

Today's Fishkeeper

SEPTEMBER 2004

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IN HOME WATERS

P-P-P-PICK
UP A PENGUIN

Create a community with Penguin tetras



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SEPTEMBER

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KEY TO SYMBOLS:

Keep an eye out for these handy symbols to help you with your fishkeeping.

	COMMUNITY		MID-WATER
	NON-COMMUNITY		BOTTOM
	CARNIVORE		TEMP.
	OMNIVORE		SIZE
	HERBIVORE		NOT SUITABLE FOR KEEPING IN CAPTIVITY
	SURFACE		

Starting Point...



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

PHOTO: www.chokona.org.uk



Although called 'Giant danio', *Danio aequipinnatus* isn't the largest danio

It is daunting when you are starting out to be bombarded with scientific names like *Parachanna innesi* and *Pterophyllum scalare*. These are easy to deal with, everyone knows the Neon tetra and the Angel fish. They are easily recognised in aquatic outlets so there's no need to worry about the scientific names for these particular species, also the common names for these species are used world-wide which is not always the case with common names.

A problem with common names is that they are all too common in many cases as several species will have the same common name. This problem came up with an email from a reader when he said he had a Red-finned shark. Was it the Red-tailed black shark – *Epalzeorhynchus bicolor*, or the Red-fin shark *Epalzeorhynchus frenatus* or the Red finned shark *Leptobarbus hoeveni*?

Choose a book which has a good index listing common and scientific names to guide you through

As the *L. hoeveni* grows to 50cm and the *E. frenatus* only reaches 15cm there is a vast difference in their required accommodation.

Often a species has several common names according to which publication, country or area of a country you happen to be in, so common names can be confusing although the intention is to simplify things.

If you are looking for species a little out of the ordinary you need to know the scientific name and a good ID book will help you a lot. The book will give the common name, the scientific name and the size to which a mature specimen will grow. There will also be a photograph although many juvenile specimens do not display full mature coloration or finnage.

A couple of danios

Danios of all sizes are great community fish. They are not fussy feeders accepting all foods, flake pellets, frozen and live. They are very active swimmers in the

mid-water regions and make a lively addition to a beginner's tank. They are not at all aggressive but require plenty of open swimming room. Zebra danios are probably the most well known of all the danios and are suitable occupants for a 60 x 30 x 30cm tank, however, this month I'd like us to consider a couple of danios that are better suited to a larger tank of peaceful community fishes.

You would expect the Giant danio to be the largest of the danios but at a full grown size of 50cm it is much smaller than others that reach 15cm.

This species is deeper bodied than the Zebra danio forward from the caudal peduncle. The underlying colour is blue and horizontal stripes along the body shine out indigo blue in reflected light. Golden horizontal and vertical stripes which are broken into blotches transverse the body. Fins are reddish except for the colourless pectorals. The females are deeper bodied and less brightly coloured. There are many colour varieties of this species. There's never a dull moment with this fish and it

can be very difficult to catch, sometimes jumping clean out of the water when you try to net it. Its upturned mouth indicates its favourite feeding position mid to upper water levels.

The Bengal danio is less widely kept than the Giant danio and it really is a contrast in family types. Its full adult size is 15cm but rarely exceeds 10cm in home aquaria, although it is sexually mature at 7cm. More gentle in nature and more delicately coloured than the Giant danio.

Predominantly aquamarine and silver with markings of blue and yellow, it does not show its coloration in unplanted dealers tanks so it may not stand out when seen there. More timid than most danios it needs the protection of the shoal and plants in which to retreat. Never keep this one as a solitary specimen. It's a lovely fish if given the right conditions.

Danios are shoaling fish. Purchase at least half a dozen to keep them happy



The Bengal danio, *Danio devario*, needs companions to be at its best

PHOTO: www.photomax.org.uk



Silver needlefish, *Xenotodon cancella*, are interesting fish but not for beginners

NOT FOR THE UNWARY

I have sometimes seen these fish offered for sale and they are very interesting. The common name aptly describes their long thin shape. A shining stripe runs along the length of the body. A fully grown specimen reaches 30cm. This is not a beginners fish and a public aquarium is the best place to observe them. They have a very large beak which can open very widely indeed indicating their predatory nature. They are not fussy feeders living on a diet mainly consisting of fish and frogs. They are very nervous and skittish and any change in the aquarium conditions agitates them into such a state that panic ensues as they dash back and forth hitting the aquarium sides or jump straight up out of the water.

If you do take the plunge and decide to keep one of these creatures, they need a large aquarium, but not necessarily very deep, say 30cm. Use dense planting around the edges but with open areas for swimming and ensure good filtration. Keep them as a shoal as this will make them less nervous.



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Pseudotropheus sp. female incubating eggs

LOST FOR WORDS

Biomass: The amount of living matter in a designated area.

Calcium salts: River water contains calcium, the most important elements being calcium sulphate and calcium bicarbonate. Water containing high levels of calcium salts is known as hard water. If the hardness is due to high levels of calcium carbonate, this can be taken out by boiling. Calcium sulphate, on the other hand cannot be boiled away and so is known as permanent hardness. Together they make total hardness represented by the symbol GH. This can be measured from 0 upwards in degrees (dGH). The lowest being the softest.

Carapace: Chitinous or calcareous skin or shell that encloses all or part of the body.

Caudal peduncle: This is where the tail (caudal fin) joins the body. Often the narrowest part of the fish. Fish that have to carry large tails like the broad tail guppy need a strong caudal peduncle to support it.

Estuarine species: There are species that live in water where the

salinity is 0.05%-1.7% which is brackish water not marine. However, in estuaries where rivers flow into the sea and marine waters mingle with fresh to a greater or lesser extent according to the tides, a difficult environment is created and the creatures that live there have to adapt to these varying conditions. Sailfin mollies and Scats cope with such an environment.

Limnivore: These fish eat vegetable matter like algae and detritus which contain edible micro-organisms. They are bottom feeders that will take worms and food from the substrate. They continuously search the bottom of the aquarium for these on which they slowly and continuously feed

Matriarchal family: In some of the mouthbrooding cichlids brood care is the sole responsibility of the female. The female mouthbroods her young and looks after the nest. The male's territory is outside of this area where he mates with other females and forms no bond with his sexual partner or young family.

Peat Sandwich: This is a layer of aquarium peat sandwiched between two layers of a medium such as gravel. It is either laid on the base of the aquarium or within a filter for peat filtration to soften the water.

Tank size matters

It is important when starting out with communities of fishes to consider the size of the fish you wish to keep. It is better to keep similarly sized fishes in an aquarium of the appropriate size.

Size, however, although important, is not the only consideration. When visiting shops and aquaria look at how much of the tank space the fish you are interested in cover with their movements. Read about their habits and special needs. Although the ratio of fish to surface area should be adhered to, other factors must be borne in mind.

Always consider the depth of the tank. Angels, Discus and other deep-bodied fish require deeper tanks but not at the

expense of surface area. There are some tall narrow tanks but fish swim horizontally and need as large a surface area as possible and rectangular tanks provide this. Some species, although not aggressive like their own territory or space and will defend it, these species and their tank mates will benefit from larger tanks. Species that lie around on the substrate do not need as much space as those species that are constantly on the move. Species like barbs and danios need space to be happy, jostling fish can become quarrelsome. Always purchase the largest tank you can accommodate, a tank can soon become overcrowded even if you only keep small fish.

WARNING

Before purchasing a particular species it is important to know the adult size to which it will grow. This cannot be emphasised enough. Do not buy it if you cannot accommodate it at full size, otherwise it could cause heartache when you have to part with a well-loved fish because it has become too large for the tank.

Looking after your aquarium

Maintaining your aquarium in tip-top condition is easy, provided you undertake a few basic tasks every so often. Most jobs take only a few minutes and will ensure that your aquarium remains a healthy and hygienic environment for your fish. The experts at AQUARIAN have compiled 10 tips for successful aquarium maintenance, based on 30 year's experience in fish-keeping:

WATER CHANGES

1 Regular part water changes are really important for your fish's well-being. They help refresh the aquarium and dilute out undesirable wastes and other pollutants that slowly accumulate in the water over time.

As a general guide:

- Freshwater tropicals and goldfish: change about 10-20% of the water every week or two.
- Marines: Change no more than 20% every two weeks.
- More frequent water changes may be required for small aquariums or those that are heavily stocked with fish.

2 If you have been on holiday for a week or more then it's a good idea to make a part water change when you get home.

3 Avoid undertaking very large water changes, except in emergency situations such as when an aquarium has become polluted for some reason.

MAKING TAP WATER SAFE

4 Tap water contains chlorine disinfectants that can harm fish, so always treat tap water with a chlorine-removing solution (from the aquatic store) before adding it to the aquarium. You should also adjust the temperature of the tap water so it matches that of the aquarium. You can check the water temperature using a glass aquarium thermometer.

5 **Buckets:** buy a couple of plastic buckets – one for taking the old water when you siphon it out and the other for mixing the replacement tap water with chlorine remover. Label the buckets 'For aquarium use only' and never fill them with soaps, detergents or other household or garden chemicals.

Did you know?
Most fish health problems stem from poor aquarium hygiene or incorrect water conditions.



KEEPING THE GRAVEL CLEAN

6 Every month or so, remove any trapped dirt from the gravel using a siphon tube or gravel cleaning apparatus, available from the aquatic store.

LOOKING AFTER YOUR FILTER

7 Most aquarium filters work 'biologically' which means they harbour friendly bacteria that clean up your fish's wastes. These invisible bacteria inhabit the sponge or foam cartridge that is found in most popular makes of filter.

As a general guide, rinse the sponge every couple of weeks. Simply lightly squeeze the sponge a few times in a bucket of aquarium water, to remove any brown sludge. (Tap water should not be used for rinsing as it contains chlorines that may kill the filter bacteria.) Don't over clean the sponge or the friendly bacteria will all be washed away!

8 Inspect the filter for any blockages in the pipework or water inlet slits. An old toothbrush or pipe cleaner make ideal unblocking tools. Refer to the filter's instruction leaflet for any other routine servicing that may be required.

REMOVING UNSIGHTLY ALGAE

9 Unsightly growths of algae can be removed from the viewing glass using an algae scraper or algae 'magnet', available from your aquatic store.

WATER TESTING

10 It pays to have your aquarium water tested every so often for ammonia, nitrite, nitrate and pH levels. The frequency of water testing will depend on your particular aquarium conditions: your aquatic store can advise. Simple test kits are on the market for testing the water yourself. Alternatively, some aquatic stores offer a water testing service for a small fee. (Note: certain chemicals used in test kits are harmful if accidentally swallowed, so choose a brand of test kit that has childproof caps on the reagent bottles).



For your free beginners guide please call:

0208 843 1766

or visit our website: www.aquarian.com

It's easier with

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Today's news

All the latest news and products from the world of aquatics

New 'Eden Project'?

The Mayor and Town Hall officers in Bedford are battling Wales and Liverpool to get a project 'bigger than Eden' brought to the claypits of Bedfordshire.

If successful it would rejuvenate derelict areas and bring hundreds of jobs and hundreds of millions of pounds to the area.

The cost of building it alone is estimated at £200m. The project, codenamed NIRAH (National Institute into Research into Aquatic Habitats), is based on fresh water habitats and, in addition to being one of only two fresh water aquariums in the world, would be a centre for bio-sciences.

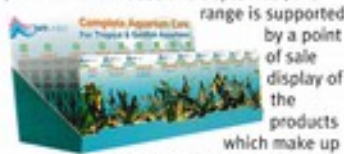
As with the Eden Project, the visitor attraction would be housed in domes, which would replicate freshwater habitats around the world. The science part comes because it is believed that rare freshwater fish have the potential to provide valuable biological and medical resources.

Here at *TFK* we're all hoping that it comes to Bedford as we're just a few miles away from the proposed site. Fingers crossed!

NT Labs' new range is a picture

What a picture an aquarium makes... and that's just what NT Labs thought when they designed their new freshwater Complete Aquarium Care range to complement pond ranges *Koi Care* and *Pond Aid*.

Set to launch in the UK at the garden and pet trade show GLEE this September, the range is supported



by a point of sale display of the products which make up a full aquarium visual vista, which makes it easy to spot in your local retailer.

Products include: MVS multi vitamin supplement health booster, Clean-Up powerful enzyme aquarium cleaner, Start-OK new aquarium successful starter kit + test, Aquasure chlorine remover, Just-Down anti-alkali pH adjuster, Ichcide Anti-parasite, Diseaseolve general disinfectant, Bactocide antibacterial and Phyto-Fe plant booster.

SAFETY NET FOR WATER-LOVING CHILDREN



Children never fail to be attracted by water, and a sparkling blue pool or inviting pond full of fish is like a magnet to them – sometimes with tragic consequences.

But a tried-and-tested product from America, available exclusively through Power Plastics Limited of Thirk, North Yorkshire, is here to bring peace of mind to pool and pond owners nationwide.

Katchakid™ is a strong polyethylene net anchored to flush-fitted mountings around the edge of the pool or pond. Using an ingenious drawstring method, the net is pulled taut towards its centre to form a highly visible, weight-bearing barrier across the entire accessible surface of the water.

The Katchakid™ net can be trimmed to fit accurately to any shape, and can be securely anchored to virtually any poolside ground surface.

The high quality polyethylene is stabilised with maximum UV inhibitors and the net can stay in place while the pool is chlorinated or chemically treated. Covering the average pool takes 5-8 minutes and removal takes 3-5 minutes.

Interpet improves Deltatherm heater

Interpet has long been at the forefront of aquarium heating and those old enough to remember the yesteryear of aquarium fishkeeping will no doubt remember Interpet's 'Minimatic' heater range, followed by their pioneering use of electronic thermostat control with Thermasure.

For the past few years Interpet has been highly successful in the premium end of the market with their Deltatherm range.

Then, last year they introduced their budget 'Aquattherm' range with great success and have increased their already significant market share.

Now Interpet has launched a re-vamped Deltatherm with a two-year guarantee. The new heater has been slightly re-designed to give a more positive click-control to the thermostat, but retains the build quality, accuracy and reliability.

