. A group well known in aquatic circles for its aggressive territorial instinct.

Essential shell

Various species of shell dwellers are found in the lake. Those likely to be of most interest to the average aquarist are perhaps *Neolamprologus ocellatus*, *Neolamprologus multifasciatus* and *Neolamprologus brevis*.

In some cases geographical colour variations exist within species and although fundamental behavioural characteristics are frequently similar they are by no means necessarily identical.

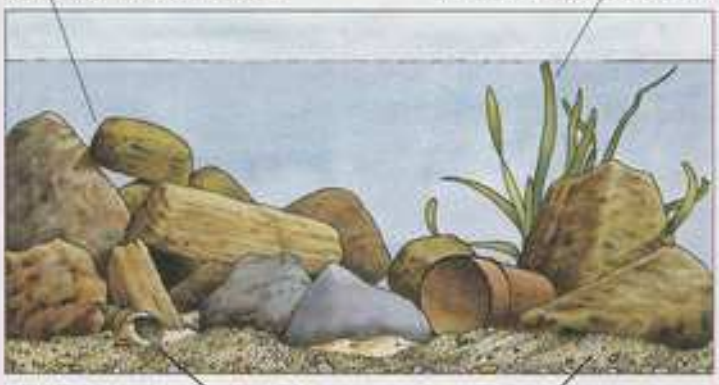
In some forms, for example, a depression in the substrate will be excavated into which the chosen shell is placed. Gravel or sand will then be tightly packed around it leaving just the opening visible. Others may be content to leave the shell far more exposed.

The shell dwellers occur widely in Lake Tanganyika, East Africa

Some varieties will carry out major substrate modifications creating a series of embankments around the shell bed. These are undoubtedly intended to act as territorial boundary markers. It is also possible that the mounds may divert the natural flow of water towards the shells, bringing with it a potential food supply.

The one constant with all shell dwellers, however, is that they must have access to a shell that they can call their own. This becomes their base and provides both

SHELL SPAWNERS' TANK SET-UP



An underground filter is not really the best option in this tank as much of the floor surface is covered with rocks. A power filter is better

WATER QUALITY

As with most African Rift Valley species careful attention must be paid to both water chemistry and quality if success is to be achieved in the aquarium. These fish are also sensitive to sudden changes.

A pH value in excess of 8.0 should be maintained, with a total hardness between 15-25dH. An efficient filtration system together with regular partial water changes of about 25% every two weeks should provide excellent conditions. The water must be well oxygenated.

shelter from predatory attack, and a site for egg laying and brood rearing.

As with most other members of the cichlid family these fishes are territorial, though on a generally more localised and restricted scale. They can also be extremely aggressive. That said, by only keeping one species and ensuring that each individual can locate and claim a shell home, a colony will often live together in harmony.

Shell dwellers are, of necessity, relatively small fishes, especially when compared to many others of the Cichlid fraternity. Usually ranging between 3-5cm when adult. Often there is a noticeable size difference between the sexes, with the male frequently a centimetre or so larger.

The aquarium

As always, the larger the tank the better. In favourable conditions shell dwellers will often reproduce at a considerable rate. Remember, that for every new inhabitant a shell home must be provided. It is cruel to deny these fishes access to a shell and to do so is likely to result in violent territorial disputes.

Sand or very fine gravel provides the best substrate for these fish making it relatively easy for the shells to be bedded down.

Acquiring shells can sometimes present a problem. Clearly, Tanganyika species are best, but those belonging to edible snails are a satisfactory substitute. A chat with the chef of a local French restaurant will often yield good results.

Shells, from whatever source, should be thoroughly cleaned in boiling water for at the aquarium make certain that all air is released from the interior. Some aquarists drill a tiny hole in the end of the shell to facilitate this.

Always provide at least one more shell than there are fishes to occupy them. But better to put in a good number from the start permitting an element of choice to the inhabitants and allowing for population expansion if they breed.

Breeding

Spawning procedure differs to some extent depending upon species. In some cases the male fish will visit the shell of his chosen partner and the mating ritual will take place. In most instances the female will enter the shell, deposit a few eggs and retire. The male then fertilises them. Either by entering himself, or in some cases depositing milt at the entrance to the shell which is then swept inside with the female as she re-enters.

With *Neolamprologus brevis* it is normal for a pair to take up home in a single shell prior to spawning. The male and female of most other forms often retain their own shells throughout.

In some cases the female will demonstrate considerable intolerance towards the male once he has played his part in the spawning procedure, forcefully driving him away from the nursery shell. He is likely to quickly loose interest and wander off in search of another potential sexual partner.

Hatching times will depend on various local factors. Typically this may be about 72 hours with the fry becoming free swimming some four to six days later. In many instances the aquarist's first indication that a spawning has taken place will be the sighting of fry in or around the mouth of a shell.

For those seeking something a little out of the ordinary, the shell dwellers of Tanganyika may provide an absorbing diversion. ■

Festival of Fishkeeping & water gardening weekend

15th - 17th October 2004

Laguna Koi Festival

DAY VISITORS
Saturday 16th and Sunday 17th

"Hagen Masters" Open Show
(On Sunday — Sponsored by Rolf C Hagen)

The Laguna Southern 5 Section Koi Festival
Sponsored by Laguna

Goldfish Society of Great Britain Fish Show
(On Saturday — Sponsored by Rolf C Hagen)

The FBAS "Supreme Championship" Final
(On Sunday Sponsored by Tetra)

Catfish Show (Sponsored by Rolf C Hagen)
(Southern Catfish Conservation Rescue Society on Saturday)

Society of Furnished Aquaria and Tableaux
Organised by Mid Sussex AS

A Multitude of Speakers from both the Aquatic and Water Gardening Worlds

Furnished aquariums, pond displays, aquatics, water gardens, water features and trade displays

A host of ex
attractions fo
residents an
visitors inclu
Everything yo
to know about
Freshwater trop
Marine fi
Koi and gol
Native freshwat
Filtration and
Water garde
Introducing water
garden including
water featu

£15 Ha
VOUCHER

for every full fee paying adu
as part purchase of Hage
against a commemorativ

Bracklesham Bay Weekend

New Horizon Holidays, South Downs Holiday Village
Bracklesham Bay, Near Chichester, Sussex

Hotline bookings: Please contact Grace Nethersell

8 Acacia Avenue, Brentford, Middlesex TW8 8NR
Tel/fax form direct to: 0208 847 3586

Federation of P

DISCUS PROBLEM SOLVER

Our resident Discus expert **Tony Sault** solves another batch of your problems

Discus of different sizes can be kept together. You just have to make sure the adults get enough food

Does size matter?

Q I have been keeping Discus for six months now. All my fish are thriving and have grown to about 10-12cm. I am getting a larger tank that will hold more than the six I have already, and when it's mature I will transfer the existing fish into it and then buy some new stock to join them.

I intend to use the old tank as a quarantine tank to keep the new fish in before they go in the main tank. My question is: will I have to buy 10-12cm fish or will smaller ones be all right with my existing fish? I have heard that the larger Discus can eat all the food before the smaller ones get a chance to feed.

A You are wise to use your old tank as a quarantine tank for all new stock. You could also use it to grow on young Discus before introducing them into your main tank.

In answer to your question, I once mixed Discus in a 600 litre tank with sizes ranging from 5-15cm to see if it could be done. I fully expected the smaller fish to be deprived of food by being intimidated by the adults, but to my amazement the smaller 5cm fish were so fast to the food at feeding time I found the opposite to be true. It was the adults that were slow off the mark and getting less food. The way to make sure they all have enough to eat is to alter your routine and spread the food over the length of the tank so all sizes can get their share.

Hard water worry

Q I am thinking about setting up a Discus tank but I have been told my water is too hard for these fish. Would I need to buy a reverse osmosis unit as I understand these are quite expensive to run?

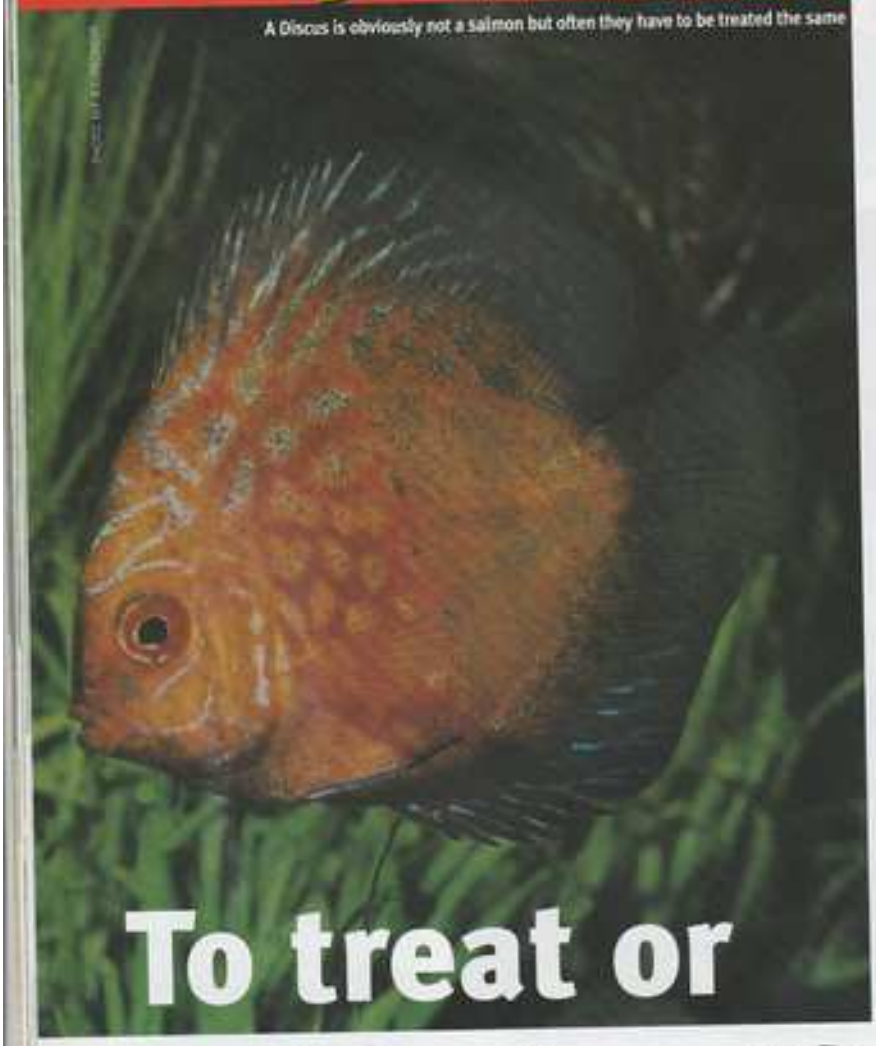
A It is a fallacy that Discus must have soft water to thrive. My own water is relatively hard (600 micro siemens) and all my stock tanks are full of healthy, thriving Discus. I only remove the chemicals and metals through a triple cartridge water purifier which is designed to leave in the minerals that the fish need. In my opinion R. O. units are mainly for breeders – I do have to soften the water in my breeding tanks to get the eggs to hatch.

How do I treat tapeworm?