Deltatherm is available in five sizes ranging from 50w to 300, to suit all aquariums. The Prices start at £19.99 and are available now from aquatic outlets.



About Instant Ocean Seminar

The primary objective of the Instant Ocean Seminar is to enable UK marine aquarists to have a better understanding of the marine environment as a whole.

Aside from providing cutting edge methodologies from around the world, natural habitats and ecosystems are often illustrated and incorporated into the lectures. It is Underworld's belief that this greater understanding will enable aquarists to better cater for the marine organisms under their care. Underworld achieve this aim by inviting experts from around the world who themselves are not only aquarists, but are biologists, field researchers, breeders, underwater photographers, curators and scientists.

Attendance of this unique event in the UK consists mainly of hobbyists, but an increasing number from the scientific and professional community have also attended. They include zoologists, biologists, writers, traders and curators

from zoos and public aquariums across the UK.

The Instant Ocean Seminar is a non-profit making event. All proceeds from the ticket sales go towards funding UK largest marine aquarist association, the West Yorkshire Marine Aquarist Group (WYMAG), and £2.50 from each ticket sale will be donated to the Semporna Islands Reef Conservation Project.

Speakers include:

Dr. J.E.N. Veron (Australia)

Scott W. Michael (U.S.A.)

Steve Tyree (U.S.A.)

Daniela Stettler (Switzerland)

Venue: Gilbert Murray Hall, Leicester

University, Manor Road, Leicester

Date: Sunday October 10, 2004

Registration: From 9am

Tickets: £20, by post from: WYMAG,

31, Henconner Crescent, Leeds,

W. Yorkshire LS7 3NS.

A buffet is included in the price.



New precision phosphate test kit

D-D aquarium solutions have brought out a new High Sensitivity Phosphate Test Kit, which they have specifically developed with Merck for the aquarium marketplace.

Standard Merck test kits have been around for many years for laboratory use but the high cost that comes with their accuracy has made them prohibitively expensive for use by the general hobbyist.

There are currently several phosphate test kits on the market and many will measure down to the low levels of phosphate required to prevent algae problems.

The problem with some test kits, however, is that at the lower end it is almost impossible to

Rowaphos from D-D... keeps phosphate levels down



differentiate between the different pale colour swatches.

The new D-D test kit overcomes this by providing two flat-bottomed glass test tubes and a black polystyrene block, which allow the user to look down on to the colour card without any stray light or colour to alter the perception of which is the correct reading.

The second test tube is used as a standard so that any coloration of the aquarium water does not affect the ability of the user to read off the concentration.

D-D recommend that for marine aquariums the phosphate level should be kept below 0.46 (PO₄), and for freshwater aquariums that it should be below 0.92 (PO₄). Rowaphos will remove up to 25g of phosphate per Kg of media.

The test kit contains sufficient chemicals to carry out 100 tests after which time a refill is available rather than replacing the whole kit. D-D High Sensitivity Test Kit for 100 tests - £29.99. 100 Test refill with replacement colour card - £19.99.

tropicalfishfinder.co.uk

the easy way to find your tropical fish

WHAT'S NEW?

The first fish worthy of mention this month is the result of selectively breeding Convict cichlids which has resulted in a marble-coloured variant (below). Whilst they will not appeal to everyone, the coloration is distinctive and attractive. Unfortunately, they have not lost the aggressive tendencies of the Convict cichlids so make sure you keep them with fish of a similar size and ideally in a tank of their own. If you are interested in acquiring some of these fish which are quite rare at the moment, The Aquatic Design Centre had some in stock at the time of writing.



Another rare fish is *Enneacanthus chaetodon* (above) which are currently available at Wholesale Tropicals. These fish are more commonly known as the Black-Banded Sunfish and come from North America, ranging from Florida to New Jersey. They prefer lower temperatures and they will do best in soft and acidic water conditions. Most North American fish require a licence to be kept in the UK, but these are not included.



Finally, if you are lucky enough to own a very large tank you may be interested in acquiring some *Hypselobarbus jerdoni* (above) which are currently listed as endangered in certain parts of their natural habitat in India. They can grow to around 30cm in aquarium conditions, and do look very impressive if kept in a group.

All of the fish mentioned here were available at one or more of the shops using the Tropicalfishfinder service at the time of writing. To find out more go to www.tropicalfishfinder.co.uk or alternatively call 020 8297 4199.

Tetra set to attract new fishkeepers

Tetra is launching its striking new brand strategy with the aim of bringing new fishkeepers into the sector. The programme will focus on making fishkeeping more accessible, with the new strapline 'The Experts at Making Fishkeeping Easy'.

Emphasis will be placed on an additional two new consumer groups: parents taking children to an aquatics outlet or pet store as an 'entertaining' exercise and those reacting to children asking for 'easy' pets such as rabbits and hamsters. The campaign is not only aimed at raising awareness amongst the trade, but

also demonstrating fishkeeping as an easy and enjoyable hobby for these consumer groups.

Tetra also see one of the main goals of the programme is to reach the right audience at the start of their fishkeeping journey and guide them through every stage. Chris Nixon continues: "We can also support existing fishkeepers offering guidance and solutions that make fishkeeping fun. We're aiming to now take the lead in terms of a more structured in-store environment by putting even more emphasis on our trade activity and supporting retailers."

WATERHOME AQUARIUMS IDEAL FOR DESKTOPS



The new Waterhome aquarium is a stylish, self-contained desk-top aquarium that would look great in a study, office or child's bedroom.

Its compact size means it will brighten up your room without taking up valuable space, creating a beautiful living display feature in rooms that would otherwise be restricted by lack of space.

Features include:

- Compact fluorescent light
- Hidden top filter which won't spoil the appearance of your aquarium set-up

- Dual filter cartridge to ensure crystal clear water
- Easy access lid which aids easy cleaning

The Waterhome 3 holds 11 litres and is available in indigo/lime green or grey/terracotta. The Waterhome 5 has a 19 litre capacity and is available in burgundy/natural or grey/terracotta.

Recommended Retail Price: £49.99/£64.99.



Waterlife brings Harmony to ponds



Waterlife is launching an exciting new blanket weed product to its award-winning pond range. Pool Harmony has been developed by its team of researchers to solve the pond-keeper's nightmare problem of blanket weed.

"Thousands of pond-keepers have been left up to their necks in blanket weed since last year's biocides directive removed numerous products from the market including (temporarily) our own Algizin P" said Waterlife Chairman and Founder, Graham Cox. Graham went on to say "We are now pleased to be able to offer our customers Pool Harmony to solve their blanket weed problems."

Pool Harmony works by controlling the nutrients within the pond and allowing the fish and plants to live in harmony without the nuisance of blanket weed.

Pool Harmony is initially being launched in the small pond size suitable for ponds up to 500 gallons (2,250 litres). Waterlife have used an innovative packaging format to keep costs down and continue the Company's long established reputation for offering quality products at a value price. Pool Harmony 180g (three treatments for a 500-gallon pond) priced at £5.99.

TODAY'S FISHKEEPER SEPTEMBER 2004

Marine Conservation review published

A range of potential measures to protect our marine environment are outlined in a new report.

The report details a framework for the management of the UK's marine environment that includes:

- Establishing clear targets for conservation policy in line with the strategy's overall objectives.
- Including measures for monitoring and assessing the impact of human activity on the marine environment.
- Addressing environmental issues at a range of different scales – from the entire North-east Atlantic region down to individual habitats or species.
- Identifying and designate areas of special importance for protection.
- Taking an integrated approach in marrying conservation with the social and economic needs of communities that depend on the marine environment.
- Establishing a UK-wide marine information network to provide a resource for the benefit of all sea users.

Welcoming the report Environment Minister Elliot Morley said: "This report provides another example of how current thinking is moving away from the more traditional focus on rare and threatened flora and fauna to an approach that looks at whole ecosystems."

New range of replica live rock

Tropical Marine Centre has been appointed the UK distributor for a new range of replica live rock.

These rocks are hand-made and hand-painted to ensure they are as realistic as possible and, with several different replicas of varying sizes, the hobbyist can use them on their own or together with natural rock to create a "true to nature" reef scene.

The rocks have been tested to ensure their colour-fastness and to make sure they are non-toxic and completely safe to use in the aquarium. They are priced from about £7 to £50, making them particularly attractive to hobbyists who have fish-only systems and do not want to invest in natural live rock.

Goldfish bowls banned

An Italian town has banned pet owners from keeping goldfish in bowls.

The Monza town council believes fish get a "distorted view of reality" when they are kept in a bowl.

Council official Giampietro Mosca said: "This type of receptacle generally doesn't have a filter and doesn't allow for good oxygenation of the water, unlike rectangular aquariums."

Mr Mosca said the laws were designed to educate young people about treating animals properly.

Pick up a Penguin

Sometimes the simple things in life are best. **Mary Sweeney** takes a look at Penguins, Cardinals and Hatchets...



A well-looked after Penguin tetra, *Thayeria boehlkei*, can be a stunning addition to your tank

The Penguin tetras were more mercy purchases than anything else. The poor little creatures were pale and looked cold. There was nothing appealing about them, not even the price, which wasn't that bad, but multiplied by six for the school, it was more than I wanted to invest in such unlikely candidates. If I'm going to write these articles every month, however, I want to have more than a mere passing association with the species. As it turned out, this was a very nice investment.

The tattooed and pierced shop assistant netted the fish, commenting: "My boss says these fish are very delicate." I looked for some signs of sexual dimorphism – on the fish, not the shop assistant. So they're either too young or they're very subtle, I thought, counting on the 88% rule: that being that in a group of six fish, you have an 88% chance of having at least one pair. That's what I wanted – at least one pair. If I'm going to work with a new species, I want to take them all the way through to the next generation. I'm a little funny about that. Provided there is a pair available, I don't feel that I've really kept the fish until the babies are grown up and thinking about pairing off themselves.

The shop assistant offered me a discount "because they're delicate." Well, the fishes may not have been inspiring in the shop but that small discount sweetened the deal and inspired me to silently wish the uninspiring shopkeeper a bit more pizzazz in the future.

Home sweet home

I got them home, acclimatised them, and moved them into a 80-litre tank I keep up and running for impulse purchases. It's a very basic set-up with some pebble substrate, a heater, a piece of driftwood, and some Myriophyllum (which does quite well as the tank is on a table under the kitchen window and gets some midmorning sunlight.) There isn't even a top on the tank, but that soon needed correcting, as two of the Penguins took death leaps the minute I

Tetra
The experts at making fishkeeping easy



turned my back. Oops! A few pond snails also help keep things tidy in their own way. There's a small internal power filter with sponge media that gets a quick squeeze every month or so. Because the tank had been running without fishes for a while, no water had been changed, so the water was very well aged and quite amber from the driftwood. It had acquired all the attributes of an ideal aquarium for rainforest fishes with the pH at 6.5 and the temperature at 28°C. The Penguins looked just right in there, except they were lost in all that water. In fact, it was quite amazing how much improved they appeared in the short time they had been in the more appropriate conditions.

Colourful Cardinals

The next day, I was out browsing about in a slightly more upscale fish shop and what should I spy, but some lovely Hatchetfish, another species that's been on the wish list for some time, and by chance very nice in combination with the Penguin tetras. Now, all I needed was something with some strong colour and I'd have the makings of a very nice population for a peaceful community. There! Cardinal tetras,



Cardinal tetras, *Paracheirodon axelrodi*, were the perfect fish to add a bit of colour to Mary's tank.

Paracheirodon axelrodi. My old boss, mentor, and friend, Dr Axelrod, has been very much on my mind lately, so in his honour, I decided to include the Cardinals. Pick 'em, bag 'em, and swipe the credit card. We were soon home and the Penguins, Hatchetfish, and cardinals were making acquaintance. No problems between these

species. They are all small, timid, and have identical needs.

Thayeria boehlkei, the Penguin tetras, have a pale body with a strong white line under the distinctive black stripe that extends from behind the gill to the caudal and angles downward at the tailfin. These fish grow to about 8cm. Mine are barely



Make sure you put a good lid on your tank as *Carnegiella strigata strigata*, the marbled Hatchetfish, can fly!

4cm, so they are very young, as is so often the case with store-bought fish purchases. They will be sexable when they mature and the females become more stout than the males – assuming that there is still a pair among the four I have left. Incidentally, Penguin tetras are not really all that delicate when kept in proper water conditions. The other two species included here are not nearly so hardy – but they too will thrive in hospitable conditions.

Comegiella strigata strigata, the marbled Hatchetfish, is quite the find. These little gems have the ability to 'fly' (it's a good thing I had a cover to put on that tank!) Yes, Hatchetfishes have strong, wing-like pectoral fins and an aerodynamic body shape that permits them to lift off and fly for short distances in pursuit of insects that hover just above the surface of the water.

It's still quite a testament to one's fishkeeping prowess to breed Cardinal tetras and raise the fry to maturity

The body shape of the Hatchetfish is quite interesting, with a straight back, deeply rounded belly, and those wide pectorals. The marbled Hatchetfish is attractively patterned in silver and black with transparent fins, but there has been mention made of violet iridescence in natural light. I look forward to the experience. The adult size is a mere 5cm. Again, I could see no sexual dimorphism, but as there were only three available, that is what I got, and time will tell.

Newly imported Hatchetfish can be susceptible to ich, but I got lucky; these ones must have been kept warm enough. No sign of whitespot showed up at all, for which I am quite grateful.

Paracheirodon axelrodi, the Cardinal tetra, is a well-known aquarium fish. Even from its first description in 1954, it has been something of a character. Unfortunately,

Escaping Hatchetfish



Amazon swordplant

As Hatchetfish jump out of the water to catch flies, they keep to the top of the tank. It is recommended that the aquarium be well covered as they can slip through the smallest openings. Lowering the water in the aquarium is often suggested – this look might not appeal to everyone, but if

you were to add an Amazon swordplant (above) to the aquarium, you might be more willing to drop the water level, given that the emerged flower of this plant is so attractive. Just a thought. Floating plants are also good to help keep these fish in the safety of the aquarium.