Q Last year I bought a shoal of wild Discus and they have all settled in and are looking very healthy. Recently, to my horror, one of the larger fish passed what I now believe to be a tapeworm. It was approximately 7-8cm long and white about 2mm across and was in segments. Should I remove this fish and treat it separately or should I treat all the Discus in the tank? Could you also recommend a medication to use.

A You are correct in the diagnosis. Tapeworms are quite common in wild Discus where the complete cycle includes two intermediate hosts such as a small crustacean i.e. a snail, and a bird. Each Discus will probably only carry one or two tape worms and, as parasites go, this worm is pretty smart in as much that when it outgrows its host it excretes a length of its own body, snaps it off and then retreats back into the host's gut. When I have treated Discus for tapeworms I used Droncit (obtained from my vet), mixing 2ml of Droncit liquid into 100gms of food. This was fed to all the fish on days one, two and three once per day, then reverted to normal feeding on day four.

Today's Surgery



A Discus is obviously not a salmon but often they have to be treated the same

To treat or not to treat?

Our resident vet, **Lance Jepson** MA VetMB CBiol MIBiol MRCVS tells us why it's not possible to administer antibiotics without seeing the fish

One of the most frustrating situations that I have to deal with is the telephone call from a fishkeeper requesting antibiotics. Usually they will have tried a variety of proprietary medications with no success, and now they want to try antibiotics. They want me to supply them with antibiotics either from a surgery that I work from, or through the post. Unfortunately my answer has to be invariably "No, not without seeing a fish first." This is translated by many clients as an attempt on my part to squeeze more money out of a situation. I can understand that – vet fees are perceived as expensive and the fish may be of little monetary value, and after all, I'm a vet and part of my job is to try to alleviate animal suffering so why shouldn't I dispense some? Also, from a purely mercenarial standpoint I could earn some money from this transaction! My problem is not that I'm hard-hearted or obstructive, it's that I'm stuck between two pieces of legislation.

The legislation

The first is the Veterinary Surgeons Act 1966. This legislation at present means that it is illegal for anyone who is not a Member of the Royal College of Veterinary Surgeons (RCVS) to diagnose or treat disease in mammals, birds or reptiles (including amphibians) but crucially, not fish. This has allowed a small industry of non-veterinary fish health consultants to develop, and in many cases these offer an excellent service.

The second piece of legislation is the Medicines Act 1968. In order for a veterinary surgeon to legally prescribe the majority of medicines (including all antibiotics), the animals – in this case the fish – must be 'under his care'. This fairly woolly statement is further defined by the Royal College of Veterinary Surgeons as:

- The veterinary surgeon must have been given the responsibility for the health of the animal or herd by the owner or the owner's agent.
- That responsibility must be real and not nominal.
- The animal or herd must have been seen immediately before prescription and supply or
- Recently enough or often enough for the veterinary surgeon to have personal knowledge of the condition of the animal or current health status of the herd or flock to make a diagnosis and prescribe.

The bacterial infection in this koi's tail meant that some of it had to be cut away

The koi is given an injection to stop further infection

• The veterinary surgeon must maintain clinical records of that herd/flock/individual.

The RCVS Guide to Professional conduct also states that "Diagnosis for the purpose of prescription should be based on professional judgement following clinical examination and/or post mortem findings supported if necessary by laboratory or other diagnostic tests." This can be another hurdle. A few of my clients know a great deal about fish disease. They have microscopes and are well able to do some basic tests themselves. Most of my clients know very little about fish disease and why should they? So I'm afraid a request for antibiotics based upon somebody else's assessment of the situation just will not work – I stand to get into a lot of trouble by doing so.

I've mentioned Prescription Only Medicines already. Although there are changes afoot, at present medicines are divided into three categories. These are:

Prescription Only Medicines (POM). This group includes all antibiotics including enrofloxacin (Baytril), oxolinic acid and metronidazole. In the UK it even includes the tetracycline antibiotics, which are freely available in some other countries such as the USA. A veterinary surgeon must dispense these – not a pharmacist or your doctor.

Pharmacy and Merchant Lists (PML) or Pharmacy (P). These products can be legally sold by either a pharmacist, a licensed agricultural merchant or veterinary surgeon,

"Would you expect your vet to treat your dog like a dairy cow?"

but in the case of the vet the same conditions of sale apply as for POM drugs.

General Sales Lists (GSL). This group can be sold without restriction, such as wormers like piperazine that you can buy from pet shops and supermarkets.

Is the drug safe?

Then, as if life wasn't complicated enough, in the UK all drugs in the POM, P and PML categories needed to be licensed by the Veterinary Medicines Directorate. This license for use is based upon a number of criteria, one of the main ones being how safe the drug is in a given species. Hence, we find some drugs are licensed for use in dogs but not for cats. This may be because that drug is not safe for use in cats, or it may be that there is insufficient data available to prove that it is safe. To use a drug on a species for which it is not licensed (i.e. off-license) can carry a degree of risk as unexpected reactions can occur. As an example dimetridazole has been used to treat Hexamita in discus, a job that it did ably well. Unfortunately many affected fish became sterile.

To counter this situation, but also to control inappropriate drug-use in food-producing species such as cattle (where we, as end consumers – literally! – could potentially be affected) there is a recommended protocol for prescribing that all vets in the UK should follow. It is known as the Cascade system and works as follows:

The protocol

To treat a given condition in a particular species, then one should choose a medication licensed for use in that species for that condition. If one is not available then one should:

• Choose a medication licensed for use in that species for a different condition that would probably work (for example you could choose a different antibiotic). If one is not available then one should...

• Choose a medication licensed for use in a different species that would probably work. If one is not available then one can...

• Select a medication licensed for use in man that will probably work.

The above protocol is designed to balance the need for animal welfare against the risk to the consumer. It was designed originally for food-producing animals, but is adopted for prescribing for any species – including ornamental fish. Unfortunately, as far as drug companies are concerned, the market for ornamental fish products is so small that it is not financially worth it for them to do the investigative work to produce drugs for this market. Some do produce antibiotics licensed for use with food-producing fish species such as salmon and we can and do use these products on ornamental fish, but there are theoretical risks. A salmon after all is not a koi, and it most certainly is not a discus. Would you expect your vet to treat your dog like a dairy cow? ■

ANTIBIOTIC DISPENSING

In order for me, or any other vet, to legally dispense antibiotics or any other Prescription Only Medicine, I either have to:

- **See one or more affected fish myself – which may entail an examination of live fish, or may involve a postmortem, or**
- **Be sufficiently aware of what the disease status of a particular owner's establishment is, based upon prior but relatively recent knowledge.**

Do you need a filter? Part 1

If you want to keep koi, you'll have to have a filter

In part one of this filter Q&A special, **Ben Helm** asks why we need filters and what to consider before buying one

If you drive a car, the odds are you will fall into one of two categories. Those whose priorities are the looks of a car and the driving experience, and those who are interested in what's happening under the bonnet. I fall into the first category, and struggle to remember the last time I lifted the bonnet. I think garden pond filtration has many similarities.

Admirers of a beautiful pond will be captivated by the tranquillity of cascading water and shoals of colourful fish gliding through the depths. Most people will have little interest in what is going on behind the scenes to create such an impressive pond and their impressions of such a perfect and serene world would be dashed if the bonnet were to be lifted and they were shown the engine (ugly pipe work and filter units) that is used to achieve the result. That is essentially the role of a pond filter. The 'back room boy' and unsung hero of a thriving pond.

Q. An engine is critical to the performance of a car, but does every pond need a filter?

A pond filter is optional if your objective when installing a pond is to recreate a slice of nature and to attract wildlife to your garden, then by design, your pond will not require a filter. In theory a 'proper' wildlife pond shouldn't have fish at all.

Such wildlife ponds by definition are not heavily-stocked with fish and can adequately rely on dense planting to create and maintain the pond's balance. A pond filter is optional should you want to make your pond a half-way house between a stillwater wildlife pond and a heavily stocked ornamental fish pond, with a pump installed merely to add a little moving water 'on demand'.

Q. WHAT ARE THE BENEFITS OF FILTERING A POND?

The majority of new garden ponds are filtered because of the many advantages filtering offers both the pondkeeper and their fish.

A. Fish
A filter performs several complimentary roles that help maintain the pond in a suitable condition for fish. Besides obviously removing solid particulate debris from the pond (such as material from fish, food and your garden) a pond filter eventually matures to become a supportive environment for beneficial bacteria that breakdown largely soluble waste that would otherwise accumulate to toxic levels.

B. Water
Circulating water is likely to be oxygenated water, which is then redistributed throughout the entire pond. A filter also provides us with the opportunity to install an Ultraviolet clarifier (UVC) in line between a pump and the filter. The UVc is now a guaranteed method (by most manufacturers) of creating a pond with crystal clear water. A UVc causes the microscopic algal cells that cause green water to clump together, but unless there is a filter installed to remove these clumps of dead and dying algae, they will simply recirculate around the pond, making your pond look like a snow storm. So by installing a filter with a UVc (or a good selection of plants) a filter will give you a crystal clear pond.

C. Peace of mind
A filter does a lot of the leg-work that is performed by the host of organisms that help to purify the water in a naturally-stocked water body. A biofilter gives a pond far more capacity for holding fish compared to an unfiltered pond which in practical terms means you can stock your pond with more fish, without the worries you would have if you had no filter. A filter also allows you to feed your fish more intensively should you wish, with a reduced risk of polluting your pond.

D. Reduced pond maintenance
A submersible pump that is placed on the pond bottom will continually dump solid matter into the filter, keeping the pond relatively clean and sediment-free. Regular maintenance of the filter will mean that the days of cleaning out a silted-up pond will be put off for years.

The Bioforce 18000 is one of a new breed of pressurised filters which can be hidden easily. *Image with thanks to Hozelock*

Q. Will my pond need a filter?

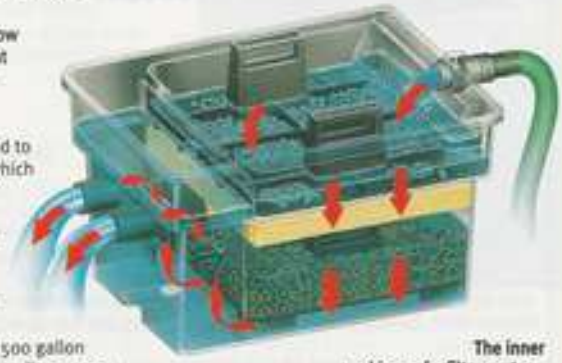
Pond fish are just like any other animal in that they excrete waste which would be toxic if allowed to accumulate in their body.

We have long recognised the link between poor sanitation and disease and have invented practical water treatment solutions to reduce the risks to human health. Fish experience exactly the same threats to a healthy life if they are also exposed to a build up of toxic waste and such risks can be reduced by installing a pond filter.

Q. What do I need to know before I can buy the right filter for my pond?

A. Size of pond
Filters are generally rated to the volume of a pond (which in turn is rated to the number of fish a pond that size could hold). As the majority of ponds are smaller than 1500 gallons, most filters are manufactured to suit ponds at approximately 500 gallon steps – those under 500 gallons, 1000 gallons and 1500 gallons.

B. The number and type of fish that are going to be stocked
The filtration needs of a garden pond that is lightly stocked with a mix of pondfish will be far smaller than if that same pond was densely stocked with ravenous and rapidly growing koi. Filters for koi ponds are more substantial in size and design, usually being divided into a series of different chambers. Whereas, a garden pond filter will be smaller (and less expensive) and generally consist of a single chamber.