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many of these little beauties never grow to adult size because people insist on including the tiny babies in tanks with their natural predators, angelfish and discus (and anything else that can eat a tiny, brightly coloured fish!) Failing that, they insist on trying to keep them in hard, alkaline, or even chilly water. All these things are strictly out of order. Keep Cardinal tetras safe from predators, give them warm, soft, and acidic water and they will even breed in the aquarium, which was thought for years to be totally impossible. It's still quite a testament to one's fishkeeping prowess to breed cardinal tetras and raise the fry to maturity. So if you want a challenge, there's a good one for you.

The Cardinal tetra grows to about 7cm. This is one species that really does best in the largest shoal you can afford. Aesthetically as well, the bigger the shoal, the more impressive these fish will be. They are iridescent blue on the top half, bright red on the bottom half, with a silver trim on the top and bottom of the fish. The fins are transparent, almost as if not to compete with the magnificent coloration of the body. The males are said to have little hooks on

the anal fin, but it takes a really good eye to see this! The females will be the plumper fish when they are ready to spawn, as usual!

Maintenance

One of the main things to keep in mind with these fish is that they don't do well when the nitrite and nitrate build up in the water. The preferred low pH renders ammonia into ammonium, so ammonia shouldn't be a problem – unless you overdo it with a large water change of higher pH water, which can lead to a chemical disaster. Why would a water change cause trouble? Aquarium water tends to become more acidic over time due to many factors, nitrification being just one. If the fishkeeper performs a large water change with water of a higher pH, the non-toxic ammonium turns into ammonia as soon as the pH goes above neutral (7.0). Even though water changes are good – essential even – large water changes can be lethal if the water chemistry is altered in the negative. So, when we advise small partial water changes, it's not just to save you the work of carrying too many buckets, it's to

ensure that the water chemistry is kept stable, which is one of the biggest factors in successful fishkeeping. It's also a very good practice to age the new water before adding it to the tank. Not only will this remove chlorine without chemicals, but it allows gas bubbles to escape, gases that damage tender little gills. ■

FEEDING THESE FISH

The key to keeping these fish in good condition is to include some tiny live foods whenever possible. Wingless fruit flies would thrill the Hatchetfish especially, and the Cardinals and penguins wouldn't turn them down either. The small size of the fish precludes feeding live earthworms, and even tubificids are a little big for young specimens. Live brine shrimp are great, as are daphnia. Flake food should be crumbled slightly before adding it to the water. Otherwise, they will take just about any kind of fish food that will fit into their tiny mouths.

10 Community Cautions

Big fish will usually eat small fish

- 1 Be aware of the size to which the species in your community set up will grow and try to keep them even

Fish require different water temperatures

- 2 When creating a community, always ensure that the fish you are choosing can live at the same temperature and adjust your thermostat accordingly.

Fish have varying dietary requirements

- 3 Remember to cover the scope of dietary needs within your feeding regime and add extra filtration if you stock carnivorous species.

Do not mix riverine and still water fish

- 4 Riverine fish require higher oxygen and filtration levels than still water fish. Still water will kill them. When exposed to fast moving water, still water fish quickly become distressed and lose condition. Choose either a still water OR a riverine Community.



Fish have different water requirements

- 5 Always ensure that your community tank only contains species that need the same water pH and hardness.

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Fill all the levels

- 6 Different fish live in different areas of the tank. There are top, middle and bottom dwellers. A good community tank will include each of these.

Never over stock

- 7 Cramped conditions can lead to aggression in otherwise placid species.

Keep your eyes open

- 8 Look for bullies in your community and remove them immediately. Prevention is always better than cure.

Provide sufficient territory

- 9 Always ensure each species in your community has its own territory. For example if you have 5 species of cave dwellers, ensure there are 5 caves...

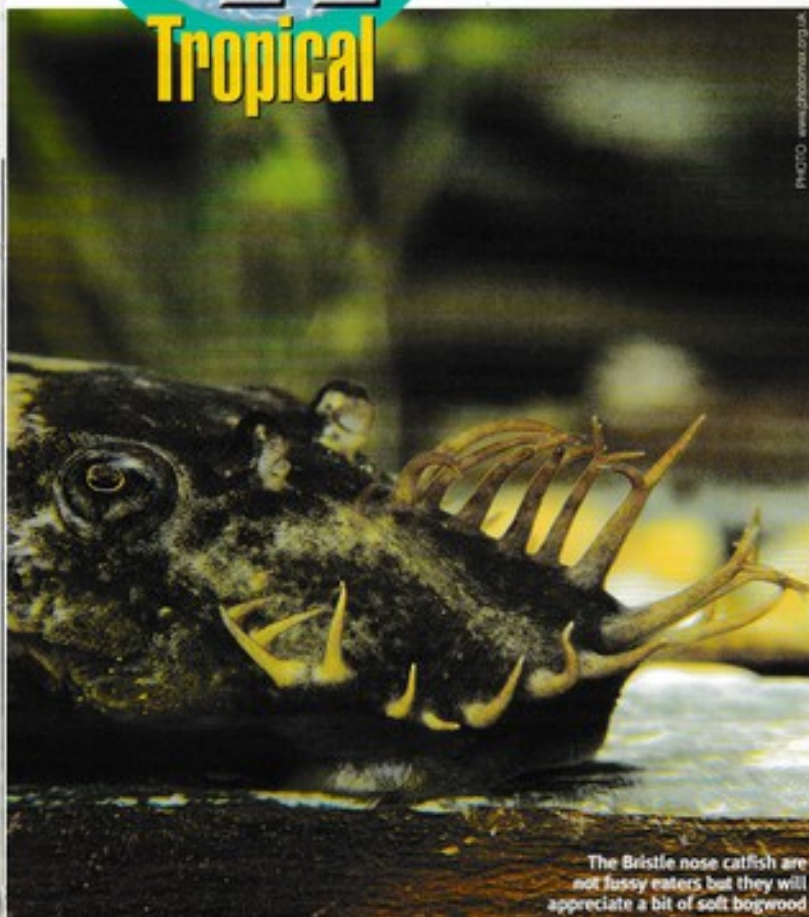
Differing dispositions

- 10 Quiet tranquil species can easily become distressed when in close proximity to lively bolsterous tank-mates. Keep the temperaments of your community fish similar.

Create your community with Tetra's Virtual Aquarium at www.tetra-fish.co.uk

Q&A

Tropical



The Bristle nose catfish are not fussy eaters but they will appreciate a bit of soft bogwood

Feeding Ancistrus



I have been keeping fish for some time now and have a thriving 24 x 14 x 19in community set-up. I am particularly interested in catfish and the related families, particularly Corydoras. While I know quite a bit about Cory's eating and behaviour habits I thought I would diversify and keep an Ancistrus. While I have had no problems with the Ancistrus, and indeed my tank has never sparkled quite so much, I am not sure what I should be feeding him. His current diet consists of the stock Cory water/granular feed and all the algae he can eat! Can you advise me on alternatives and special care for this interesting specimen? Lee, via email



I take it that when you say Ancistrus you are referring to what's commonly known as a Bristle nose. They are not regarded as fussy eaters and what you are feeding your Corys on will suit your fish just fine, however there are a couple of additions which would definitely be of benefit. Many Ancistrinae species naturally graze on dead wood, feeding on the bio film and all it contains as well as consuming the wood itself. So the addition of a piece of soft bogwood and a weekly piece of courgette would certainly help to keep you fish in tip top condition. Ian Fuller

WHICH SPONGES SHOULD I USE?



I have a 96-litre Juwel tank and keep tropical fish. I have recently introduced Siporax as a filter medium (biological) to replace some of the sponges that I have been using. I am currently using a wool pad (acts as a mechanical pre-filter); carbon sponge (chemical filter), and a coarse and fine sponge (biological filter). I thought that by using Siporax I would be able to do away with these sponges, but it now looks like I should keep the wool and carbon, and maybe even one coarse or fine foam. (I did have two coarse, and have removed one). I would be grateful for any advice you could offer regarding which sponges I should use in conjunction with the Siporax. I don't want to affect the clarity of the tank. Jan Boakes, via email



Out of interest – why are you looking to add Siporax? Are you having problems with the biological performance of your filter? I too have Siporax in my aquarium filter (external power filter) which is not as limited for media space as an internal. I place my Siporax in the last of three media chambers, relying on ceramic pipe, coarse and medium biofoam (together with a little ancient filter floss to help maintain the bacterial activity whenever I get around to cleaning the filter (approximately every four months). If adding Siporax to your own filter, you will be doing so to gain additional biological activity so if you are looking to make space for it, I would remove other biological media (but biological media that isn't also performing a mechanical function. If you find that by removing a single coarse foam that your clarity hasn't suffered then I'd leave things like that. You'll find that the mechanical function of the filter increases anyway as it starts to collect other mulm and debris. What I'd want to be careful of is substituting too much mechanical media for Siporax, only to find that you are having to clean your filter out more frequently – now no-one wants to do more filter maintenance than is absolutely necessary! Ben Helm

Silver or Bala shark, *Balantiocheilus melanopterus*, can be a bit aggressive towards each other but this is easier to control in a larger tank.



WHAT SIZE TANK DO I NEED?

Q Just wanted to say that I love your magazine! I got into the hobby a few months ago and I'm already interested in upgrading the tank. I have a 20-gallon tank with three Dwarf gouramis, one Bala shark, and two angel fish. My question is, what is the minimum size of tank that I should go to accommodate the fish I currently have and possibly a few Discus, maybe four to six of them. Chris Maxwell, via email

A Rather than ask 'what's the minimum size', I'd be inclined to ask you, how big can you afford to go? Rather than try and limit your fish collection to a minimum size of tank (which will

limit the number of fish you can ultimately keep), why not install as large a tank as you can and gain all the benefits of a larger tank. These will include having more stable water quality, better growth rates, and greater scope for aquascaping etc. Bala sharks can also prove to be a little aggressive/territorial towards each other - something that you could control better in a larger tank. Further more, Discus prefer to be unbothered by darting fish, having lots of space to sit peacefully; they also benefit from a deeper aquarium. They too can be very territorial, so the longer the tank the better. I would be inclined to opt for a 4ft long tank, perhaps 18in deep and 18in high. Ben Helm

Will my milk snake eggs hatch?

Q One of my milk snakes has laid eggs. I think I have a true pair. What do I do? Some people say the snake will incubate them. Matt, via email

A Whilst assuming you have a true pair you do not say whether the snakes were cooled, either intentionally or accidentally during winter. Breeders of milk snakes usually cool their specimens to 10-12°C for two to three months to replicate conditions in the wild. This lower temperature is necessary to trigger hormonal production that then causes sex cells to be produced. So even though they may not have been cooled they will still mate and the female produce eggs. Whether these are fertile or not - time will tell. In nature most pythons find a secluded spot in which to brood (incubate) their eggs. By using small muscle shivers they release heat and are thus able to maintain constant temperatures. Egg-laying Colubrids, the family to which milk snakes belong, usually lay their eggs in a burrow, under a log etc. and then leave them. In captivity eggs are incubated by placing the whole clutch into a container of moistened vermiculite. Do not try to separate the eggs or alter their position. Some of the eggs will be totally covered by the vermiculite but this is not detrimental.

The top of the clutch can be covered with damp moss to prevent dehydration. The lid of the container should be ventilated. Most milk snake eggs are incubated at 28°C (82°F) and take about 60 days to hatch. During this period the eggs should be checked and if necessary the moss and vermiculite moistened to maintain humidity. About one week prior to hatching the eggs swell and stretch. They should now be inspected daily during which removal or lifting of the lid allows an exchange of gases which can prevent the hatching snakes from dying at this stage. Within a day or so of the eggs sweating slits appear and within the next 48 hours the snake emerges completely. Any infertile eggs will usually rot within one to two weeks. Without cooling the whole clutch may be infertile. If only one or two 'go off' they should be left if stuck to the others - usually they do not affect the other eggs - just smell a bit! An incubator can be an old vivarium heated by a thermostatically controlled dimming bulb with the probe placed in the egg container or a polystyrene box and lid with a heat mat and pulse proportional thermostat. In the latter case do not sit the container on the mat but on a wooden rack just above the mat. Bird incubators, unless altered, should not be used as these usually turn the eggs four times a day - this is detrimental to reptile eggs. Val Davies

Today's Answers Expert Panel

All Stalsberg Cichlids

Pete Liptrót 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

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

Problem platy

I am a complete novice at looking after tropical fish and I have only had my tank for a couple of weeks. I bought four platys for my tank early on, as I heard they were quite durable and placid. I got two Red Wagtails (a male and female) and two Sunburst (a male and female). Unfortunately the Sunburst female did not survive the trip home, but I still placed the remaining three in the tank. After a day I noticed the male Sunburst was acting very aggressively towards the other male, he would chase him around the tank for short spurts, but quite continuously, and the male Wagtail now has a few nips from his fins. I decided to go back to the shop and get another female Sunburst (hoping this would calm him down), but it seems to have had the opposite effect. The male Sunburst now seems to always swim around the tank very erratically (unlike the other three), he never has a go at the female Sunburst, but he now chases after the female Wagtail as well. It has got to the stage now that the male Wagtail just sits in the bottom corner of the tank, hardly moving, unless he is chased for a bit by the male Sunburst. Is there anything I can or should be doing?

Jon, via email

Platies are usually the most gentle of species but swordtails are less so. Through hybridisation there are many swordtail-platy crosses. *X helleri* (swordtail), *X maculatus* (platy) and *X variatus* (platy) have all been interbred to produce the



Red Wagtail platies are gentle tankmates

lovely colour varieties we have today. Your Sunburst male appears to be displaying the spawning behaviour of a male swordtail. This is done to achieve the dominant male position through submission of the weaker fish which can possibly die through stress. If this is the case buying another female will not make any difference. If several males were present the aggression would not be concentrated on one fish. Have the fish anywhere to hide such as plants, rocks and caves? The Sunburst male will also mate with the female Wagtail as platies will breed with other platies regardless of colour type. He will mate with the female Sunburst as well. One male with the two

females should be OK. My advice would be not to buy another male platy at the present time. I would move the distressed fish to an isolation tank using water from your aquarium. The addition of a little salt will help to avoid infection of the nipped fins. As more fish are added to the tank he may be able to return if or when he recovers. Did you stock the tank too early in its maturation as it has only been set-up for two weeks up to the time of writing. See August issue for 'Maturing your tank'. Don't despair, these things are bound to happen when you're starting out.