The inner workings of a filter system. *Image with thanks to Laguna*

Natural vs artificial

In natural balanced water bodies, such as oceans, rivers or lakes, fish are in balance with their environment. They are so lightly socked in relation to the water volume that there is no build up of fish waste. Their natural aquatic environment is self- sustaining. This is not true in most garden ponds that are typically well stocked with fish in all varieties and sizes, well above the stocking levels that would be found naturally.

Fortunately, an effective garden pond filter can be bought, complete and ready to go, with many units fitting easily in the boot of a car. Adequate filtration cannot be achieved by the small foam pre-filter placed on the intake of a pump.

NEXT MONTH WE ANSWER:

- What filter options can I choose from?
- Will I need to buy anything else?
- What are the running costs?
- How does a filter work?
- How much maintenance is there?

Competition

WIN!

Prizes worth over £800!

Do you want a clear pond?

If the answer's "Yes", enter our competition and be in with a chance of winning a Laguna Clear Flo Clear Water Kit worth £244.97 – we have three to give away

The fabulous new Laguna Clear-Flo Clear Water Kit contains everything you need for a beautiful, clear pond and has a recommended retail price of £244.97. Included in the kit are:

- A Laguna PowerJet Free-Flo 9200 pond pump suitable for fountain or waterfall use. This new foam-free pump has a flow rate of 9,200lph and is suitable for ponds up to 4,400 litres. The pump features a unique backwash feature, allowing the pump cage to be cleaned without removing it from the water. Its low power consumption means low running costs and it boasts a host of new features. Two fountain heads are included for different effects, and the pump comes with an industry leading three-year guarantee.
- A Laguna PowerFlo External Filter for the ultimate in water filtration and clarification. This large filter sits outside your pond and has three chambers of mechanical and biological filtration to ensure your water remains clear and your fish stay healthy.
- A Laguna PowerClear UV Steriliser for 100% clear water guaranteed. The steriliser is equipped with an 8 watt UV bulb which kills algae, parasites and other harmful bacteria to leave your pond truly sparkling.

All Laguna hardware is easy to set up and maintain with the unique 'click-fit' connectors

Test kit giveaway

Three runners up will each receive a Laguna Master Test Kit each with an RRP of £24.99. It contains the four main tests required to diagnose any pond chemistry problems – pH, ammonia, nitrate/nitrite and hardness. The kits are accurate, easy to use and come with effective problem solving advice in case you find a problem with your pond water.

For more details contact Rolf C. Hagen UK Ltd, Castleford, West Yorkshire WF10 5QH
tel: 01977 556622 fax: 01977 513465 website: www.hagen.com

HOW TO ENTER

Simply complete the coupon and send to the address shown.
Entries must be received by June 30, 2004. The first entries plucked from the *Today's Fishkeeper* tank win. The editor's decision is final.

RULES

The competition is not open to employees of PS Magazines, Laguna, or their families or agents. The prize is stated above and is non-transferable. The competition is open to mainland UK only.

Laguna **COMPETITION**

Title Initial Surname

Address

Postcode

Telephone number e-mail

Send the completed coupon to *Today's Fishkeeper* Laguna Competition, 7 The Rickyard, Clifton Reynes, Olney, Buckinghamshire MK46 5LQ to arrive not later than June 30.

☐ Please tick the box if you DO NOT wish your details to be used by PS Magazines to let you know about our other products and services

Koi world

Bernice Brewster thinks we should give a bit of credit to the unsung heroes of the fish trade

Have you ever noticed that if you are involved with any organisation, or club, there are a few individuals who quietly get on with all the work that is required, whether its duties on committees or even hands on, while the rest of us are just too busy. In previous articles, I have mentioned the Ornamental Aquatic Trade Association (OATA) and in my book, the people who run this organisation are without doubt the unappreciated by the koi industry as a whole.

PHOTO: CHRISTINA GUTHRIE

The koi industry is huge – let's keep it that way

Funding for OATA is by and large achieved through the tropical fish industry, despite the large number of koi retailers, few actually subscribe to this organisation. OATA has through the years, been quietly working behind the scenes lobbying Parliament on issues which might have affected the importation of koi, notably with regard to the movement of coldwater fish from non member states of the European Union (EU). More recently, when the EU included barley straw in the Biocides Directive and therefore banning its use, OATA once again came to our rescue and as we all know, this natural product is once again available for use. For any retailers reading this article, did you know that OATA run a distance learning course on fish management?

THANKS TO OATA

In the last article in this series, I mentioned the English Carp Heritage Organisation (ECHO) and what a pity that we can't all work together in finding a solution to the Koi Herpes Virus (KHV). Just like OATA, the organisers of ECHO rely on subscriptions and donations but unlike OATA, the support that ECHO has received has been overwhelming. In fact ECHO has just handed over a cheque for £8,000 to the Centre of Excellence for Fisheries and Aquatic Science (CEFAS) Weymouth Laboratory as part of an ongoing funding for a research project into KHV. Hmm! Doesn't that put those of in the koi industry to shame? After all our industry is also directly affected by KHV. But before moving on, I would like to publicly thank Keith Davenport and his team at OATA for all their efforts on our behalf, they do a great job.

A waiting game

Recently I was working on a fishery which is predominantly populated with carp and noticed that on one of the lakes a large amount of the submergent plant life was floating in the margins. The plants had been well and truly broken but most interestingly, they were covered in fish eggs. Possibly the eggs were those of the carp in the lake but could equally have

PHOTO: WWW.CCARP.COM

A bit of warm weather is all carp need to start their frantic spawning!

also present, nonetheless it demonstrated to me that just a few warm days are enough to trigger the fish into spawning. Most

for the invertebrate life contained in the lake, I caught a tiny pike fry in the plants – waiting for the fish to start hatching. It's a

Ponderings

This is the time of year when you should be out and about enjoying your pond. **Dave Bevan** tells us what we should be keeping an eye out for...

Children must be supervised at all times when around water

How safe is your pond?

Garden ponds act like a magnet for children and, sadly, every year children are injured or drowned in garden ponds. With the light summer evenings and impending long school holidays how safe is your pond?

Probably the best way of protecting children from the pond – and the pond from children is a secure perimeter fence with a lockable gate. Covered with climbing and creeping plants it will soon blend in with the rest of the garden.

If your pond is open plan then a professionally installed polypropylene grid capable of taking a persons weight could be the answer. Installed just below the surface it provides safety without obstructing access or visibility.

Check out electrical connections and cables. Have you made permanent, the temporary connection to the new pump or filter installed in the spring? Loose trailing cables can be easily damaged or trip the unwary.

However, a small unwary child can drown in even a couple of inches of water so the only foolproof solution is supervision at all times whilst encouraging them to develop an interest in the pond and its inhabitants.

BEWARE THE BACKSWIMMER!

The backswimmer is one of the largest and most common bugs found in the pond. They spend their time floating upside down on the surface waiting for an unsuspecting insect to come into range. You should always treat these insects with care because they are capable of inflicting a very painful sting. This is because they not only have a very sharp pointed rostrum but they also inject saliva containing flesh dissolving enzymes.

Backswimmer feeding on shrimp

NINE SPINED STICKLEBACK FACTFILE

Species:	Nine spined stickleback *(Pungitius pungitius)*
Other names:	Ten spined stickleback, tiddler
Other names:	None
Size:	Up to 7cm
Weight:	Few grams
Availability:	Not usually available from aquatic outlets but may be introduced to garden ponds with water plants.
Habitat:	Lives amongst the mass of dense water plant stems and roots at the water's edge, rarely venturing into open water.
Identification:	The male is almost black in the breeding season whilst the female is a brown colour. Both have between 8-10 small spines along the back.
Habits:	The male constructs a nest amongst the water plants about 10cm from the bottom. After the female has laid the eggs he then watches over them until they hatch and then looks after the young fry.
Pondfish value:	A great little fish for the wildlife pond. They often take up residence and build their nests in the tops of planters which makes it easy to watch them as they rear the fry.


10 spined stickleback female

BEAUTIFUL BOG PLANTS

The chances are that if a pond is integrated into the garden then the transition between wet and dry will contain plants which are commonly known as bog plants. More correctly they should be called moisture loving plants because few will survive if their roots are immersed in water, particularly in the winter months.

Astilbes and hostas, often associated with boggy ground, will only grow successfully in well drained but moist soil whereas the some iris species and lobelias, although called bog plants, will thrive even in shallow water.

There is a huge choice of moisture loving plants available from the colourful candelabra primulas to the gigantic gunnera. For ground cover choose bugle or creeping jenny. Hostas will provide leaf colour and texture whilst if you need some tall plants for the back of a border then ligularia or loosestrife will provide both colour and cover.

Caddis larvae

Caddis flies are all fairly insignificant little moth-like flies but the larvae are much more interesting. They spend their life underwater, the majority feeding on plant material, but being soft-bodied need some protection against predators.

Each species makes itself a distinctive protective case, which it carries round with just the head and legs sticking out allowing it to move and eat.

It is this case which not only aids identification (all the names are long and unpronounceable) but also makes this group interesting. *Anabolia* uses pieces of pond detritus like broken twigs and plant stems which makes them almost invisible on the bottom, that is until they move and then you wonder how a piece of twig can move against the current! *Glossosomatidae* makes a case out of small unevenly sized stones whilst *Sericostomatidae* makes a smooth case from sand grains. *Glyphotaelius* rolls dead leaves into a case resembling a tiny cigar.

Like so many of the smaller water creatures caddis larvae are an important part of the food chain where their hard cases do not prevent them being eaten by larger pondfish which simply swallow them whole.


Caddis fly larva using whole leaves


Caddis fly larva using small snail shells

DISAPPEARING GOLDFISH

We returned from a week's holiday and as soon as I saw the pond I realised something was wrong. The water was murky green and the surface still. The fish had gone – all 28 of them! In the twilight I started to change the water in case they were hiding in the bottom but next morning my worst fears were realised.

There were three possible culprits, all of which have been seen in the area, mink, heron and otter. As the pond plants were not disturbed and there were no signs of footprints round the pond then it was unlikely that it was the work of an otter.

All the fish were relatively small – none larger than about 8cm in length – which makes the heron the main contender particularly as the pond, is relatively open with planting ledges which would allow the bird to wade, make a clean catch and swallow the victim. At this time of the year herons are feeding youngsters so 28 small goldfish over a week is well within its capability.

However, closer inspection of the pond edge showed the presence of fish scales in several places. They were in irregular but separate patches indicating that a fish had been eaten at the pond edge. Time to set a humane trap as the mink is now back in the frame – watch this space!

One of the main culprits if your fish disappear is the heron

BLANKET WEED CONTROL

Blanket weed is one of the main problems faced by many pond keepers each year as it covers the surface in a green slime, blocks pumps and filters and entangles plants. The cure is to ensure the pond is a balanced self perpetuating system but if we keep fish then this can be a constant struggle.

There are several ways in which blanket weed can be controlled but none of these offer a permanent solution:

- Algaecides can be added to the water which will kill the blanket weed but the dead material sinks to the bottom adding to the biomass available for the next flush when the potency of the algaecide reduces.
- Barley straw in a bag placed in the flow from a waterfall works well for some people but it needs to be added weeks before the blanket weed appears for best results.
- Improvements to barley straw methods include pellets and liquid extracts.
- The Water Wych claims to work by absorbing the nutrients from the water thus starving the blanket weed.

A Water Wych is lowered into the pond

- Units like the Blagdon electronic blanket weed controller have been proved to work well in some ponds.
- Finally a little hand weeding can help to get the problem under control. Simply pull it out and spread it on a mesh to allow the wildlife to return to the pond.

Common Darters ensuring the continuation of their species

Dragonfly egg-laying

For an insect that spends several years in the water as a nymph and only a few weeks as an adult, egg-laying is an important event. As many as eight or nine different species can colonise even the smallest of garden ponds so, not only do they hatch at different times during the summer, but they have different egg-laying techniques to exploit every part of the pond.

Southern hawkers move around the edge of the pond pressing their abdomen against the soft wet soil and moss depositing their eggs. The Golden-ringed dragonfly rests on floating vegetation and pushes her long abdomen down into the water leaving her eggs on submerged plant stalks.

Darters do it in tandem. The male, keen to ensure that the female only deposits eggs he has fertilised, holds the female by the back of the head as they hover round the edge of the pond, her abdomen leaving eggs in the mud a few inches either side of the water line.

The delicate damsel flies also work in tandem picking out a suitable plant stem they cling to it whilst the female leaves the eggs in the plant stem, usually just below the water surface.

WHO'S EATING MY WATER LILIES?

For many of us our water lilies have pride of place in the pond, not only because they produce beautiful blooms but also because they can cost a lot. So when the leaves become disfigured or even start to disappear all together then action is required. But who is the likely culprit?

If the leaves have random pieces chewed out of them then the most likely cause is the great pond snail. They can attain 5cm in length so can be fairly easily picked or netted out of the pond. Alternatively float a piece of cabbage stalk in the water which will attract them. At the same time check the undersides of the leaves for eggs which are laid as a ribbon of jelly. Removing these will reduce the damage later in the season.

If neat semi circular pieces have been cut from the lily leaf then it is the work of the brown china mark moth. Attacks are not usually serious but the plants do become disfigured. Pick out or net any pieces of leaf seen floating in the water and careful examination will usually show that there are two pieces stuck together with a tiny caterpillar hiding inside.

Finally, if the leaf is disfigured and there are tiny black larvae present, these are the larvae of the water lily beetle. Wash off into the water with a high pressure jet and if there are fish in the pond they will enjoy an unexpected snack.

Laguna's revolutionary new Powerjet pumps make beautifully simple water gardening -

even simpler

new

UNIQUE BACKWASH FEATURE!

POWERJET FREE-FLO

FOAM FREE

- **BACKWASH CLEANING** with a garden hose connection from the pond edge. 30 seconds is all it takes!
- **HIGH PERFORMANCE** for ultimate fountain and waterfall operation
- **REMOTE FILTER ADAPTOR** allows connection to a remote filter for increased filtration
- **EASY CLICK-FIT CONNECTORS**
- **LOW, LOW RUNNING COSTS**

POWERJET MAX-FLO

- **SOLIDS HANDLING** delivers solid waste direct to the filter
- **ULTRA HIGH PERFORMANCE** optimum power for filters and greater lift to waterfalls
- **ANTI LEAF RIBS** to ensure continuing suction and easy cleaning
- **EASY CLICK-FIT CONNECTORS**
- **LOW, LOW RUNNING COSTS**

HANDLES SOLIDS up to 8mm

new

Whatever your pond needs

Laguna makes it FLO

ROLF C. HAGEN (UK) LTD Castleford, West Yorkshire, WF10 5QH. Tel: 01977 556622 Fax: 01977 513465 www.hagen.com HAGEN

Success with plants

Angelfish are normally found swimming amongst tree roots and riverbank vegetation. A combination of plants, open swimming space and vertically positioned wood decor gives them the ideal artificial home

Peter Hiscock discusses the benefits of planted aquaria and says if at first you don't succeed, try again

I often feel that there are not enough aquariums out there with a good selection of healthy growing plants. The reasons for this are understandable, at first glance, aquarium plants seem difficult and complex and first attempts normally result in dead or tatty looking specimens. Initial failure usually results in the remaining plants being taken out and replaced by artificial décor. As an attempt to encourage a little more effort and research, this month I will look at the widespread benefits which plants provide to the aquarium and its inhabitants.

Low maintenance

By means of starting in an area that everyone will appreciate, I shall try to convince you that well-planted aquaria are low maintenance. Without a significant number of plants, it is vital for the long-term health of the fish to carry out a number of maintenance steps that I'm sure we are all used to. Regular water changes to keep nitrates low, siphoning gravel to remove toxic waste build-ups, removal and/or treatment of algae, use of chemical filter medias (carbon, phosphate/nitrate removers etc.) are all elements of maintenance which become far easier in a planted aquarium.

Waste removal

Plants are well known for their ability to remove wastes and toxins from the aquarium and you may be forgiven for thinking that today's modern filters will do the job equally well. Unfortunately this is not the case. Filters are designed primarily to convert ammonia compounds into less harmful nitrates; with the addition of chemical medias such as carbon they can also remove some of those nitrates along with other heavy metals or organic pollutants. Plants however, have the ability to remove ammonia directly and will continually remove heavy metals and organic pollutants without running out of storage space, or re-releasing them back into the aquarium. If you are using tapwater as your water source it is likely to contain levels of pollutants that are harmful to fish and inverts and also encourage algal blooms. In a well-planted tank, these pollutants will be removed far quicker by plants than by a good filter.

Algae control

Algae is the fishkeepers worst nightmare, at best it means regular glass cleaning and at worst it can ruin a display and kill fish by releasing toxins. Plants not only take up compounds that would otherwise be food for algae but they also release an arsenal of chemicals that inhibit and prevent algal growth. Combine a well-planted aquarium with a team of algae eating fishes and inverts and you will never have algae problems again. In one of my planted aquariums I can honestly say that I have not cleaned the glass for over five months and it still looks clear.

Top five tips for failed gardeners


Some plants, such as *Vallisneria sp.*, will grow in most substrates but large gravel like this will not benefit the overall planted tank environment


An established substrate with the help of plants will become an invisible world of microbial activity

If you are continually unsuccessful with live plants and can't get to grips with the jargon, try these basic tips for success

- Check your water conditions: although plants remove toxins, if there are too many to begin with then plants simply can't get established. Check for high levels of phosphates and nitrates then use a combination of carbon, phosphate/nitrate removers and specialised medias such as a polyfilter for a month to clean up the water conditions.
- If your substrate is too large (3mm+) then water will easily pass through, removing vital nutrients. Change to an inert substrate 1-2mm in diameter and add a bottom layer of a slow-releasing nutrient rich additive such as laterite
- Try some more hardy plants before adding other specimens. *Microsorium sp.* (Java Fern), *Hygrophila sp.*, *Vallisneria sp.*, *Cryptocoryne sp.*, *Anubias sp.*, and floating plants are all good starter plants.
- Plants need gentle water movement to obtain nutrients and dislodge waste but too much surface movement can remove important carbon dioxide. Reposition your filter outlet so that surface movement is almost removed and take out any airstones.
- Change your light tube to a full-spectrum tube or one designed specifically for plants and add a reflector. If your light tubes are more than 12 months old, the useful light they emit will be heavily reduced. Lights should be on for around 12 hours and the aquarium should be in darkness for at least six hours.

pH stabilisation

This is a debatable subject as some planted aquaria with additional carbon dioxide injection can produce fluctuations in pH. As a long-term condition though, planted aquariums are a much more stable environment. In most aquaria over time, acidic compounds are produced by the breakdown of organic matter and most noticeably by the bacteria that form part of the filtration process. If this continues without some form of counteraction, at some point the aquarium will experience a 'pH crash' resulting in fish losses and poor health. Without getting too technical, plants remove a number of acidic compounds whilst taking over a large part of the filtration, reducing the population of acid-producing filter bacteria. Through photosynthesis plants also produce 'base compounds' which help to stabilise pH on a long-term basis.

Increased biological activity

The bacteria which carry out the process of filtration in an aquarium are not the only


Small fish have a natural instinct to feel threatened when there are few hiding spots, when plants are present they are less stressed and healthier

If you have difficulty with plants, don't give up, most good retailers have a wide selection and will be able to advise you on hardy varieties

The only good excuse for not keeping live plants is when you have large open water fish such as these cichlids, which would soon wreck any plants

in fact there is far more going on in the microscopic world of the aquarium than you may realise. All kinds of bacteria, fungi, and even algae's play an important part in breaking down waste products, re-releasing nutrients and stabilising the environment. 'New tank syndrome', part of which involves the loss of fishes and the need for slow stocking in a new aquarium is not only due to an un-matured filter but also due to a low population of these micro-organisms. The vast majority of these microorganisms live on surfaces within the aquarium and plants provide the ideal surfaces. Within the substrate the roots of plants provide a huge surface area and also release oxygen and nutrients, which allow these useful microorganisms to thrive.

Substrate toxicity

The substrate in an aquarium acts as a collecting area for all the waste products produced by living organisms, including fish waste. Over time, this build up of mulm produces areas that become anaerobic (lacking oxygen) and start to release toxic chemicals. When this happens, fish are less likely to feed from the bottom of the aquarium and bottom-dwelling fish are more likely to develop bacterial diseases. The areas around the roots of plants produce oxygen and nutrients, which stop the substrate from becoming anaerobic and encourage useful organisms to continually recycle debris. The benefits of plants to aquarium substrate mean that you can allow the substrate to build up a collection of waste matter, which actually becomes useful rather than harmful to the overall environment. Put simply it means that by leaving the substrate alone and not gravel cleaning, you are actually improving the aquarium's health.

Elegant solution

To summarise the benefits of plants and to prove that they really do make life easier, just look at the evidence; stabilised pH and removal of waste products and toxins including nitrates means that water changes can be heavily reduced. A healthy and biologically active substrate does not need cleaning, a quick and occasional siphon of surface mulm will do. Algae is kept at bay without treatments or physical removal. Chemical filtration media is no longer needed. Your fish will be healthier, happier, more active and likely to breed and will have a higher resistance to disease. Sounds a bit too good to be true? well you will have to provide the conditions for plants to grow in the first place, and this can be tricky and sometimes expensive. As with most problems, there are different ways of looking at a solution. Next month I will take a look at the 'pros and cons' of high-tech (expensive) and low-tech (cheap) setups for planted aquaria, and you may be pleasantly surprised by the results. ■

FISH BEHAVIOUR

The health of fishes is directly related to the suitability of environment they are in and how well that environment matches their natural lives. For instance, most tetras are shoaling fish that are found in riverbanks and streams where there are plenty of hiding spots under roots, overhangs and vegetation. If a small tetra was kept on its own in a bare tank with no hiding spots it would not be long before the fish became stressed and weakened to the point of disease and death, regardless of water quality. A well-planted aquarium provides a huge increase in most fish's well being; many fish will never show their full colours, live their potential life-span, show natural behaviour or breed unless they are in healthy, natural surroundings.