Pat Lambert

FOOD FOR THOUGHT

I have a Clown knife fish in a tank with a Clown loach, a Red finned black shark and a Bulldog catfish. The 24 x 18 x 12in tank is lightly planted with an internal filter. I have a large number of snails (which I am told the Clown loaches will deal with) but I also have a massive amount of algae growing all over the tank. Is there any fish I can get that won't be food for the knife fish and also clear the algae?

Luke Burridge, Tiverton, Devon

I am afraid I have to tell you that the species you are keeping in your small 24 x 18 x 12in tank will soon be in deep trouble. The Clown knife fish can reach 100cm in length. This is a nocturnal predatory loner who will eat anything that fits in its mouth and is aggressive even to its own kind. Definitely not recommended for communities and it will need to go. The Red-finned black shark I am assuming to be the Red-tailed black shark as the Red-finned or Rainbow shark has not got a black body. The Red-

tailed black only grows to 12cm but is very territorial particularly in a tank this small. Lovely fish that needs a larger home. The catfish reaches an adult size of 25cm and is peaceful and can be kept with smaller species but again grows too large for this tank. All these fish inhabit the lower regions of the tank – not a good thing. The Clown loach rarely exceed 20cm in aquaria. This is an active lively species but this might not happen in this set-up. You really need to start again and think very carefully about the size to which species grow not the size at which you buy them. A good ID book will help when you go shopping for fish. Any fish that I'd keep in your sized tank would certainly not exceed a maximum size of 7.5cm, ideally less than that. Lighting depends on the

wattage of your tube and how long it is on for... Good algae eaters are bristlenoses such as *Ancistrus ferminckii* maximum size 12cm or *Otocinclus* which are small fishes for communities of small fishes.

Pat Lambert

The predatory Clown Knife fish, *Notopterus chitro*, can reach up to 100cm so it needs a lot of space



Q&A

Blowing the budget



Pterois volitans, the Lionfish is a force not to be reckoned with



I am planning to set-up a marine fish-only system and would appreciate some advice on the best set-up. I have a budget of about £200.

I will be using a 500-litre tank and would like to know if a sump system is the best way to go? I plan on housing two False percula clowns, a Regal tang, a Lionfish (*Volitans*) and a Cleaner wrasse. Are these all compatible with each other? Could you please advise me on the type of lighting I should use? I would also like to house an anemone as well as a shrimp or two?

Could you also please add a list of equipment besides the protein skimmer, powerheads, heaters, UVc, pumps etc. that I would need (especially for the sump system)?

Brett Pieterse, Cape Town, South Africa



Regarding your proposed set-up I have some reservations with the budget as I do not think that £200 will do it – in fact a good skimmer for a 500-litre aquarium will cost well over £200, however, I do not know the prices in South Africa. If you want a reef aquarium with an anemone and a sump system, I am very sorry but to do the job correctly you will have to add another zero to your budget and increase it to at least £2,000!

Sump filtration is best in an aquarium of 500-litres. Lighting would have to be either metal halides or T5 tubes, as this will give the anemone the intensity it requires. Other equipment you would need in the sump set-up would be twin-return pumps delivering at least 5,000 litres per hour each. But your biggest problem I assume will be heat – in your hot summers you are going to have to cool the aquarium, so a chiller is needed costing at least £700 in the UK.

Please think about your budget and do not skimp on the equipment or all you will achieve is heartache – it is hard to achieve a balanced aquarium with equipment that has been poorly designed. Save up and get the filtration core correct with good equipment and you're off to a headstart.

Your stocking seems OK apart from the Voltan as this is a big predator growing to 38cm and will eat all your other stock, so I suggest you lose this fish from your list.

Sorry to be so negative but please allow yourself a good budget or trouble will follow.

AQUA MEDIC

for all your marine keeping answers

Feeding experiment

I recently read an excellent article written by yourself and Mark Howarth regarding a continuous coral and fish feeding experiment. As a result of this article, I have tried a similar experiment on my own tank (a Percula 120), using an IKS computer coupled through a non-variable control plug to two Aqua Medic SP 3000 dosing pumps.

My intention was to feed live phytoplankton (40 ml per day), Kent Zooplex (5-10ml per day) and Kent Chromoplex (5ml per day) through one dosing pump (set to come on for 5 seconds every 5 minutes, 24 hours per day). I also intended to feed fish food (1 cube cyclops and 2 cubes adult brine shrimp) over a period of say, 15 hours per day through the other dosing pump (set to come on every 10 minutes for 10 seconds). Lastly, I had contemplated feeding live brine shrimp (nauplii) through a third dosing pump every 5 minutes, also 24 hours per day.

I have now encountered a practical problem in that my dosing pumps require the use of a non-return valve, and whilst this tends to work for a limited period of time with the phytoplankton/zooplex, I have had very limited success with the other foods. I find that the non-return valves seem to clog or stop working after a day or two. This results in the water flow from the reservoirs no longer pumping into the tank. Even with the phytoplankton, a valve only lasts about 10 days.

Could you recommend a way around this? I have discussed this with my local aquatic supplier, who suggests that a dosing pump which does not require a non-return valve may do the trick (such as the IKS dosing pumps).

However, they cannot guarantee that adult brine shrimp would pass through these pumps, and before making further purchases, I would like to hear what pumps you used in your experiment, and whether you had similar problems.

Fraser, via email

If you get the feeding right your aquarium will indeed improve. However, as you have stated you need to get the right kit for the job. The Aqua-Medic Peristaltic pumps are a very good pump for the price, however they are not designed for feeding solids, and do need a non-return valve as they have two rollers instead of the more expensive pumps which have four rollers.

I have picked up a few points from your question, as you are feeding live phytoplankton do not mix it with anything else. It should run through a non-return valve as it is only 2-6 microns in size, over a period of time a bio film will develop over the surface of the valve and will need replacing on a monthly basis, but please let me know if it blocks. Personally, I cannot see any reason for feeding Chromoplex even though it is a different-sized particle you are feeding preserved dead algae which has lost a great deal of nutritional value. It is of course a good food for those who do not feed live phytoplankton but feeding live is best.

Any other food which has a solid present will require a much more powerful pump, I used a Williams pump which has a 5-8mm pipe size larger than the 6mm airline bore. These pump around 9 litres per hour so your timing will have to be adjusted, but they have four rollers so do not require a non-return valve. They retail at around £130 and are available from your local dealer through Aqua-Medic. The IKS pumps are also very good for the same job but you need the bigger bore pipe.

The pumps we used supplied various-sized particles of frozen food up to mysis size, however, passing newly hatched naupli through might prove unsuccessful as they might get crushed by the rollers, I have not tried this yet.

To sum up you will have to invest in more powerful pumps to get this correct, feed only live phytoplankton on its own, and other food mixed together. A bit more cash is involved but it will be a worth while expenditure.

Star Letter

Nemo tanks too good to be true?

I am thinking about setting up a marine aquarium, and when I was in my local shop I saw marine starter kits advertised with Finding Nemo characters all over them. My children were drawn to the tanks immediately.

The tanks are 50-litres and with them you get an internal filter, salt, 4 kg liverock, sand, and other bits and pieces, all for £199, which seems attractive. However, I do read this magazine each month and this deal seems to good to be true as you keep saying how much marine set-ups cost. Please can you advise.

I am aware of the set-up you describe but I believe the aquarium is too small for a thriving marine set-up. In my opinion the filtration is under par for the job, with phosphate removal non-existent, and no protein skimmer. On such a small tank, with the basic equipment you are given, you will more than likely end up fighting algae and poor water quality.

Unfortunately there is no cheap way to start up a thriving marine system – see the 'Blowing the budget' Q&A (opposite) for a brief look at the costs.

Any marine dealer worth his salt (sorry!) should be able to give you a run down of the

Who else but the star of Finding Nemo, the Common clownfish *Amphiprion percula*



costs involved and suggest a basic set-up that may work better for you in the long run.

Star Letter Prize from

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Algae-eaters or not?

Albino Ancistrus showing its mouth off to full effect

Ian Fuller looks at the dietary requirements of sucker mouth catfish and warns that they may not all be the magic solution to your algae problem

Albino Ancistrus



The reason I felt this article needed to be written was the fact that on several occasions while visiting aquatic shops I have seen a variety of so called 'Plecos' labelled as 'algae eaters' and with some of the species advertised as such now costing as much as £80 each. I did mention to one member of staff at one establishment that Zebra Plecs were not good algae eaters as they had advertised on the tank, only to be told to mind my own business. The fact here is that there are places where we buy our fish from where some members of the staff actually know very little about them and the advice they give can be totally opposite to what is actually required.

Not all veggie lovers

It is a common misconception that all so called Plecos are vegetarians. They all belong to the family known as Loricariidae and all have an under slung sucker-shaped



Panoque nigrofasciatus mouth



L133 mouth

mouth. The family consists of somewhere in the region of 100 genera and because of their sucker-shaped mouths, many people presume that it is used to attach themselves to objects so they can eat the algae there on. The truth of the matter is they all have their own individual dietary needs and to lump them all into one category can be a fatal mistake both for the fish and your wallet. Some species have greatly exaggerated lower mouthparts, which are nothing to do with feeding, but are used in the breeding process to shield or even carry eggs.

To a certain degree all do consume some vegetable matter, but it comes as a by-product in the search for their preferred food. It is true to say that few are pure vegetarians; many are in fact omnivores eating a variety of foodstuffs, which would include insect larvae, fruit, seeds, leaves as well as the zooplankton that lives in the biofilm that forms on the surface of all submerged objects. Then there are those that are classed as carnivore having a diet consisting of zooplankton, insect larvae, shrimps, snails, muscles as well as fish. The third group are probably the most specialised of all Loricariids and have a staple diet of soft wood.

Which diet to feed?

So how do we know which species eat which foods? The answer to that is with great difficulty. In recent years there has been an ever-growing interest in this group of fishes and a lot of knowledge has been gained and many articles have been written, but information on species natural diet is still very sparse.

With more than 500 genera covering several hundreds of species, to list and cover every known Loricariid species would be impossible. The German Aquarium magazine *Datz* has recently published a special book called 'L-Numbers' which features all current L-Number species, 387 in all, a list that is constantly growing. In



M. isbrueckeri



Glyptoperichthys species

this book there is a section covering the nutrition and diet of 37 genera of loricariids.

Good algae controllers

Here I do not have the space or in fact the knowledge to cover more than a few of the more commonly encountered Pleco species. The most common of these has to be the

humble 'Bristle nose', these belong to the family Ancistrus and get their common name from the soft tentacles that are present on the head, usually elongated and branched on males. In general they do not grow very large, 15cm total length, however, identifying the various species is another matter and something to discuss another day. As for diet Ancistrus are quite easy to please and are relatively good aquarium



Hyp sp Queen arabesque

algae controllers, especially the smaller juveniles. They will readily accept most of the commercially prepared flake, tablet, and granular foods as well as live or frozen insect larvae. They are also wood grazers and the addition of a piece of soft bogwood to their aquarium is a necessity. Other genera that would fall into this category are *Acanthicus*, which grow considerably larger reaching up to 30cm and are a fish for the experienced or specialist aquarist.

Peckoltia, are similar in size to *Ancistrus*, but are a little more aggressive or should I say have a stronger character – if they want a space they take it no matter what, they also have more diverse colour patterns. *Hypancistrus* are also considered as omnivores, but within this family there is some diversity in dietary needs, with species such as the now very well known and very expensive *H. zebra* preferring to feed on zooplankton, insect larvae, muscle and shrimp, juveniles requiring a little more vegetable matter, another member of the same family, *H. inspector* (L205) is known to be a wood eater and for its well being a supply of soft wood should be supplied.

Wood eaters

Moving on to wood eaters, there is quite a number of genera that fall into this category, including *Panaque*, *Panaeolus* and *Cochlodon* and many others with species that also have the ability and possible need to digest wood. They all require a supply of soft wood to sustain them, fortunately there has for many years been an adequate supply of soft bogwood within the aquarium trade. In more recent years other

hard/petrified wood has been available, mainly for use as aquarium decoration and as far as I am aware is not suitable as a food source for loricarids.

Like *Acanthicus*, *Panaeolus* are reasonably large fish growing to 40cm or more and are only really suitable for the dedicated specialist, *Panaeolus* being physically the smallest of the three, reaching sizes up to 15cm and *Cochlodon* to around 30cm.

Carnivores

When it comes to pure carnivores we are looking at *Loricaria*, commonly called 'Whiptail Catfish', reach moderate sizes up to 25cm and require a diet containing insect larvae, zooplankton and shrimps. *Pseudacanthicus* and *Scobinancistrus* are somewhat larger animals that can reach sizes up to 40cm and require a similar diet which should also include muscles and fish meat. Again I would consider members of these genera to be for the experienced aquarists.

Herbivores

Finally we come to the true herbivores contained in Genera not so commonly encountered in the hobby. *Harttia*, is possibly the largest at up to 35cm with *Hopliancistrus* and *Lasiancistrus*, up to about 18cm. Some species from these genera will again be fish that only the experienced aquarist should attempt to keep and none should be considered as the way to keep the algae in their aquarium at bay, they all need a vegetable-based diet with the addition of insect larvae,

zooplankton and soft wood.

Up until now and not including the already afore mentioned Bristle nose *Ancistrus* I have avoided the commonly available genera/species that are offered to us as tank cleaners/algae eaters, which in all honesty they are not, except when very small and young. The two most common of these are *Hypostomus*, which probably accounts for more than fifty percent of all the so call Pleco species imported into the hobby and has many species that can reach 30cm or more. *Glyptoperichthys* are commonly known as Sailfin Plecos, with species in this group reaching 50cm. The commonest and most frequently imported of this genus being *G. gibbiceps*. As I have already mentioned these are excellent algae eaters when young, but they grow very quickly and can soon outgrow the average aquarium.

In the last few years many manufacturers have realised the popularity of sucker mouth catfish is continually growing and are now producing specialist ranges of foods to suit almost every requirement, from algae wafers to tablet and granulated pellets, all of which help to provide the right kind of nutrition, so with these, a variety of frozen insect larvae and a nice piece of bogwood our Plecos have never had it so good. ■

PLEASE NOTE...

For the purpose of this article the genera and species I have referred to, follow Isbrücker 2001, Nomenclature of the 108 genera with 692 species of mailed catfishes, family Loricariidae Rafinesque, 1815 (Teleostei Ostariophysis). However in a more recent paper by Armbruster 2004, Phylogenetic relationships of suckermouth armoured catfishes (Loricariidae) with an emphasis on the Hypostominae and Ancistrinae, generic changes have been made, which will take a quite a while to digest. So I am not going to try and explain these changes here, but to just say the species names will remain as they are, so your 'Gibbiceps' is still your 'Gibbiceps'.

Scobinancistrus auratus





Last month **Andrew Caine** talked about how to set up a native marine aquarium. Here he gives some top tips on how to stock it

A day at the seaside

The big day has arrived – you have a bare aquarium and all the hardware is connected and ready for your native marines. Now there are two choices here, you can either collect water from the shore or prepare a synthetic salt water mix. It is obviously better to collect the water from the sea but do you really want that work in transporting such a weight back home in your car? It's fine if you have a van but not very practical in a car.

So for those who opt for the synthetic mix, fill the aquarium with reverse osmosis water and mix your salt, now be careful here as you do not want a reef mix as this has elevated levels of elements not required by our future animals – Tropic Marin from TMC or Instant Ocean are good choices. When

you check the specific gravity with a hydrometer remember to compensate for the cooler temperature, the use of a refractometer with automatic temperature compensation is much more accurate and takes care of this side for you. You will find that the waters around our coast has a reading of an average specific gravity of 1.026 or 35ppm.

Ask permission first

So with the system up and running it's off to the seaside to find your rockwork and other bits, but **SLAM ON THE BRAKES!** There is a very important part of native marine collection and that is you might need permission from the local council to collect,

some areas that you might think are good collection points could be part of a marine conservation park or a site of special scientific interest and collection from these areas could end up with you in court. So find the areas that interest you and then contact the council to see if permission is needed.

Permission given, the next area to think about is planning – this is very important and it's the difference between a good collection day and total disaster.

Firstly, let's look at the rocky intertidal region and see where all the beasts live. As you look at the intertidal area around the coast there are distinct zonation areas that are easy to see and identify. Zonation is often described as the areas and the inhabiting biology that are influenced by

Common hermit crab, *Pagurus bernhardus*



PHOTO: ANDY HOSON

Shore crab, *Carcinus maenas*

tides, so it's the amount of time exposed to the air or covered by water. However, many other factors influence the animals found on a particular area – these are the shape of the intertidal zone and also the physical force of the tide resulting in high energy to low energy sites. So different places will show an abundance of different animals or algae but all are influenced by the amount of time they are exposed to the air.

Tidal zones

The zones start at the highest point called the splash zone, or supralittoral zone. The tide rarely reaches this zone and a band of lichens commonly yellow or black in colour can be found here. As we move down to areas that are covered by the high tides we see a distinct zone called the littoral fringe, here we find small macro algae and many species of snails which are protected by the algae at low tide. Moving down we enter the eulittoral zone the top of which is marked by barnacles or mussels and this extends down to the low water mark. The bottom zone is the sublittoral zone which is only exposed for a very short time period and only two times per month, here we find by far the greatest diversity of life that we can collect on foot. We also have rock pools in the different zones, the lower the rock pool on the shore the greater diversity of life is displayed.

In other words you have to find out the times and date of the spring tides which occur twice a month, and for the lowest tides of the year the equinox tides occurring twice a year. Gain this information and you

EQUIPMENT LIST

1. Plastic holding tanks – you will need somewhere to house your collections while on the shore, these should be as large as you can easily handle, and you will need a few of them. You might collect a few of the same species of animals so you can then see which individuals are best suited to your size of aquarium and then release the rest. Remember only take what you need and no more.
2. A range of hand nets – different sizes and lengths of handles will assist in capture.
3. Fish bags for transportation home.
4. Polystyrene boxes for temperature controlled shipment, most aquarium shops will be happy to give them away.
5. Good strong gloves – you will be turning over barnacle encrusted rocks which will make short work of your skin, remember to replace the rock as you found it, many animals living on the underside will die if you leave them exposed, and vice versa of animals living on the exposed areas.
6. Wellies or waders – keep dry and warm and you will enjoy yourself.



Limpets, mussels and dogwhelks

7. Small buckets for transfer of animals to your holding tanks.
8. Hot drinks and food – keep happy at all times.
9. Collection partner – under no circumstances must anyone go rock pooling on their own. It can be very slippery and if you fall over and bang your head it's just a matter of time before the tide comes in and you drown – NEVER go onto the shore alone.
10. Waste bags – the shore is a beautiful place and I suspect that anyone collecting would not drop litter. You can also use your bags to collect any litter left washed up by the tide. Please don't ignore this important aspect and clean the shore as you go. Remember you are taking animals from the environment so give a little back.
11. Species guide: for reference to make sure you can identify your critters.



Palaemon serratus, Common prawn

PHOTOS: ANDY HUBB

will arrive on the shore two hours before spring tide low water and find an abundance of animals normally missed if you just go down to the seaside. For this information you will need a tide table which can be purchased from most good fishing tackle shops.

Now we have permission for collection, and the time of the low tide we can start to plan what equipment we need and to observe unwritten rules that go with native collection.

Now the fun part...

What exactly to keep in our tank? First of all we need the rocks to create the aquascape in the aquarium. These should be collected from high up in the tidal range, this avoids you bringing back hitchhikers which could die in transport. Take a template of your aquarium or draw an accurate size of it on the shore, this will guide you in rock sizes as it is easy to 'forget' and bring home huge rocks and indeed too many. Back at home set-up the aquascape with your chosen rocks and let the aquarium settle.

When on the shore look for animals in the rock pools under the seaweed but most will be found hiding under rocks. It is not worth just 'looking' for your animals, you really have to put in the effort and actively hunt down your quarry. I know when I have had a good day when I'm physically shattered - that's the sign of a good day.

As in tropical reefs the list you can collect is endless so I will only touch on this subject. The fun really lies in discovering species you didn't know and then identifying them in reference guides.

Remember the shoreline is a battlefield -



Anemonia viridis, Snakelocks anemone

eat or be eaten - so be careful what you choose to take home or you could be in trouble. Predators can be acclimatised to home offerings if they are not prey specific, and many will be filter feeders which will require live phytoplankton, and newly hatched brine shrimp. The following list are the more common species that you will find, but really are a very small representation of what lurks beneath.

What to look out for:

Fish

Lipophrys pholis, Shanry
Syngnathus acus, Pipefish
Pholis gunnellus, the Butterfish
Thorogobius ephippiolus, Spotted goby
Chirolophis ascanii, Yarellis blenny

Echinoderms

Asterina gibbosa, Cushion star
Asterias rubens, Common starfish
Henricia oculata, Bloody henery

Ophiotrix fragilis, Common brittle star
Psammechinus miliaris, Shore urchin
Strongylocentrotus droebachiensis, Northern urchin

Crustaceans

Galathea strigosa, Spiny squat lobster
Pagurus bernhardus, Hermit crab
Loicarcinus puber, Swimming crab
Carcinus maenas, Shore crab
Palaemon serratus, Common prawn.

Cnidaria

Actinia equina, Beadlet anemone
Anemonia viridis, Snakelocks anemone

Mollusca

Diodora graeca, Limpet,
Gibbula cineraria, Topshell
Elysia viridis, Green sea slug
Mytilus edulis, Common mussel
Pecten maximus, Great scallop

Porifera

Haliclondria panicea, Breadcrumb sponge
H. bowerbanki, Yellow sponge
Scypha ciliata, Purse sponge

Others

Sabella penicillus, Featherduster worm
Clavellina lepadiformis, Lightbulb sea squirt
Botryllus schlosseri, Star squirt

As you can see this is just a taster as to what's there, so remember to go collecting on the low tide mark on a spring tide, in the summer months when the greatest diversity is there. You will collect great animals, and have great fun. Enjoy! ■

Watch out, Jack's about!

Juan Miguel Artigas Azas profiles the ever-popular Jack Dempsey, *Cichlasoma octofasciatum*

The Jack Dempsey cichlid, *Cichlasoma octofasciatum* (originally described as *Heros octofasciatus*), is distributed in the Atlantic slope of Central America from Rio la Antigua in the state of Veracruz in the north to Rio Ulua in Honduras in the south. It is mostly found in lowland freshwater bodies (up to 100m).

Exotic populations of *C. octofasciatum* have been extensively reported since 1974 from the Florida peninsula as north as Jacksonville (Courtenay et al, 1974; Hogg, 1976; Dial and Wainright, 1983; Jennings, 1986) where they invaded as escapees from aquarium fish farms and aquarist introductions (Hensley and Courtenay, 1980). Densities of these populations are reported to be small and not to pose a

threat. Another, more recent exotic population has been reported in Australia (Welcomme, 1988).

Habitat

C. octofasciatum inhabits mostly lowland, slow-flowing rivers and lagoons as well as backwater side tributaries of clear water rivers within its range. The water can get very murky (zero visibility) and warm (at least up to 34°C) in this type of habitat, but the Jack Dempsey is somehow able to cope with these harsh conditions. In these areas substrate is normally a layer of deep mud and very little aquatic vegetation other than *Nimpohea* sp. and *Echinia* sp. is present.

'*Cichlasoma*' *octofasciatum* male in the aquarium of Don Danko, Cleveland, Ohio



ETYMOLOGY

The specific name *octofasciatum* derives from latin octo = eight, fascia = band, eight banded cichlid, in reference to the dark background bars exhibited by this fish.

But don't be misled, these apparently terrible habitats are a thriving ecosystem where many fish species are found abundantly, such as the Pimelodidae *Rhamdia* sp., the Poeciliids *Gambusia* sp., *Belonesox belizanus*, the Clupeidae *Dorosoma* sp., the Symbranchidae *Ophisternon aenigmaticum* (the Swamp ee!) and several other fish. The Jack Dempsey however, is the only cichlid normally found in these habitats. As you can imagine, oxygen content is very low in these stagnant water bodies, where pH is on the alkaline side (normally over 7.5) and hardness moderate.

The lowest lethal temperature for Jack Dempsey was estimated at 8°C by Shafland and Pestrak (1983) although Jennings (1986) observed *Cichlasoma octofasciatum* dying from cold water stress in a creek in Alachua county, at 10-11°C. Both cases were exotic species in Florida. Jack Dempseys have a relatively low salinity resistance – they have been reported from water up to 8ppm (Dial and Wainright, 1983). But I have never found them in saline habitats myself.

Description

A detailed description is offered by Regan (1903, 1905), basically it is a slightly elongated cichlid with a robust body, a short and rounded snout with thick lips and jaws equally longer or the lower slightly projecting. Two teeth in the upper outer series differentiating as a pair of canines, while three pairs of canines are present in the lower jaw. 28-31 scales along the lateral line. Dorsal fin with XVII-XIX 8-19 spines, the fin extends to the middle of the caudal or beyond. Anal fin VIII-X 7-8. Ventral fin



Murky tributary of Tonala river in Tabasco, habitat of '*Cichlasoma*' *octofasciatum*

extending well beyond origin of anal fin. Short caudal peduncle. Body with eight dark vertical bars.

The most striking coloration feature of this beautiful fish is a green, blue or even yellow shine on every scale on the flanks that appear like longitudinal rows of coloured spots. Males hold more scales showing this beautiful trait. Unpaired fins are adorned as well by longitudinal rows of blue and green spots, pelvic fins show blue longitudinal lines along the fins, a red marginal trim is present on the dorsal fin of some males. The throat and belly area are red-coloured, with variable intensities depending on geographical origin. Apparently those individuals coming from Belize or Guatemala being the most colourful.

Sexual dimorphism is weak – the females are smaller, with less coloured scales and lack the long pointed filaments on the tip of the dorsal and anal fins that males bear.

An adult *C. octofasciatum* male can grow as big as 25cm in total length as Ron Georgeone, an aquarist in Ohio and regular

winner of numerous Cichlid exhibitions in the United States has proved with a wonderful male he used to display. This size fish however, is out of the normal and I have never seen such a monster in its natural habitat, where even males 20cm in total length are rare. Females would normally stay smaller around 15cm in size.

Breeding

Pairs of *C. octofasciatum* form in the spring during the months of low water levels from February to May. Although I have never witnessed a spawning in habitat so far, given its regular turbidity, a multitude of small about 2cm *C. octofasciatum* can be found in the summer months, which indicates that they breed in the dry season as most other cichlids.

In the aquarium males secure a territory and chase females with his fins extended, cut their pass with their head and get side by side forcing water towards the female with undulating movements of the body and assuming an 'S' position. This may signal the female of the strength of her potential partner. In a few occasions jaw locking succeeds and may have the same end.

I am not aware of breeding observations made in the natural habitat, but some behavioural observations were documented by Dmitry Zworykin under laboratory conditions. He found (1998a) that females of '*Cichlasoma*' *octofasciatum*, once spawning takes place, spend most of their time guarding the eggs and males are kept at a distance, guarding the territory. Eggs have been reported 1.8mm in length and 1.4mm in width (Coleman, 2004) and can number over a thousand. Once wrigglers appear, the roles are inverted in something known as compensatory behaviour (Zworykin et al, 1995) and females spend less time than



'*Cichlasoma*' *octofasciatum* in a low visibility tributaire of Rio Belize, Belize

Feeding

Food is no problem as Jack Dempseys are omnivorous – worms, cichlid pellets or whatever standard cichlid food is greedily taken. The bottom of the tank is normally explored with the mouth in search of little pieces, of course not with the skillfulness of eartheaters. I wholeheartedly recommend a thin layer of fine sand as substrate, as amore common behaviour can be observed.

males close to their wrigglers for a few days, as females start making runs out of the nest. Once the wrigglers reach three days and subsequently, both males and females spend equal time with them. Why males spend more time with wrigglers their first three days it is not known for sure, but a hypothesis can be drawn that females venture to feed outside the territory so they can gain the required energy to cope with the remaining effort of clutch raising, after they were secluded to the care of the spawn.