Shy and timid fish such as these gouramies often originate from heavily planted swamps and waterways. Unless they are provided with a suitably similar aquarium environment, they will suffer many problems


with Activated Barley Straw
NISHIKOI
Goodbye
BLANKET WEED
Simply drop one water-soluble sachet into your pond every week and say goodbye to blanket weed!
The scourge of blanket weed
Blanket weed is the biggest problem for most pondkeepers – it quickly covers the pond in a green slime spoiling enjoyment of the pond and blocking filters and pumps. But now Nishikoi have developed the perfect solution that works like magic!
A miracle of nature from Nishikoi
'Goodbye Blanket Weed™' is a unique patented bio-product with friendly, harmless bacteria and enzymes which eat the food that blanket weed lives on.
With Activated Barley Straw
Barley straw has long been the solution used by pondkeepers for blanket weed. 'Goodbye Blanket Weed™' also contains Activated Barley Straw which works in conjunction with the bacteria, accelerating the clearing of the blanket weed.
Easy-to-use, no mess, no measuring
Simply drop one water-soluble sachet of 'Goodbye Blanket Weed™' into the pond or filter every week.
WORLDWIDE PATENT
UNIQUE
NISHIKOI
Goodbye
BLANKET WEED
chemicals • 8 week treatment for 1000
100% natu
no ch

The DIY indoor pond

Anthony Calfo shows us step by step how to build a large, economical display for aquatic life – in an indoor pond!

Large marine fish (like this Pinktail triggerfish) and freshwater fish can thrive and more readily reproduce in the spacious housing of an indoor pond

PHOTO: BRIAN & CINDY RICHARDS

If you participate in the aquarium hobby long enough, you begin to wonder what it would be like to have a really large aquarium. It seems only natural to want to see your 'pride and joys' swimming in hundreds or even thousands of gallons of water! Reality sets in quickly for most of us though, and the daunting expense of procuring the aquarium alone remits such dreams to the drawing board – likely never to be realised. And so, some people begin to consider alternative materials for constructing an aquarium when the notion of an indoor pond inevitably comes to mind. The aesthetic shift towards viewing the submerged life from above opens numerous doors for constructs, living and non-living, above the water level. Imagine the possibilities with an indoor pond for species variety, if not an outright approach to more complete biotope displays!

More room

Aquarists that like heavily populated fish communities or large fishes can find an outlet to continue to enjoy their growing charges with indoor pools. African cichlid enthusiasts can enjoy multi-generation and multi-species colonies of fishes in the widest array or colours, with the comfort of extra space for territories. Fans of big American cichlids like oscars, jaguars, blackbelts and uaru can keep and even breed some of these fishes at home finally with enough room. Show-sized marine fishes like puffers, triggers or some small sharks might fairly be housed at last. With a good design, non-piscine aquatics may enter the realm too like crabs, semi-aquatic turtles and other shorelife. And let us not forget the options now for horticulture (mangroves, ferns, orchids, etc.) and water features like simulated water falls, dripping pseudo-stalactites, and functioning bogs (vegetable filters). It's exciting to think that in not much more space than a large home aquarium, we can have a multitude of unique life forms on display, commonly

GENERAL PARTS LIST

*** Tools and materials to make indoor ponds up to 1,000 gallons/3,785 litres [costs are approximate and vary by region]**

MATERIALS

Three to four 4ft x 8ft x ¾in Plywood sheets... £15 each	£45-£55
[upgrade to ¾in or ½in thickness and/or marine grade if desired]	
Fifteen to 20 2in x 4in x 8ft Framing wood ('studs')... £1.50 each	up to £30
Two to four 2in x 2in x 8ft wood... to be sawed diagonally for seams £1 per	up to £5
5lb all-weather Deck Screws [nails less expensive but weaker]	£12
Enough Styrofoam or cheap carpeting to cover interior pond shell	£9-£17
[used carpet/old newspaper instead – contractor's sheet Styrofoam quoted here]	

LINER

Pond liner, roofing rubber (aged, or rinsed new), PVC sheet
* highly variable cost per region, material and size – here we have quoted a pond liner purchased at a retail local pet store. Expect to pay less than £12 per linear foot of rolled product up to 20ft wide.
£115

RECOMMENDED TOOLS

Spirit level
Drill/screw gun
Marking pencil
Centre punch (if nails are used instead of screws)
Hammer
Measuring tape
Saws (table/circular)
Coarse sandpaper/chisel
Razor/knife

OPTIONAL

Motivational music (Neil Diamond and AC/DC compilation disc... quite special)
Wine and/or beer

overlooked by most everyone outside of zoological collections.

A cheaper option

Aside from the creative freedom and space that an indoor pond gives you, there is the practical benefit that the cost per gallon to build such pools is a fraction of the cost of glass or acrylic aquaria. The best materials for building an indoor pond depend to some extent on the region you live in since shipping costs (freight) make up a significant part of the final cost of any large, bulk consumer goods.

Regardless of where you live, common building materials like milled wood and flat roof materials (rubber, sheet PVC, plastic, etc.) are likely to be available and affordable. The images used to illustrate this project depict a 1,000 gallon pond built for about £230. At a few pounds per gallon, this is only 10-20% the cost of purchasing the same vessel in glass or acrylic. The basic materials are a good, stud grade of framing lumber, plywood, some old carpeting or sheet Styrofoam for padding (thick layers of old newspaper would be fine instead), and sheet rubber (for outdoor ponds or flat roofs). Assembly will require a few sizes of deck screws, basic power tools (drill, circular saw, spirit level, measuring tape). A sharp wood chisel or coarse sand paper will come in handy for taking care of rough wood edges. Scissors or a knife will also be required for trimming the liner to size, unless you can chew like a beaver. At length, nothing employed for the construction of this pond is uncommon in a household big enough to hold an indoor pond to begin with.

Get creative

Where do we start? With imagination! It is the single most important item that you will bring to the project. Sit down in the space that you intend to place your pond and simply visualise and spend some time contemplating the possibilities of the display, both above and below the water. Some aquarists take a traditional route and keep the pond very simple in both construct and plumbing with not much more to speak of than a sound, plain walled pond upon completion. Others may wish to employ through-wall bulkheads for drains, plumbing, electricity, or submerged lights. Consideration of track lighting, power supplies, or even remote filtration (placing the serviceable hardware in another space or room behind, beside or below the pond) could also be issues worth exploring.

Find out more

I have worked for some years professionally designing and installing ponds for private aquarists. My dear friend and colleague/co-author Robert Fenner has done this work very well for decades. His free-content website www.WetWebMedia.com details some of these wonderful aspects of pond-keeping among a plethora of other topics of aquarium hobby, science and business in actively archived articles, images and FAQs. Please take the time to explore this website for ideas and inspiration, and feel free to contact us with more specific questions about polishing your dream pond. For now, however, let's focus on the simple construct with an illustrated, step-by-step tutorial. The pond depicted here is in the basement of a home and will be taking advantage of the naturally cool, stable ground temperature conducted through the concrete foundation without employing a wooden floor.

STEP 1

Lay out all necessary tools and materials within comfortable reach. You will build the pond in situ. And remember: "Measure twice, but cut only once", as the saying goes. You should pre-cut as much wood as possible in preparation for assembly.

STEP 2

A good friend and helping hand is priceless, and makes passing the time more enjoyable on the project.

STEP 3

Install all new service features (water supply lines, electrical outlets, light fixtures and switches, etc.) before the pond is built, or at least before it is filled. It is easier and safer to do such work in and around a dry pond. Note: be sure that all electrical lines are Ground Fault protected (with proper GFI switches or breakers).

STEP 4

Begin the pond form with vertical side walls. Carefully measure and mark positions for horizontal bracing. See the images below for the use of framing lumber (studs) as stabilising ribs to the pond structure. Take the time to pre-drill pilot holes and screws for securing the bracing on the outside of the pond.

STEP 5

Your first finished vertical wall will be the simple sum of a pre-cut sheet of thick plywood plus bracing studs/ribs cut with mitred ends. Be sure to use veneer plywood (marine grade when available) and not particle board (glued sawdust) or pressed wood (glued wood chips) for this project, for durability and strength. Common, construction grade plywood of 1/2-3/4in thickness will be fine for ponds less than 4ft high or 8ft long. Larger vessels may require thicker sheet and bracing wood, if not, the use of engineered bracing like a four-sided capture or some such (welded metal banding as straps or a collar).

STEP 6

With two vertical walls assembled (bracing wood screwed and glued [optional] into place), the opposite side-wall bracing can be used to tie three walls together. It is here that you will really appreciate the time spent to mitre the corners of the bracing wood.

STEP 7

Securely install all matching ribs for the first opposite wall.

STEP 8

Set and screw that (interior placed) vertical plywood panel into position.

STEP 9

You may want to strategically allow a very slight slope to one side for future drainage and water pumping. In some situations, a false floor to the pond is now built for an actual floor drain (seek such bulkhead fitted drains with seals from a pond or swimming pool supplier) or to house plumbing or filtration components. Other people may plumb features (lights, water, electricity, e.g.) through the pond to the next floor of the house below. A (ply-)wood floor fastened to the side walls lends considerable support to the structure and is encouraged.

STEP 10

Finish securing the 4th-panel ribs and plywood wall. Important – it is necessary to countersink all screws (or centre-punch nails) on interior surfaces that the liner or padding will come into contact with. A sharp woodworker's chisel will level any burrs or irregularities in the wood assembly.

STEP 11

After completely assembling the vertical walls and floor, consider filling the corners with ripped blocking lumber to make contact of the tucked liner with interior seem less severe. The concern in any pond (our pond's unfinished corners here) is that any hollow gap behind a liner could be a puncture risk if concentrated pressure ever befell that spot (falling rocks, walking on or near the bottom seams, air pockets, etc.).

STEP 12

Nearly finished, you should pad all interior surfaces that your liner will contact. Find something inexpensive or recycled for the purpose - old carpeting works well as does newspaper. Insulating Styrofoam sheet is affordable too (pictured here in pink colour). Note: do not secure padding with screws, tacks, nails or other like fastener as they may puncture the liner. Simply cut and set padding in tightly or glue lightly (contractor's caulk).

STEP 13

When the pond is framed and padded, you are ready to size up the liner. Lay it out on a clean, flat surface. The garage floor or driveway may be safe for this purpose. Avoid walking on the liner at this time – a stone or other hard foreign object could puncture it. The dimensions of the cut liner will be the total continuous length of a side = 2 x height, plus length, plus 2 x width of cap plus a bit extra for folding and pleating. For example, if a pond is going to be 6ft square by 3ft deep with a .5ft wide ledge, then the liner must be cut at least 13ft x 13ft. Please cut the liner slightly larger (10-20% minimum) to allow for comfortable folding and pleating in the corners.

STEP 14

Drop the liner loosely into the frame, but do not tack, nail or tie down any part of it until you fill the pond as it could tear away and damage the liner. When it's filling make certain that the liner lays flat and unwrinkled on the bottom, while gently pulling and tugging the upright sides to make tidy, folded pleats in the corners. Do not allow any air pockets to form underneath bunched or wrinkled liner... especially on the bottom – these are vulnerable to tear or puncture. Fill the pond to its highest point. When the liner is laying flat all the way around with clean pleats and folds, then trim excess liner away. Be sure to cap the top edge to protect the liner from wear and tear. Stonework is a natural and handsome finish for your pond's edge. Most aquarists prefer to apply a cap that hangs over the edge enough so that the liner is not apparent when the pond is full.

STEP 15

Finally: the finished pond is now your blank canvas to adorn and personalise. The exposed bracing lumber and panels might be painted. Some people prefer to face the pond with a veneer (wood or concrete composite) for decorative ceramic tile. Perhaps you can integrate a theme for your pond into the facade, like nautical artifacts (fish net, curios, sailing instruments), or natural rock of the simulated biotope (calcareous tufa, fossilised coral, volcanic lava, etc.). Use your imagination.

Wonderful worms part 3

ALL PICS BY SEQUATIC PHOTO: ALF NILSEN

In the final part of his series, **Alf Nilsen** takes a look at worms that are more commonly found in aquariums

The Eunice tubes are often colonised with Zoanthid anemones

In this final part of my series on worms I would like to start with a worm that has probably never been imported to the trade or kept in captivity, but is still commonly seen in aquarium shops! Now, how can that be? In the early days of the marine aquarist hobby in Norway, back in the late seventies, some parchment-like tubes densely covered with what was then commonly called 'polyps' frequently occurred in the trade. The tubes were said to be sponges and we observed that the 'polyps' that covered the tubes were very difficult to keep alive, even for a few weeks. Julian Sprung once told me that he believed the tubes did not come from a sponge at all, but from a worm – and he was right! The tubes are the burrows of a eunicid Polychaet from the genus Eunice, probably *Eunice tubifex* which is known from shallow waters. The tubes are often colonised with Zoanthid anemones (order Zoanthidea) belonging to the genus Acrozoanthus and this is the answer to the 'polyps' and 'sponges' seen 20 years ago in the Norwegian trade.

At least two species of Eunice build tubes like this, *E. tubifex* and *E. metatropos*. In *Eunivce tubifex* the tough tube is made from polysaccharides. The polysaccharides are secreted by the worm and harden when coming into contact with seawater. The tubes, which have several openings in a serrated pattern, lead down into a hollow space within a rock or piece of coral. About 10-15cm down into the rock or coral there is an oval cavity where the worm spends most of its life. When feeding, the worm extends the anterior part out of the tube and search the substrate surrounding their tube for food and in this way this species combines and errant mode of life with a life in seclusion. *E. tubifex* reaches a length of up to 1.5m, but the average length is 'only' 0.8-1m.

Eunice metatropos lives in deeper water than *E. tubifex*. The species was described by Hanley (1986), who has a lot of interesting information on these interesting Polychaets and their way of life. Now, can you imagine how magnificent an aquarium housing tubes of *E. tubifex* complete with worms would be?

Bispira guinensis is among the most durable of the larger tubeworms

Good aquarium worm

One tubeworm that really thrives in the reef aquarium is *Bispira viola*, originally from the coasts of Croatia, but also found elsewhere in the Mediterranean and the Solomon islands. The tubes are thin, measuring only 2-3mm in diameter, but can grow very long in aquaria. I have seen tubes that were more than 20cm long, but usually they settle around 5cm in captivity. The tentacular crown is pale whitish to pinkish measuring about 1cm in diameter.

What is astonishing with this worm is its capability to reproduce asexually by budding. A couple of individuals can build a population of hundreds of genetically identical individuals in a few months. Usually the worms prefer shaded or semi-shaded areas where the current is steady, such as in the sump. The filter chamber or sump is actually a place where a number of interesting worms and other invertebrates develop and thrive. Do avoid Butterfly fishes if you want to keep a population of *Bispira viola* intact. *Bispira viola* is really 'unknown' in the sense that few samples have been collected from nature. Observations indicate a distribution both in temperate and tropical waters, but there are differences in size between tropical and temperate populations... in other words, we need more information on this species!

Live rock introduction

Another tubeworm that resembles *Bispira viola* as it reproduces asexually by scissiparity is *Brachiomma cf. cortum*. An

posterior part of the abdomen, found deep inside the tube. The parent worm regenerates a new posterior, whilst the clone shed piece gradually develops a thorax and branchial crown. It has become clear that this worm, originally introduced to the aquarium on live rocks imported from the Red Sea, is indeed a new species at the moment being scientifically described on the basis of material collected in the author's aquarium.

Another species in Bispira, the bigger *Bispira guinensis*, is frequently imported to the trade and is among the most durable of the larger tubeworms. It should now be mentioned that the larger tubeworms in general must be regarded as rather difficult animals to keep alive for a long period of time as they tend to suffer from lack of food. Many of the reef aquaria of today are so well skimmed and so little food particles are added, that filter feeding animals just cannot collect enough food. In tanks slightly more "polluted" than the cleanest coral tanks, filter feeders do much better. *Bispira guinensis* has a tube that is normally between 5-10cm long. The worm itself is shorter, usually around 3cm, while the crown is 1-1.5cm high.

B. guinensis is one of the few species in the genus with a bispiral crown. The crown is beautifully coloured in red and white. In my aquarium a group of 10 individuals settled nicely on the sandy substratum where they dug themselves in with only the crown and upper part of the tube projecting above the bottom. Later, I found that they actually prolonged their tubes horizontally below the bottom, often extending the tube under or against a nearby rock. It is necessary to feed this worm. If the crowns are diminishing and the worm seldom exposes itself, there is probably too little food available. Mashed food from mussels or shrimps is fine, but commercial available food mixtures are also useful.

Brachiomma cf. cortum was originally introduced on live rock imported from the Red Sea

Common worms

Very common, and found in most reef aquaria, are populations of *Vermiliopsis sp.* These small worms, which actually belong to a species complex not yet sorted out, are sub- and circumtropically distributed. The tubes are usually coiled and have funnel-shaped outer cross ribs. The worms reproduce sexually which can lead to the formation of large populations in the aquarium. The species settle on shady spots such as under rocks or in the filter chamber and is really hardy and long-lived in captivity.

Most of you are familiar with the colourful Christmas Tree Worms associated with corals, often from the genus Porites. The worms belong to the genus Spirobranchus. The planktonic larva settle on a coral, usually where the coral tissue is weakened or dead, and builds a small calcareous tube on the coral. The coral tissue grows around the tube, which gradually becomes embedded in the coral skeleton with only the colourful tentacle crown projecting above the surface of the coral.

Free-living monsters

My previous aquarium had a small run-off tank next to it. The volume was only about 60 litres, the water flow was steady and there was about 2in of coral substrate. I usually put small rocks in this tank and as the water flow was steady, food remains and suspended food was plentiful. The tank was divided in three chambers, where bigger particles fell to the bottom in the first one. It was here, on the coral-gravel bottom that I one day discovered a number of transparent, 3-4cm long swinging palps. Another interesting worm!

This time a tube dweller, not from the family Sabellidae, but from Chaetopteridae – a family containing a number of species with highly specialised worms. They build curved or U-shaped parchment-like tubes with two openings. The thorax section of the body is modified in order to create a flow of water through the tube. Some species in the genus Chaetopterus are rather big and build their tubes in muddy or sandy substrata. The species found in my run-off chamber was a member of the genus Phyllochaetopterus (see photo above). The worm is not big, only about 3cm long and a couple of millimetres wide, and is easily overlooked as the tubes are covered with sand fragments and partly buried. The only visible parts of the worm are the two transparent palps. These are, in addition to a mucous net, used for collecting detritus and food particles. If, however, the tubes are built next to the glass, you get an impressive and interesting view on the worm inside the tube. This happened in my tank, and I got the chance to study how the worm moved and even turned around inside its tube.

If the tubes are built next to the glass, you get an impressive view of the worm

Terebelid worms

On live rocks small worms from the family Terebellidae are most common. Many terebelid worms live in tubes anchored in holes in the rocks and the worm body itself is not easily seen. The many thin, transparent tentacles project out of the hole and spread on the surface searching for food particles. The most impressive and a very common species found on the reef, *Reterebella queenslandica*, is probably the best known species in the family. Unfortunately, this worm has not yet (?) been imported for the aquarist hobby.

So... the reef aquarium is full of worms! For those of you that want to use the modern reef aquarium as a tool to study the fauna of the coral reefs, worms are a most interesting group of animals to start with. They are not as colourful as the fishes and corals, but from a biological point of view they are just as interesting – and indeed beautiful! ■

A tube dwelling worm which covers itself in debris

HAVE YOU SEEN THESE WORMS?

Worms from the genus Microprotula which we need more information on

One of the most interesting events I have ever experienced in connection with the reef aquarium hobby, was when I spotted a population of tiny, delicate calcareous tube worms in a pet shop in Siegburg, Germany last Autumn. The tubes were long (around 5cm) but not more than half a millimetre thick and an operculum is lacking. The small crowns were almost transparent with tiny bright red patches. The species belongs to the genus *Microprotula* and the species is possibly *Microprotula ovicellata*.

Anyway, the genus has (according to Uchida, 1978), so far never been observed in the nature, but is only known from aquaria. The tubes are very fragile and break by the slightest touch. It is then probable that populations found in the nature will have short tubes and/or live in microhabitats protected from heavy wave action and predators. In aquaria, where predators are lacking and the conditions are quiet, the tubes can develop their long size and we can study this little-known genus of worms in detail.

More information is needed on Microprotula. Please contact me by e-mail, post or fax if you have seen or have experienced this worm in aquaria or if you have observed it in the wild.

Write to: Alf J. Nilsen, N-4432 Hidrasund, Norway Fax: +47 383 72351 or Email: ajnilsen@online.no

Plumed basilisk – looking like something left over from the dinosaur age. Captive-bred specimens of these lizards accept vivarium life better than wild-caught ones

Reptiles for beginners

Commonly available and not usually too expensive, iguanas can be a great first-time buy if you want to keep herptiles, says **Val Davis**

A number of species belonging to the family Iguanidae are often available in reptile outlets which, with a little knowledge, are relatively easy to keep. Members of the family tend to possess a scaly body, four well-developed limbs, moveable eyelids and a longish tail. In some species males may possess crests, helmets or gular flaps all of which play a major role in courtship and territorial disputes with rivals. The family comprises about 690 species in 48 genera and probably the most well known is the arboreal green iguana (*Iguana iguana*). However, this is not a species we would recommend for beginners. Although appealing as babies their ultimate size (1.8m/6ft), housing and complex vegetarian diet makes them a species which should only be kept by more experienced herpetologists. This month we look at several other arboreal iguanids which are relatively easy to keep.

Plumed basilisk *(Basiliscus plumifrons)*

Plumed basilisks are probably best known for their ability to assume a bi-pedal position and run on water due to enlarged flaps running along each side of the toes. This bi-pedal locomotion is not seen in a vivarium. We have witnessed this on several occasions when the male escaped during cage cleaning and ran around the room. Crests on the head, along the dorsum and tail and a gular flap make this 60cm (24in) lizard an impressive creature. Both wild-caught and captive-bred specimens are often available and, although more expensive, the latter should be sought since wild caught individuals rarely tame down.

A large vivarium 120 x 60 x 120cm (48 x 24 x 48in) minimum will house a pair. A pool should be supplied with this species and this will help to maintain humidity. Water in the pool should be kept clean, basilisks will defecate in it. Sexing adult specimens is easy, males only sporting the crests. With constant temperatures and humidity mating may occur at any time of the year. A tear in the skin on the nape of the female's neck or back of the head will indicate that this has taken place.