During spawn guarding, pairs dig several pits in the substrate for placing the wrigglers and once hatched they change them from one to the other several times during the day (Hohl, 1976). Presumably this is done to scatter the odour of the babies among the different pits and confuse night predators, which are abundant in the habitat as the Pimelodid catfishes *Rhamdia guatemalensis* and *Rhamdia laticauda*.

Another interesting observation was made in the way parents feed their babies (Zwonykin, 1988b), once fry are free-swimming parents start using their pectoral fins to stir the substrate below them and create a cloud of debris on which the babies feed. The frequency of fin digging increases as fry become bigger and females seem to devote more time to this, while males guard the territory.

Aquarium keeping

C. octofasciatum made its debut in the German aquarium hobby back in 1904 in Hamburg (Holly et al. 1927), imported allegedly from Brazil. Its aggressiveness became then legendary and the fish was dubbed "Jack Dempsey" after the famous American pugilist, they were labelled as mean and as an efficient aquarium plant up-rooter. Nowadays the English common name would seem rather exaggerated to any aquarist familiar with Central American cichlids. This is not to say the Jack Dempsey is a defenceless creature. It can certainly be very aggressive and the rules of providing proper space with at least 300 litres for adult fish and enough cover can't be left out. In my experience they are not particularly aggressive towards other fish species kept with them large enough not to be eaten, and normally ignore other cichlids, outside reproduction time that is!



Rio Cotaxtla affluent, habitat of '*Cichlasoma octofasciatum*', Veracruz, México

Water conditions as you can imagine are not terribly critical, Jack Dempseys can cope with a fairly low oxygen content and warm temperatures, but please do not confuse that with polluted water, they are not found in polluted habitats and hence they are similarly affected as other Central American cichlid species by bad conditions.

Cichlasoma octofasciatum starts breeding efforts as small as 50mm total length for males. A good trick to get them to breed is to mimic their natural habitat in the spring. Once well fed for some time just turn the filter off or reduce its flow, reducing the amount of dissolved oxygen in the aquarium. Their black dominant markings will shortly appear and courting of females by males will begin. Males choose the territories – they need a solid surface to spawn and apparently flower pots lying on their side (either whole or half) are attractive to them, but this is not critical, as I have had *C. octofasciatum* breed on flat rocks, driftwood or even the excavated bottom of the tank. Eggs are adhesive and number in the hundreds or even over thousands, depending of course of the size of the female, as every egg is the same size. Once eggs are deposited and fertilised, females do most of the spawn care while males are maintained at distance, guarding the territory.

The wrigglers are placed in pits and crevices on the wood if provided, trying to take them up from the ground, especially where low oxygen conditions are found. Males become very participative in fry care

at this point. The parent's behaviour of fanning their free swimming babies with their pectoral fins can just be observed if fine sand is provided.

Jack Dempseys are good parents but not sufficiently skilful to grow a batch of babies in the closed confines of an aquarium, where other smaller and faster fry predator are present. So, if this is the case, you can remove some fry to a separate growing aquarium if desired. An empty 40-litre tank with a sponge filter is ideal. I do not recommend leaving the pair without fry, as this causes confusion and fights between the parents – fights that at this point could become deadly in the closed confines of the aquarium. So always leave some babies with the parents, it will make things much easier for them.

Brine shrimp (nauplii) are an ideal first food for the fry if they are kept in a separate tank. However, if left with the parents, it could serve as a food supplement, but parents will always see that their babies have something to eat, even small pieces of the parent's food. In these conditions they tend to grow faster.

Jack Dempseys are attractive and personable cichlids, they are also relatively easy to keep and breed. An absolute recommended beginner cichlid for those wanting to initiate in the keeping of large Central American, Madagascar or other cichlid tank busters. No wonder they have remained well established in the aquarium hobby since at least 1904! ■



'*Cichlasoma octofasciatum*' from Rio Cotaxtla, Veracruz, México



A stunning tank like this shows the hobby on its best. AND you don't have to take the fish for a late night walk!

PHOTO: BETH THOMAS FOR AQUARIUM

Dick Mills gets his teeth into some hot topics in the aquarist world...

There are two certainties in life, it is said – death and the taxman.

We, in the aquatic hobby may well be able to add two more – legislation and apathy.

The Animal Welfare Act has been in the news recently and it looks at first sight that the hobby may well be right to be concerned about its future. Whilst everyone agrees that cruelty must be taken out of any animal care, it would be wrong to lump fishkeepers into the 'irresponsible' category when it comes to caring for the pets in their charge.

How many other pet owners have, of necessity, to create a special environment for their animals outside of which they cannot exist?

Have the supporters of this outwardly laudable legislation really thought it through for fishkeeping?

Just look at what fishkeeping offers – and just how relatively little it demands in return:

Many pet interests involve noise, mess and sometimes unwanted litters; fish are different in that they...

- a. are quiet
- b. are highly educational
- c. leave no fur or feathers around
- d. need no late-night exercising
- e. won't take over your favourite armchair
- f. present no ties at holiday times
- g. can't exist outside their watery environment
- h. will brighten up a dull corner of any room
- i. even keep your hands clean

In order to fulfil these qualities all they ask is responsible ownership and the

provision of conditions they enjoy in the wild. These advantages are enjoyed by all fishkeepers, no matter to which aspect they aspire. Then, there is the organised side of the hobby, with which our readers are more familiar than most.

On with the show

Every weekend, from March to October, thousands of fishes travel the countryside in the hope of bringing honours to their owners. Whilst keen to show off their prowess in keeping their fish in tip-top condition, exhibiting fishkeepers also fulfil another function – that of providing other fishkeepers with opportunities to see the very best of fishes, including many new recently introduced species.

The often unappreciated side of this particular coin is the care and attention that must be given, if the fish are to survive this weekend in, weekend out ordeal. Fishkeepers simply have to keep their fish in tip-top quality if they are to travel, let alone win.

Ever mindful of this, Societies willingly self-regulate themselves so as to look after entries.

To ensure fishes' health during exhibitions, strong emphasis is placed on using water to which the fish is already accustomed, and it is common practice for fishkeepers to bring their exhibits already set-up in display tanks complete with the correct water.

There are strict rules governing the size of exhibiting tanks used. Regardless of the minimum size of a fish, the minimum show tank size is 50 x 10 x 10cm; upwards of this, another generally applied (and generally accepted) rule is that any tank containing a fish must provide enough room for the fish to turn around.

Exhibitors are also asked to comply with legislation requiring licences to be held for many coldwater species and any entries found to be unlicensed are immediately disqualified.

Breeding schemes

On a more positive note, fishkeepers are encouraged (by various award schemes) to actively breed fishes in their care, and many societies actively promote fish breeding schemes. Apart from their own proud satisfaction, the knowledge attained – and disseminated to others – means that there

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Fish like this Female Wagtail platy (*Xiphophorus molulatus*) are looked after meticulously at shows

PHOTO WITH THANKS TO AQUARIUM

is less dependency on importation of live stocks from the wild, an important conservation point.

Fishkeeping is one of those hobbies that utilises (or even demands) knowledge of several subjects – mathematics, chemistry, physics, biology, geography, geology, genetics to name but a few – but is initially taken up because of its visual appeal. In recent years, thanks to modern air transportation, reliable equipment and knowledgeable practical experience passed on by fishkeepers down through time keeping fish is as successful as it can be without disappointing setbacks. This is never more true than in the keeping of fishes from the warm waters surrounding the coral reefs of the world.

The depth of knowledge available has also been vastly amplified by virtue of the internet. There is simply now no excuse for not knowing how to keep fish properly.

Fishkeeping is a most absorbing and creative hobby enjoyed by people of all ages and financial means; it knows no social boundaries and, unlike some other pet interests, is not subject to 'pressure points' such as pedigrees or cash prizes.

It is in their own interests for fishkeepers to remain caring and responsible as, without this attitude, the very subjects of their interest will simply not survive long enough to enable them to continue enjoying this quite rewarding activity. The problem comes with persuading others that we really do care enough to fight for our interests.

Now on to the next lament...

The vast majority of fishkeepers want an aquarium or pond simply because it looks nice as a living picture, and may never even consider the advantages of belonging to a society dedicated to fishkeeping. However, the organised hobby is very well represented in the UK in this respect and to this end, coupled with publications such as *Today's Fishkeeper*, provides a full back up service for both aquarium/pond care and competitive levels.

Society numbers falling

Despite the previously-mentioned weekend activities, numbers of societies (and of their members) are steadily dropping. An important question that should be asked is "What purpose does the aquarist society fulfil in today's lifestyle?"

People are quick to point out all the other 'attractions' in life which may have lured fishkeepers away from the comforting glow of their aquariums. The root cause may be quite different, in that today's social structure is geared to instant gratification. You might even, in a flippant moment, say the rot set in with the advent of the 'fit a plug, fill it up and go' marketing strategy which, of course, does a disservice to those who created the carefully-designed complete system tanks which have done much in attracting newcomers into the hobby.

Take a look through the pages of back

issues of any hobby magazine and you will, unfortunately, find the occasional tribute to those fishkeepers who have passed away. Look carefully at the details and marvel at just how many years they gave to the upkeep of their hobby, hardly an 'instant gratification' in sight!

There is a vicious circle which we must break: there is plenty of fishkeeping knowledge for those already 'in the know'. How do we reach newcomers, the 'one tank in the lounge' person whom, we feel, might be missing out on this great hobby of ours?

Grow your own

Is fishkeeping a mystery to some people? I only ask because of a conversation I had at the Hampton Court Palace Flower Show.

A lady approached me saying "I've been told to say to you two words – barley straw." "Oh yes," I said "and in what context, would it be ponds and blanket weed by any chance?" "That's right," she replied "but I don't know anything else."

I duly went into the theory of how barley straw could be used to counter blanket weed, at which point she said "Oh, I see, you plant barley in the pond..." Immediately, I had this flash of inspiration.

"Madam," I exclaimed "you've suggested a major breakthrough! We could plant barley, in the manner of rice in a paddy-field, let it grow and die, at which point the dead barley straw would subsequently kill off any blanket weed in the pond. Brilliant!"

Unfortunately, she saw the wicked gleam in my eye, and realised I was teasing, but it just goes to show how mystified some people still are over fishkeeping.

See you next month, **Dick Mills**



PHOTO: DAVID BEVINS

If only it were as easy as planting some barley straw in the pond margins!