Today's Fishkeeper

Make sure of your copy every month

Subscribe today and save 25%

As a subscriber you will receive 12 copies a year for just £29.25 delivered direct to your door

To subscribe: Quote ref. 1008 **tel:** 01234 714404 Lines open • Monday – Friday 9.00am – 5pm **fax:** 01234 714833 or fill in the form below

To subscribe simply complete the form below and send it to: *Today's Fishkeeper*, 3 The Rickyard, Clifton Reynes, Olney, Buckinghamshire MK46 5LQ

SUBSCRIPTION ORDER FORM

Title _____ First name _____ Surname _____

Address _____

_____ Postcode _____

Telephone number _____ e-mail _____

I would like to subscribe to *Today's Fishkeeper* for 12 issues at the price of £29.25 (UK) ☐ £39.00 (EC) ☐ £61.00 (Rest of World) ☐

I enclose a cheque for £ _____ made payable to Today's Fishkeeper.

Please charge my debit/credit card £ _____ Master Card ☐ Visa ☐ Switch ☐ Delta ☐

Card No. ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐

Valid from ☐☐/☐☐ Expiry date ☐☐/☐☐ Issue No. ☐

Signature _____ Date _____

Ref: 1006

Please tick the box if you DO NOT wish your details to be used by PS magazines Ltd to let you know about our other products and services ☐

Please tick the box if you DO NOT wish to receive information about products and services from other carefully selected companies ☐

YOU CAN PLACE AN ORDER WITH YOUR LOCAL NEWSAGENT USING THE FORM BELOW

TODAY'S FISHKEEPER, NEXT ISSUE ON SALE JULY 1ST, PRICE £3.25

If you have any difficulty, please call 01234 714644

Never miss a copy of TODAY'S FISHKEEPER, order today!

To be sure of future copies of your favourite magazine, fill in your details and hand this to your newsagent

☐ Please reserve/deliver* a copy of TODAY'S FISHKEEPER on a regular basis starting with the _____ issue

*Delete as appropriate

Title _____ First name _____ Surname _____

Address _____

_____

Postcode _____ Daytime telephone number _____


Millers thumb, Bullhead (*Cottus gobio*)

There may not be a huge variety of fish in British rivers and lakes but that doesn't mean what we have isn't interesting. **Kathy Jinkings** profiles the Bullhead

Often it seems that everywhere else in the world has interesting fish just waiting to be picked out of rivers and lakes, while here in Britain there are minnows, sticklebacks and large brown fish! Sticklebacks are aggressive and territorial, but minnows make a good companion fish to the Miller's Thumb, one of our most interesting fishes that makes a good aquarium fish. The Miller's thumb is especially common in clean, fast-flowing rivers in England and Wales, with only two known locations in Scotland (the Forth and Clyde catchments, where it is thought to have been introduced). Although doing well in Britain, it is becoming quite rare over much of its European range.

Habitat

Like the minnows, the most important aspect of keeping this fish is maintaining cool, clean, well-aerated water. It naturally prefers a stony substrate and fast-flowing fresh water, but can occasionally be found in a variety of other places including brackish estuaries. In the aquarium it will thrive best in fresh water with a pH of between 7-7.5. Overheating rapidly reduces oxygen content, which these fish will not tolerate. Provided you maintain a good flow of clean water, however, the Miller's thumb will reward you with fascinating behaviour.

It is essential to obtain fish that are roughly the same size, as they are territorial and quite aggressive, and a small individual will be bullied. They are bottom-dwellers, so are unlikely to bother fish swimming in higher water levels. They have been reputed to snack on eggs and fry of other fishes, but this is uncommon. Lots of fine-grained gravel and rocks provides an ideal substrate where the fish can blend in and feel secure, as well as providing caves and overhangs where the fish can raise a family. The female will deposit about 1,000 pinkish yellow eggs on the underside of an overhang that has been cleaned, or occasionally on plants, and the male will guard them there until they hatch, fanning them with oxygenated water. After between 30-40 days the fry will emerge, and will feed enthusiastically on brine shrimp nauplii.

Night owls

These are most active at night and twilight, but should be visible out and about if you leave the tank lights off and view them by the room lights. Their behaviour is of more interest than their appearance – although quite attractive in an understated way, being patterned in brown and cream. The male is more intensely coloured. They are protected from predation by larger fishes by the spiny pectoral and dorsal fins, and the spines which project from the large head and curve backwards. Like many spiky fishes, care should be taken when netting them.

The Miller's thumb is an interesting aquarium inhabitant which does not deserve to be overlooked simply because it is native to our own waters.

PROFILE

Name:
Millers thumb, Bullhead

Scientific name:
Cottus gobio

Size:
15cm

Aquarium type:
Community of medium sized cold water fishes or species tank

Distribution:
Europe

Diet: Live foods (or frozen), raw meat, occasionally flake

Temperature:
10-16C

CLASSIFIED

BEDFORDSHIRE

CHILTERN AQUATICS

CHESHIRE

Noah's World

Looking for service and a great atmosphere? Call in at Noah's, the reason's are clear
There's fish tanks from stock or specialty built
And all types of fish, we've filled to the bill
Ample free parking and a pet section too
All up at Noah's – we're a dream come true

10% discount with this advertisement

Parker's Garden Centre,
Lees Lane, Newton,
Mottram St Andrew,
Macclesfield SK10 4 LJ
Tel: 01625 549569

Cheshire Waterlife

Koi, tropicals, marine and invertebrates
Tel: 01606 882223
Largest marine stockists in the North West

DERBYSHIRE

DERWENT KOI & TROPICALS

Large selection of discus, tropical and coldwater fish, koi, pond fish and pond plants....in fact everything for the garden pond

Juwel authorised stockist
HIGH PEAK GARDEN CENTRE,
BAMFORD, NR SHEFFIELD S33 0AL
01433 650029

GLOUCESTERSHIRE

The Aquatic Habitat
Shurdington Rd Brockworth
Gloucester
GL3 4PU
(01452) 862791
"Everybody really should add this shop to the list of places to visit"
Derek Lamport
Open 7 days a week

LANGDONS AQUARIA

Everything for your Aquarium and Pond

TROPICAL AND COLDWATER FISH, REPTILES AND AMPHIBIANS

HAMPSHIRE

Arundel Aviaries & Fisheries (Taylors) Ltd

220 aquariums of tropical, marine and coldwater fish
Est. over 75 years
313/315 Arundel Street
Portsmouth PO1 1NJ
Telephone: 02392 820047
Mon-Sat: 9am-5.30pm
Wed 9am-1pm

DERBYSHIRE

Specialists in Pond Equipment & Water Gardening Tropical & Marine Centre

BLUE LAGOON AQUATICS

"Aquatic Superstore All Under One Roof"

Huge Range of Tropical, Marine & Coldwater Fish

Massive Discounts on all Products

Cardinal Hall Garden Centre, Alfreton Road, Nr. Normanton, Derby.
(2 Miles off J28/M1)

www.bluelagoon.net

(01773) 830733

Open 7 days - 9.30am 'till 5.30pm

LANCASHIRE

B·A·S

One of the Worlds Largest Aquatic & Pet Centres

HUGE SELECTION OF TROPICAL, COLDWATER & MARINES

Always new & unusual fish in stock

Akes, Water Garden products, Angling Centre, Pets & Pet Care, Gift Shop, Refreshments Available & Free Parking

BRITAINS AQUATIC SUPERSTORE LTD
225 FOLDS ROAD, BOLTON, BL1 2TW

Open 7 days

LINCOLNSHIRE

Birleys

Opening Times: 10-4 Tues-Sat, 11-5 Sun, Closed Mondays

Hundreds of Aquariums and Ponds stocked with fish from around the world.

DIRECTIONS: Junction 2 off M1(M)
• Follow A601 to Oakenshaw
• At roundabout turn right to Sandbeck
• Birleys is approx 1 mile on the left.

LINCOLNSHIRE

RIVERSDALE FISHFARM

on the B1191 near Spilsby

TROPICALS, MARINES AND COLDWATER FISH AT DISCOUNT PRICES

Established for 30 years

Riversdale is set on a 4.5 acre site

Open 10am-7pm, Closed Tuesday

TEL: SPILSBY 01790 752410
FAX: 01790 754996
www.riversdalefish.co.uk

LONDON

'The Fish Bowl Ltd'

133-135 Dawes Road, Fulham, SW6 7EA

THE AQUATIC DESIGN CENTRE LTD

MANCHESTER

Meadow View Fish Farm

OUR NEW TROPICAL CENTRE
IS NOW OPEN TO THE PUBLIC

We have more than 400 glass show tanks full of tropical fresh water fish and fancy goldfish. Why not come and see our famous Koi Centre with 27 brick-built show ponds containing thousands of home-bred quality koi.

What a day out for fish and dry goods at competitive prices

Please phone for livestock details on 0161 371 0232
0161 371 0203 for dry goods

Lumb Lane, Littlemoss, Droylsden, Manchester M43 7LN

All trade customers also welcome

NOTTINGHAMSHIRE

Creating Waters Aquatics

TROPICAL FISH
MARINE FISH
COLD WATER FISH
POND FISH
STARTER KITS
TANKS
PUMPS
FILTERS
FOOD
PLANTS
ACCESSORIES

Tel: 01636 684484

CLUB

Interested in Livebearers? Join...

Viviparous

Send SAE for details to
A.J.Rothwell, 94 Ensworth Rd,
Blurton, Stoke, ST3 3EA

www.viviparous.org.uk

CLASSIFIED • • • CLASSIFIED • • • CLASSIFIED • • • CLASSIFIED • • • CLASSIFIED • • • CLASSIFIED • • • CLASSIFIED

DISCUS

Premium Quality Discus at

JUST DISCUS

Current stock includes...

• Snow White • Leopard Snakeskins • Red Melons • Red Moonlight • Rio
• Red Cover • Browns • Blue Diamonds • Yellow Dust • etc etc.....

Expert advice, Own Discus food, Rare Products, Huey Hung Filters
Just Discus has a fine selection of Discus at excellent prices

51 Spring Road, Kempston, Beds MK42 8LS — Nr Junction 13 M1
Open 7 days a week 2-8pm — Tel & Fax 01234 351186

www.Just Discus.co.uk

We only sell quality DISCUS!

QUALITY EUROPEAN DISCUS

By Tony Sault

8 Clifton Gardens, Brierley, Barnsley, South Yorkshire, S72 9JZ

TEL: 01226 713506 FAX: 01226 781976 EMAIL: t.sault@lycos.co.uk

Stocks include - 60 Tanks of Discus from Europe's Top Breeders - Selected Personally

- MAGNIFICENT - Solid Fire Reds and Original Marlboro Reds
- SUPERB - Solid Steel Blues
- STUNNING - Snakeskin Reds
- PLUS - Brilliant Turquoise, FI Alenquer Reds, Red Turquoise, Solid Greens
- PLUS - Dry goods
- GENUINE - C.B.R and Metalex Water Purifiers and R.O Units at lowest ever prices

Retail Only Mon-Sat 10am-6pm Sun closed

Call And see Q.E.D. The Proof!!!