people and their pets

... somebody has to understand them

telephone: 01952 883408

September's show, auction and club meeting dates



Siamese tiger fish, *Datnoides microlepis*



Copy for Today's Diary Dates

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Wed 1st	<p>Conry & D.A.S. meeting; Contact 01536 790932</p> <p>Oasis Fish Club (Sunderland) meeting; Contact 0992 384433</p> <p>Perth A.S. meeting; Contact 01 728 621294 or 01506 510958</p> <p>Clacton Fish Keeping Club meeting; Contact 01255 428066</p> <p>Pendlebury A.S. meeting; Contact 08573 889352</p> <p>Bradwell A.S. meeting; Contact 01189 732874</p> <p>Ryedale A.S. meeting; Contact 01423 443900</p> <p>Tameside A.S. meeting; Contact 0161 339 0593</p> <p>Plymouth & District Aquarists & Pondkeepers Society meeting; Contact 01995 642150</p> <p>Thurs 2nd</p> <p>Fairley A.S. meeting; Contact 01728 561291 or 07714 885607</p> <p>Kings Lynn Fish Club meeting; Contact 01553 769522 or 01553 763743</p> <p>Isle of Wight meeting; Contact 0983 721246</p> <p>Basingstoke A.S. meeting; Contact 0118 970 1461</p> <p>South East Marine Aquarist Society; Contact 01279 305542</p> <p>Yorkshire Childid Group meeting; Contact 01924 367086</p> <p>Sat 4th</p> <p>Bristol A.S. 75th anniversary coldwater show; Contact 0117 949 6467 or visit www.bristol-aquarists.org.uk</p> <p>Sun 5th</p> <p>Mid Sussex A.S. Open Show; Contact 01273 602407</p> <p>Kirkcaldy A.S. meeting; Contact John Reid on 01728 634689 or Jo Graham on 01592 782964 after 6pm or email: joegraham@btconnect.co.uk</p> <p>Selway A.S. meeting; Contact 01987 750606</p> <p>St Helens A.S. meeting; Contact 0924 671463</p> <p>Ayrshire Fishkeepers Association meeting; Contact 01294 609272</p> <p>Religate & Redhill A.S. Contact 01293 781282</p> <p>Messydale Aquarist Society meeting; Contact 0151 260 3664</p> <p>Warrington A.S. Contact 0925 483979</p> <p>Tues 7th</p> <p>Southend Leigh & D.A.S. Contact 01702 305740</p> <p>York & District A.S. meeting; Contact 0994 414272</p> <p>Palsley & District A.S. meeting; Contact helburn@thehelburnet.co.uk</p> <p>The Irish Tropical Fish Society meeting; Contact 01 456836</p> <p>North A.S. meeting; Contact 0151 2898190</p> <p>Herth Bucks A.S. meeting; Contact 0998 177133</p> <p>Preston A.S. meeting; Contact 01772 321743</p> <p>Lang Town Aquarists & Pondkeepers Group meeting; Contact 01592 595835</p> <p>Wyke A.S. meeting; Contact 0482 445543</p> <p>Wed 8th</p> <p>Leeds A.S. meeting; Contact 0113 2630 438 or 0113 2161 038</p> <p>Lanllogow Aquarist Society meeting; Contact 01506 510958</p> <p>Hallix A.S. meeting; Contact 01274 880471</p> <p>Bradford A.S. meeting; Contact 01274 652542 or 0113 257 7709</p> <p>Houseslow D.A.S. meeting; Contact 020 8890 6933</p> <p>Dunstable & D. A. S. meeting; Contact 0152 7509564</p> <p>Hambledon & D.A.C. meeting; Contact 01765 640644</p>
Thurs 9th	<p>Plymouth & District Aquarists & Pondkeepers Society meeting; Contact 0992 642150</p> <p>Glenrothes meeting; Contact D. Smart, 4 Leachy Ave., Kingsdale, Fife</p> <p>Mid Sussex A.S. meeting; Contact 01273 602407</p> <p>Bristol Tropical Fish Club meeting; Contact 0117 973 2145</p> <p>Fairley A.S. (Perth A.S.) meeting; Contact 01728 562881</p> <p>Fri 10th</p> <p>Sandgrounders A. S. Contact 01704 541177</p> <p>Dixons Ireland meeting; Contact 061 318193</p> <p>Sat 11th</p> <p>Kirkcaldy A.S. meeting; Contact John Reid on 01728 634689 or Jo Graham on 01592 782964 after 6pm or email: joegraham@btconnect.co.uk</p> <p>Bristol Aquarist Society (Goldfish) Meeting; Contact 01792 207467</p> <p>Grimshy & Cleethorpe meeting; Contact 01472 340178</p> <p>Port Talbot & District A. S. Meeting; Contact 01610 770736</p> <p>St Helens A.S. meeting; Contact 01924 671461</p> <p>Orley A.S. meeting; Contact 01274 511418</p> <p>Robin Hood A.S. meeting; Contact malibee@orangeopus.btconnect.co.uk</p> <p>Darvel & District Aquarists meeting; Contact 01322 773416</p> <p>Tues 14th</p> <p>Northwich A.S. meeting; Contact 01606 883966</p> <p>Caer Uffia A.S. meeting; Contact 0191 5217664</p> <p>Bedford & D.A.S. meeting; Contact 0992 409721 or 0992 666410</p> <p>Lang Town Aquarists and Pondkeepers Group meeting; Contact 01592 595835</p> <p>Northern Goldfish and Pondkeepers meeting; Contact 061 9697567</p> <p>Greenock D.A.S. Meeting; Contact 0475 704219</p> <p>Bangor Aquarists & Breeders Society; Contact 028 9887 3539</p> <p>Clyde Aquarist Society meeting; Contact: porth@btconnect.co.uk</p> <p>Hill A.S. meeting; Contact 0964 562387</p> <p>Strood & D.A.S. meeting; Contact 0654 221291</p> <p>Aberdeen A.S. meeting; Contact: alaburn@btconnect.co.uk</p> <p>West Yorkshire Marine Aquarist Group meeting; Contact 01924 420201</p> <p>Clacton Fish Keeping Club meeting; Contact 01255 428066</p> <p>Tongham Aquarists Society meeting; Contact 01252 254886</p> <p>Perthmouth A.S. meeting; Contact Gill Uffing, 9 Inverness, Rd., Gosport, Hants.</p> <p>Perth A.S. meeting; Contact 01189 712874</p> <p>Bradwell A.S. meeting; Contact 01189 712874</p> <p>Workington A.S. meeting; Contact 01900 679925</p> <p>Thurs 16th</p> <p>Glenrothes meeting; Contact D. Smart, 4 Leachy Ave., Kingsdale, Fife</p> <p>Bristol Tropical Fish Club meeting; Contact 0117 973 2145</p>
Fri 17th	<p>Fairley A.S. (Perth A.S.) meeting; Contact 01728 562881</p> <p>Sandgrounders A. S. Contact 01704 541177</p> <p>Eastbourne & District Pondkeeping; Contact 01323 773169</p> <p>West Cornwall Fishkeepers meeting; Contact 01209 64518</p> <p>Sat 18th</p> <p>Carlisle Study Group open show and auction; Contact 01254 776667 or visit www.carlislestudygroup.org.uk</p> <p>South London A.S. open show; Contact Sue 0207 231 2317</p> <p>Mon 20th</p> <p>North East Yorkshire Killi Group meeting; Contact 0453 618971</p> <p>Kirkcaldy A.S. meeting; Contact 01728 634689 or 01592 205565</p> <p>Norwich A. S. meeting; Contact 0603 436219</p> <p>Solway A. S. meeting; Contact 01387 750606</p> <p>Messydale A.S. meeting; Contact 0151 260 3664</p> <p>Ayrshire Fishkeepers Assoc meeting; Contact 01294 609272</p> <p>Oldham A. S. meeting; Contact 0161 652 6007</p> <p>Midlands Marine Aquarists Society; Contact 0121 339 1469</p> <p>Castlefield Auction; Contact 0977 730754</p> <p>Lang Town Aquarists and Pondkeepers Group meeting; Contact 01592 595835</p> <p>Wyke A.S. meeting; Contact 0482 445543</p> <p>South Park Aquarist Study Society; Contact Eric 0208 6792880</p> <p>Wed 22nd</p> <p>Houseslow D.A.S. meeting; Contact 020 8890 6933</p> <p>Hallix A.S. meeting; Contact 01274 880471</p> <p>Workington A.S. Contact 01900 679925</p> <p>Thurs 23rd</p> <p>Tameside A.S. Contact 0161 339 6993</p> <p>Mid-Sussex A. S. meeting; Contact 01273 602407</p> <p>Glenrothes meeting; Contact D. Smart, 4 Leachy Ave., Kingsdale, Fife</p> <p>Bristol Tropical Fish Club meeting; Contact 0117 973 2145</p> <p>Fairley A.S. (Perth A.S.) meeting; Contact 01728 562881</p> <p>Sandgrounders A. S. Contact 01704 541177</p> <p>Eastbourne & District Pondkeeping; Contact 01323 773169</p> <p>West Cornwall Fishkeepers meeting; Contact 01209 64518</p> <p>Frid 24th</p> <p>Northern Goldfish open show; Contact 0161 9697 567</p> <p>Sat 25th</p> <p>Basingstoke A.S. Contact Sue 0207 231 2317</p> <p>Mon 27th</p> <p>Kirkcaldy A.S. meeting; Contact John Reid on 01728 634689 or Jo Graham on 01592 782964 after 6pm</p> <p>Port Talbot & District A. S. Meeting; Contact 01610 770736</p> <p>Tues 28th</p> <p>Greater Manchester Childid Society meeting; Contact 01906 619095 or 01906 8497155</p> <p>Northwich A.S. meeting; Contact 01606 883966</p> <p>Lang Town Aquarists and Pondkeepers Group meeting; Contact 01592 595835</p> <p>Greenock D.A.S. meeting; Contact 0475 704219</p> <p>Croydon Aquarist Society meeting; Contact 020 8654 0984</p> <p>Strood & D.A.S. meeting; Contact 0654 221291</p> <p>Castlefield A.S. meeting; Contact 0977 730754</p> <p>Wed 29th</p> <p>Thurs 30th</p>

Calling all goldfish fans



PHOTO COURTESY OF ADAMWEN

Many readers are interested in goldfish and often enquire about clubs in their area.

If you are interested in goldfish and live within the Bristol area, why don't you go along to their meetings where you can meet fellow enthusiasts, receive helpful advice and obtain quality fish. Established more than 70 years ago, this society was closely involved in producing the Bristol Shubunkin, a very attractive fish, both hardy and beautiful.

BAS meet at St Andrews Church Hall, Stretford Road, Whitehall, Bristol at 7.45pm. Their open show will be held on Saturday September 4, 2004 at Alexandra Park Centre, Alexandra Park, Fishponds, Bristol. At this show young fish will be auctioned and you will see many first class fish there. Experts will be on hand to deal with your queries.

Don't forget that on Saturday September 18 SPASS will be holding their Coldwater and

Amphibian Show in association with Hounslow club. This is another event not to be missed by coldwater enthusiasts.

In the North why not visit the Northern Goldfish & Pondkeepers open show to be held at the Church Hall, Delamere Road, Altrincham Manchester. Contact 0161 969 7567

The Goldfish society of Great Britain Open show is coming up in October. Contact 01277 215 298 for further details.

Solway A.S. Open Show

Roy Blackburn from Castleford A.S. was delighted with his prize for Best in Show. The family of Brian and Steve Chrich, along with Ian Wright had purchased a beautiful clock to accompany the perpetual trophy for Best Catfish – on this occasion his *Horo filamentosa* took both awards.

Best Livebearer and second Best in Show was a male *Characodon lateralis* owned by the host club's Gavin Cowan. With best Characin an *Astyanax abramis* belonging to Dawn and Keith Pearson from the Caer Urfia club, taking the third Best in Show award.

Entries were well up on last year's figures and the standard was very high with 'A' class Judges Brian Walsh and Steve Grant having their work cut out. While the 'B' class judges had a lot of book-studying to do to ensure they were getting it right. The three of them Donna Steele, Barry Booker and Bill Ward reckoned it was an excellent experience for them. Steve Spencer was again the superb auctioneer, working tirelessly to shift the vast amount of homebred fish and other assorted items.

A big thank you to the members of staff at the Barony College for all their assistance and to the Flinn family for their support.

The members of Solway would like to take this opportunity to thank everyone who assisted with the show and to all who attended.

DEDICATED AQUARIST WILL BE MISSED

It is with great sadness that Halifax Aquarists Society report the death of one of their longest serving members, Tom Wheelwright, on Friday July 23.

Tom had been a member of Halifax Aquarists for more than 40 years; he served as Treasurer for most of that time and had also been Show Secretary.

He had attended most of the British Aquarist Festival Shows, which used to be held at Manchester's Belle-Vue, and had in fact shown his fish there; he was also a regular at the Yorkshire Aquarist Festivals held at Doncaster Racecourse.

Tom was one of those first to breed what became one of his favourite fishes – the Harlequin, *Rasbora heteromorpha*. He used to breed these lovely little fish in a bare tank, much to the envy of many local fish keepers.

Many people who go to Halifax Auction will remember him for his garden plants – a highlight as traditionally the first lot in the auctions.

Tom will be very sadly missed by all who knew him; he was a gentleman. Our deepest sympathy and thoughts go to his wife Kathleen and his son and daughters.

SUE KENWORTHY, Show Secretary, Halifax Aquarists Society

Let's pretend



Here Hagen have combined replica plants with replica wood to good effect

Roy Osmint takes a look at replica plants and says that they have a useful part to play in the aquarium hobby

A glance around almost any good aquatic retail outlet is likely to reveal a display of artificial aquarium plants. In many cases this will be extremely comprehensive, with plants offered for sale representing a wide variety of species, constructed from various materials, at a range of prices.

To many seasoned aquarists the use of any sort of artificial plant is often unacceptable. Frequently being seen as unattractive and unnatural, as well as failing to contribute to the biological balance of the system. But is such a notion entirely reasonable? Or is it simply the view of the purist minority?

Clearly, there is no accounting for taste and undoubtedly the former view is, indeed, correct in the eyes of those who hold it. Nevertheless, my own opinion, which has been many times sought by newcomers to the hobby, is that these widely-available plant substitutes do have a useful role to play.

I have, on many occasions in the past, used artificial plants in my own aquariums to good effect, without any environmental problems arising. The point on biological balance, however, is a reasonable one. No matter how realistic or otherwise an artificial

plant may look, it cannot be expected to fulfil the natural functions of a real one.

The nitrogen cycle

Ammonia, a toxic substance excreted by fish and decomposing organic material, is eventually converted by friendly bacteria into less harmful nitrates. These are then utilised by plants as a fertiliser. In addition, carbon dioxide, a waste product of the fishes' respiratory system, will be absorbed by plants and some oxygen released back into the water.

Where artificial plants are in use these waste products are, of course, still being produced by the fishes, but without the biological benefits provided by natural plants. Attention to water quality becomes even more important in these circumstances.

In order to compensate, an aquarium containing replica plants should be installed with an efficient filtration system and small partial water changes carried out on a more frequent basis. It is also a good idea to regularly monitor the water, to ensure there is no build-up of harmful compounds.



Silk plants can look very realistic like this one from Hagen

Reasons why

There are various reasons why fishkeepers will choose to decorate their tanks with artificial plants. For some, the instant introduction of fullness and colour is the attraction. For others, it may be that the fish species being kept are plant destroyers, either by eating the foliage or disturbing the roots by constant substrate excavation. For

PREPARATION

I have in the past come upon recommendations that new plastic plants should be sterilised in a mild solution of bleach before being introduced into the aquarium – personally I consider this unnecessary. Most manufacturers suggest the plants be simply immersed in warm water prior to introduction to clean and encourage them to take shape. I have always found this to be satisfactory.

Replica plants normally come fitted onto a hollowed-out base. This can be pushed down into the substrate to a suitable depth, so it remains firmly in position and that the plant stem emerges in a natural manner.

Even though the plants themselves may be realistic in appearance, unless some thought and planning is given to the way in which they are assembled within the aquarium, the overall effect is likely to be discordant and unnatural. The observance of one or two simple rules together with a bit of trial and error will soon produce a pleasing result.

many, it will be that they have tried to grow real plants, but have been unsuccessful.

In the case of the latter, it must be realised that real plants will only prosper and flourish if they are provided with favourable conditions. In particular, this means sufficient light to enable them to properly photosynthesise. Lack of illumination is probably the principal cause of most unsuccessful plant growing attempts.

It is certainly no use whatever setting up an aquarium entirely with the fish in mind, sticking a selection of natural plants in the gravel and expecting them to flourish. In most instances it will just not happen.

Plant culture is a subject in its own right, requiring a similar level of care and attention to conditions and environment as is given to the fish themselves. If you are not prepared for this, artificial substitutes are the answer.

Materials used

The vast majority of artificial plants are made out of plastic. The better ones are very realistic, carefully sculpted to accurately replicate the species upon which they are modelled. The colour will also be a fair representation of the real thing.

Some plastic plants, generally the cheaper ones, are totally unrealistic and of garishly unnatural colours. Personally, I would not entertain them, but as stated earlier, there is no accounting for taste and clearly there is a market for them.

It has been said, the leaves of plastic plants can sometimes be left with sharp edges, due to errors in the moulding process, and that these might under certain circumstances cause injury to the fish. All I can say, is that I have not come across the problem. I reckon most fish are a bit tougher than we often think!