PLYMOUTH DISCUS

HOME OF THE GOURMET DISCUS DIET HAMPER

DISCUS DELIGHTS

Seven different safe foods for every day of the week.
Wild and tank-bred discus – R.O. units and water purifiers from £75. All equipment and dry goods below RRP
NATIONWIDE DELIVERY SERVICE AVAILABLE
Website: www.plymouthdiscus.com
Mon – Fri 10 am – 8 pm. Sat - Sun 10 am - 6 pm
Tel: 01752 784671 / 07976 200454

MARINE

CLEARWATER AQUATICS

Full range of DELTEC and AQUA MEDIC equipment & tanks including Turboflotor AP600, APF-600 plus CASCO, EHEIM and JUWEL products

OPENING TIMES:

Discus
Beautiful selection 2" to breed
50 dedicated tanks
Huey Hung sponge filters and medication now in stock
Quality Discus
Quality Tropicals
Quality Marine

Marines
best hard corals • Best soft corals • Best prices • best advice come and see for yourself in our EXTENDED MARINE SECTION

RETAILER OF THE YEAR 2001

WEB DIRECTORY

www.aqualifeuk.com

DISCOUNT
REVERSE OSMOSIS
100 GPD from £110
35 GPD from £55
WWW.RO-MAN.COM

---

www.UrmstonAquatics.com

---

www.wharfaquatics.co.uk
Pond & Coldwater and Reptile sections NOW OPEN
Marine Fish coming soon

WHARF AQUATICS

TUNZE AQUARIENTECHNIK

The new catalogue with prices - dealer shop technical help - spare

www.tunze.com

---

www.bluelagoon.net

BLUE LAGOON AQUATICS

Flying Fish Aquatic Centre

www.tryteflyingfish.co.uk

194 Loose Road, Maidstone, Kent M15 7UF

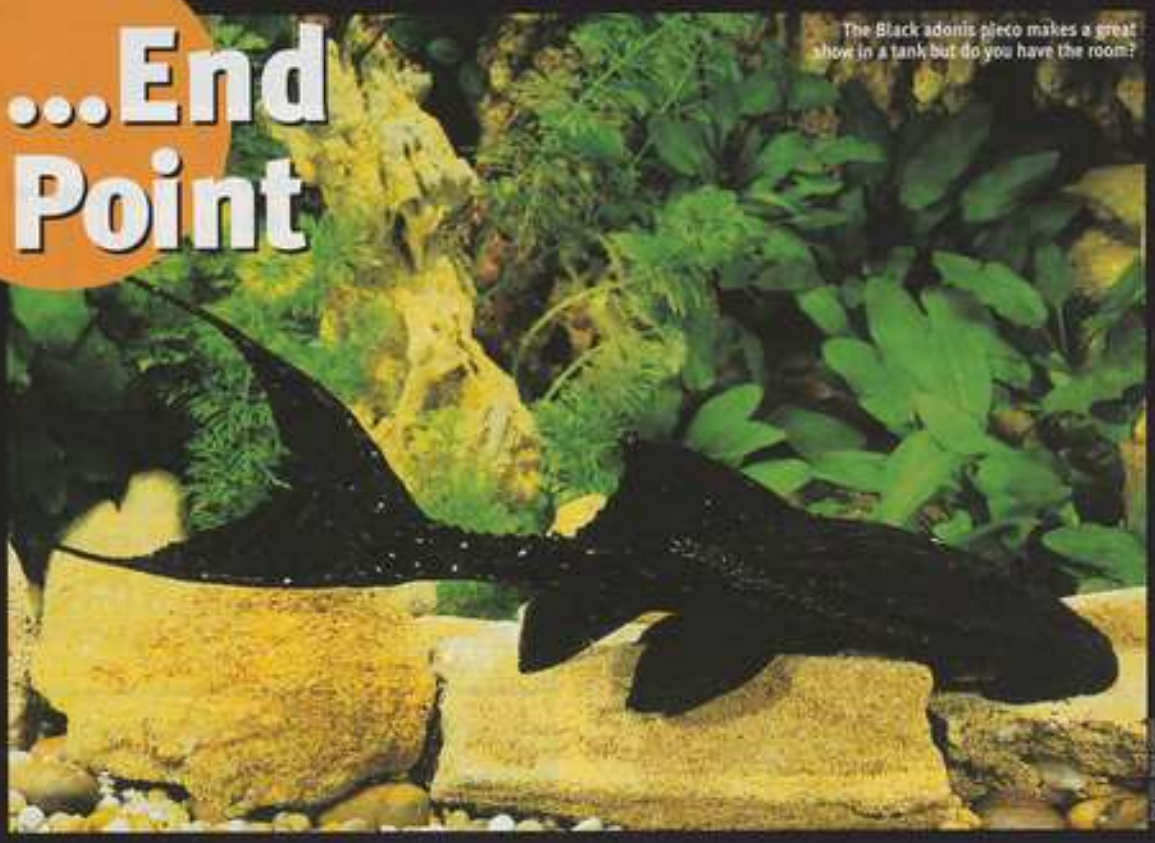
Tel: 01622 757583

biOrb. The Aquarium For Every Location

* Strong, safe acrylic * 30 litre capacity
* Unique 5 stage filtration * Choice of striking colours
* Made in the UK * Nationwide network of stockists

REEF ONE www.reef-one.com

...End Point



The Black adonis pleco makes a great show in a tank but do you have the room?

The Black adonis pleco is a stunning fish, but not one to be taken lightly says **Kathy Jinkings**

Acanthicus hystrix is not a fish to be bought on a whim. It is usually expensive to start off with, and is going to need a very large aquarium as it matures. Aquarium specimens usually reach about 60cm, but wild specimens have been caught over 90cm long. This said, it is one of the most beautiful of all the loricariids. This is not a colourful fish, being a deep black in colour. Its beauty comes from the textured scales of the fish, which make it appear as a kind of living sculpture. They also have a large number of spiky 'whiskers' around the upper lip, and long extensions to the lobes of the tail.

There are also brown forms, and an attractive juvenile with white spots was described under the name Acanthicus adonis. However, the spots of this species fade with age, whereas the textured deep black of *A. hystrix* is a lasting effect. Although these fish are generally peaceful, and require a diet with a high vegetable content. Rogue fish do occur – I had one that used to pin other fish against the glass – it was finally caught in the act after a number of surreptitious murders. They are best kept as single specimens, as they are territorial with one another.

Bogwood is not just an optional decorative accessory with these fish – they rasp away at it as a necessary supplement to their diet, so it will require replacing periodically. Plants will make the aquarium attractive and make the fish feel secure – apart from the action of a large fish moving around, they will not damage your careful plantings.

Breeding

Because of their huge size, they are not really a practical proposition for an aquarium breeding project, although captive breeding has now been achieved. This was done with a group of hystrix up to 90cm long (so you could always try flooding your house...).

If you have the room for a giant, spectacular, fish, *Acanthicus hystrix* is a good choice as it's easy to keep and well worth looking at. However, for most of us its size means that it is best looked at in a public aquarium, as the market in giant reject loricariids is generally overloaded, as can be seen at nearly every reputable aquarium store (the less reputable ones just don't take them back).

PROFILE

Name:
Black adonis pleco; Lyre-tail pleco

Scientific name:
Acanthicus hystrix

Size:
up to 1m (usually less)

Aquarium type:
Community of large sedentary fish or species tank

Distribution:
South America – Brazil, Peru and Guyana

Diet:
Tablet foods with plenty of supplementary vegetable matter

Temperature:
22-27°C

You can now

Feed your fish *and not your* algae

Guaranteed to absorb more phosphate than any other phosphate remover worldwide!

The professional way to control nuisance Algae in Freshwater & Marine Aquariums, Ponds & Lakes.

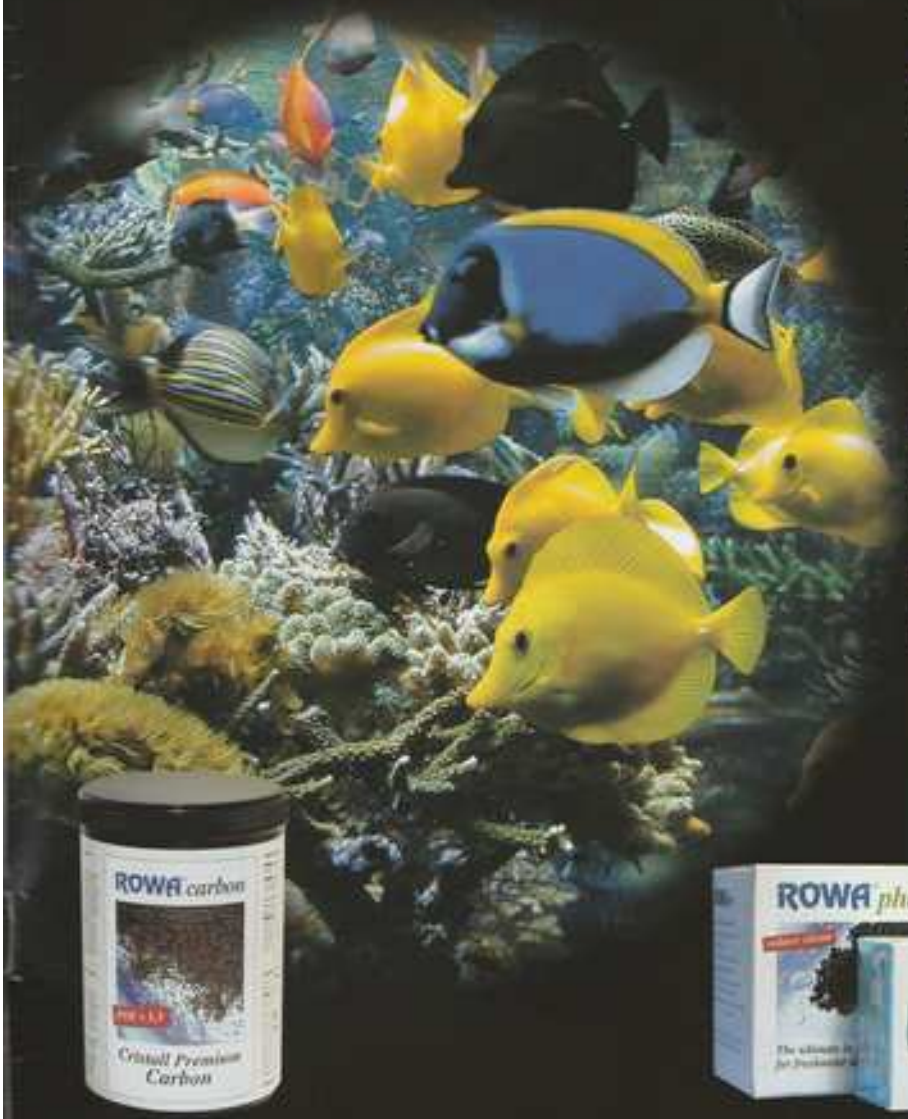
Suitable for:
Tropical, freshwater and marine aquariums, ponds and lakes.

Absorbs phosphate and silicate without releasing back any of the absorbed materials.

Used on Lake Plötzensee in Berlin to eradicate algae effectively.

It can be left indefinitely in saltwater and freshwater aquariums – with no ill effects – and changed when exhausted.

Can be used in new water prior to addition to aquarium as it removes phosphates nearly instantly.



ROWA Carbon – the essential material for absorbing toxins in your aquarium.

D-Deltec® aquarium solutions

www.d-daquariumsolutions.com **Telephone: +44 (0)20 8501 2492**