Examples of some of Interpet's range of replica plants

Plastic plants do not last for ever. Eventually, they begin to lose their colour and become very brittle. At this stage any attempt to clean them often results in leaves or stems breaking off. The best course of action is to replace them.

A few replica plants have their leaves constructed from fabric. Again these can be realistic in appearance, with perhaps the added advantage of more lifelike movement in a current of water or air. But they do tend to be quite delicate and in time often discolour and fray.

Finally, do remember that your plastic plants are not going to grow or reproduce, so closer planting is likely to be required than would be the case with real ones. With this in mind, you will probably need more plants than you think to achieve the desired result.

Pros and cons

To my way of thinking, there are few more beautiful sights than a brightly illuminated aquarium containing a well maintained array of flourishing natural plants and colourful fish.

In contrast, however, a tank whose plant life is dilapidated and drawn due to completely unsatisfactory conditions being provided to support it, looks terrible! The case for artificial plants thus becomes clear... ■

The rules

Always situate larger plants at the rear of the aquarium. This will create an effective backdrop, giving interest and perspective to smaller species and other furnishings further forward. It will also screen the back glass and help camouflage equipment such as heaters and airlifts.

Always try to position your plants at random rather than in a row and aim to keep groups of the same species together in clumps, rather than creating a hotchpotch of numerous different varieties in close proximity. This rarely occurs in nature.

The use of different coloured plants such as reds can be used to great effect alongside the greens. But again, keep them together in fairly tight groups – they have more of a visual impact.



Something old, something new

PHOTO: www.petermann.org.uk

Tony Sault takes an overview of the Discus hobby. After all these years he's still in love!

The Turquoise discus was the first man-made colour strain

TODAY'S FISHKEEPER SEPTEMBER 2004

In 1966 I began a love affair that I am proud to say continues today. In the distant past the only Discus available – and these were few and far between – were browns, blues and greens. These were very often wild-caught or first and second generation fish bred from wild parents. They were all classified *Symphysodon axelrodi*, and had very little difference in coloration beyond the anal fins having blue or green flashes. But to me the beauty was in the whole being of the fish and I just had to have the very first one that I saw.

Now, as I recall, 1966 was an excellent year for football fans, but not so good for potential Discus keepers – my newly acquired charge only lasted for one week. There are defining moments in everyone's life when you come to a crossroads and the decision of which road to take may well affect the rest of your life. I could have ended the affair at that moment and moved on, but even as a teenager, I was nothing if not determined and very curious as to why this beautiful animal had died. So I chose to find out as much as I could about this species before I bought anymore, and I am still learning some 38 years on.

Amazon exploring

As the Amazon region was opened up more, tributaries of the great river system were explored and better quality wild Discus became available to the trade. These were named Royal blues and Royal greens because of the extensive coloration on their flanks, and were classified at the time *Symphysodon aquafasciata aquafasciata*. Also the first discovery of a Discus with an amazingly prominent fifth bar, the *Symphysodon heckel* or Heckel as it was to become known.

Now, as I recall, 1966 was an excellent year for football fans, but not so good for potential Discus keepers

It was the discovery of such a highly coloured fish which led to the first 'man-made' colour strain, the Turquoise discus. I remember vividly to this day seeing my first Turquoise discus in the shop has long since closed but the feeling standing in front of the tank with my mouth agog, marvelling in utter disbelief at the beauty of this fish remains with me to this day.

As the years passed and more regions of the Amazon were opened up, namely the Alenquer region and Lake Tefe area, the



Leopard snakeskin

Photo: Tony Sault

potential for increasing the number of man-made varieties blossomed. The Tefe green with its numerous red spots and the Alenquer red discus were instrumental in passing on their colour genes to future generations. In particular the Red turquoise varieties. As the number of varieties increased some of the fish were found to contain more of one colour than others. Breeders were quick to spot this and with patience developed the solid colour strains such as the Blue Diamond, Cobalt, Solid turquoise and Solid steel blue. To all the breeders that spent many years perfecting one colour pattern, we owe a great debt of thanks. Previously uncharted regions of the Amazon system were still being explored and new colour varieties such as the Rio Tapajos, Solid red Alenquer and Blue-faced heckle were caught. However, the giant leap forward was still to come...

A different ball game

If one fish can be credited with changing the whole future of Discus colour strains then it would be a single fish caught in a batch of young Red turquoise. It had a different colour pattern – its base colour was red, overlaid with white stripes – this was the first Pigeon blood mutation and it was about to become the father of many generations of fish. The constraints for interbreeding and new colour strains creation were removed and over the last few years there has been a virtual explosion of

Wild Tefe green



Photo: Tony Sault

new varieties available. So many colour variations are available to today it's almost impossible to catalogue them all – they include Solid tangerine, Yellow-faced Marlboro, Pigeon blood blue and Snakeskin leopards to name but a few.

The desire of every serious Discus breeder is to create something new, something that has never been seen before. In fact, many breeders today constantly crossbreed their Discus through the generations – a procedure that was taboo only a few years ago – hoping for that one colour mutation that will astound the Discus-keeping public. As for me, I was astounded in 1966 when I fell for my first Discus, and to this day remain enthusiastic about this beautiful animal which it has been my privilege to keep for so many years. ■



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Discus expert
Tony Sault solves
another batch of
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Waiting for wild-caught



I have been searching shops for some wild discus to add to my collection but have not seen many. Can you tell me when good quality wild fish are available?

Sean Fallon, Belfast



The collecting season for wild discus in South America runs roughly from September through our winter to March, so importers should be getting new arrivals from October onwards. Personally I never buy the first offerings and very often wait to see what comes in November and December – after all you want the first pint when the barrel's been changed at the local!

Nitrate readings



No matter how hard I try, I can never get my nitrate reading to zero. Is this a must as I am running out of ideas?

Pete White, London



Zero nitrate is ideal but not essential as it's not toxic until present in high concentrations. Also it's a consistent of your tap water so you may have difficulty reducing it with water changes. There are various nitrate removing materials, such as resin, available that can be placed in your filter. Personally I don't worry about it unless it goes over 100 ppm – at higher concentrations the fish exhibit symptoms similar to parasite infestation i.e. itching, rubbing against objects, fin flicking etc.

Suitable tankmates



I have set-up a 190-litre tank for discus and would like to know what other fish I can keep with them. I would like a few Tetras, Angelfish and catfish – would these be ok?

James Collingworth, Boston



Any of the Amazon tetras are ideal tankmates for discus. Angels had a bad reputation for many years but I have kept them in the same tanks as discus and I've never had a problem. Catfish are fine as long as you select them carefully e.g. corydoras are great workers, cleaning up after the discus and are worth their weight in gold. Cleaners such as Bristlenoses and Pekoltias are fine but avoid introducing anything that will grow large or aggressive.

I want my discus to spawn!



I have been keeping discus for two years now and I am sure that I have a pair in my main tank. I am setting up a tank to house the pair – what can I do to get them to spawn?

Andrew Shields, Newcastle



Make sure the parameters of your new tank set-up are as close as possible to the original tank parameters i.e. pH and temperature, and allow the fish to settle in for about one

month. If they do not take the hint, you can try to induce spawning by giving them an extra few feeds a day for a week. Then turn the temperature down a couple of degrees and leave for a few days. Time this in conjunction with a water change, adding water at a slightly higher temperature while tweaking the tank temperature back up 4°C. You can also add water at a lower pH and higher temperature. A combination of plenty of food and fresh warmer conditions usually triggers the correct response – spawning.

Quarantine system



After having a few problems with my discus, I now see the need for a quarantine tank to house new fish before I introduce them into my main tank. How big does this need to be and what equipment will I need?

Sarah Winston, Warrington



It is always wise to quarantine all new stock before introducing them into their new home and this will also double as a hospital tank for any future problem fish to be treated in. The tank doesn't need to be large – 120 litres would be fine – it can be devoid of furniture and substrate and only needs a heater and filter.



It's always wise to quarantine all new discus

PHOTO: MARY & C. PHOENIX

Cleanliness is next to godliness

What we all want to achieve – a well maintained tank with healthy fish



Switch off

When making water changes, ensure that the water level does not drop below the heaterstat, internal filter or external filter inlet. If this cannot be avoided, turn off any relevant equipment.

No matter how good your filtration system, there will always be the need for regular maintenance in the aquarium. Here's how to go about it...

The regular removal of organic wastes, water changes and general tidying will keep the tank looking its best and the fish as healthy as possible. Maintaining a tropical freshwater aquarium is not a major undertaking and, if done regularly, will only take about 30 minutes per week (depending on size of aquarium). It is quite distressing to hear stories of fishkeepers who regularly remove all their fish to a separate container and completely clean the aquarium, gravel and decor before replacing the fish and water. This form of maintenance is incredibly damaging to the aquarium environment and to the fish.

Water changes

Even if everything seems fine in the aquarium and the water is crystal clear, regular water changes are still essential. Over time, trace elements that are important to both fish and plants will diminish, and organic pollutants, such as

nitrites, will build up and may not be removed by filtration. Regular small water changes will dilute any pollutants and replace lost trace elements.

Any sudden change of environment can be stressful to fish, so keep the amount of water changed to a minimum. The quantity of water and the frequency of water changes are subjects on which you hear many different opinions, even from expert fishkeepers. It is true that some aquariums can be left for longer without any need for water changes, but to judge this accurately you would need the backing of many years of fishkeeping experience. To be safe, make a weekly water change of 15-20% in an unplanted aquarium and a 20-25% change every two weeks in a heavily planted aquarium. The reason for the difference is that plants can remove many of the nitrates in the aquarium, thus reducing the need for water changes. The smaller the water change, the less stress is placed on the aquarium environment, so ideally, carry out small water changes every few days.



You may be surprised at the large amount of waste matter that collects in the substrate. This gravel cleaner will help to remove this waste

Water changers and substrate cleaners

This design has a simple rigid cylinder and a flexible hose to siphon water out



Here, the cylinder is wider at the base and a valve in the neck helps to start the flow

Squeeze bulb to draw water up

Release this valve to start the flow

Introducing the water

Water changes can be stressful and damaging to fish if they are not carried out correctly. The new water should be similar, if not identical, to that in the tank in terms of hardness, pH and temperature to avoid any shock. Provided the water in the aquarium is unaltered in terms of water quality, and the source of the new water is the same, there should be no problems. To raise the temperature of the new water, keep it for 24 hours and heat it with a small aquarium thermostat. Mixing boiling water with cooler water to raise the temperature before introducing it to the aquarium is possible, but may reduce hardness. If heating the water is not possible, leave it in a heated room for 24 hours and introduce it to the aquarium slowly over a period of an hour or more. Providing you add the fish and water slowly and carefully over time, most fish will not be bothered by a small drop in temperature.

If you are using tapwater, be sure to dechlorinate it first. There are two methods of doing this. Using a proprietary dechlorinator, some of which also remove chloramines, is by far the best method. These are supplied in liquid form and you simply add the correct dosage to the water. They dechlorinate the water within a few minutes – sometimes you can even smell the difference! The second method is to aerate the water for 24 hours. This increases the gas exchange and allows chlorine to dissipate into the atmosphere.

Finally, when introducing the new water, pour it slowly to avoid disturbing the substrate or decor, and make sure that any containers are reserved solely for the aquarium and never used for any other purpose. Chemical residues can remain in containers for long periods of time and be harmful to aquatic life.

Cleaning the substrate

Although filtration will remove some visible particles from the water, its main function is biological – to remove organic pollutants. Most of the physical waste in the aquarium will end up trapped in the substrate and must be removed to reduce the build-up of harmful bacteria and remove organic pollutants released by the breakdown of waste. Too much waste in the gravel will increase bacteria levels and can cause disease in some fish: bottom feeders such as Corydoras, are particularly susceptible. The easy way to remove waste from the substrate is with one of the many gravel cleaners on the market. Place this simple siphon device in the substrate and it will lift away the waste matter whilst agitating the substrate, and then deposit the substrate back on the aquarium floor. Agitating the substrate and removing waste also helps to prevent algae build-up. Siphon the water that is removed, along with all waste matter, to waste.

Use a bowl or bucket in which to clean filter material. Use a new container the first time and then keep it solely for aquarium use



Because the process removes water from the aquarium, carry out a gravel clean at the same time as a water change. You can then replace the lost water with the new water you have prepared for the aquarium.

Most gravel cleaners are supplied with various self-start mechanisms, making the whole process very simple to carry out. Battery-powered and air-powered gravel cleaners are also available. These recycle the water back to the aquarium and remove waste via a strainer, but they are often not as effective or as powerful as a siphon-based cleaner. Clean the gravel at least twice a month.

Gravel cleaners may not be effective on finer substrates, such as sand, as they are likely to remove the sand as well as the waste. To clean this kind of substrate, simply siphon the waste from the surface, where it settles, and then stir the substrate thoroughly to prevent stagnation.

Filter maintenance

Your filter will need regular maintenance to keep it working efficiently and to prolong its useful life. Properly maintained, a good filter will last for many years. The three most common forms of filtration in a freshwater aquarium are undergravel, internal power filter and external power filter. Each system requires a different maintenance regime.

Undergravel filters need virtually no maintenance and will continue to work effectively with regular gravel cleaning. Replace the airstone every six months. Every few years, you will notice a reduction in power or air flow, which means the airpump diaphragm has worn out and need replacing. If you are using powerheads with your undergravel filter, clean the impellers every few months according to the

Maintenance chart

	DAILY	TWICE WEEKLY	WEEKLY	EVERY 2 WEEKS	MONTHLY	EVERY 3 MONTHS	YEARLY	AS NEEDED
Check for dead fish, signs of disease, bullying, abnormal behaviour	✓	✓						
Check equipment, temperature, flow rate, etc.	✓	✓						
Remove dead plant matter			✓	✓				
Clean the substrate			✓	✓				
Water change 10-20% Low planted or heavily stocked with fish		✓	✓					
Water change 10-20% Heavily planted or low stocked with fish			✓	✓				
Clean filter sponge in aquarium water or dechlorinated water			✓	✓				
Replace carbon media in filter					✓	✓		
Clean pump impeller						✓	✓	
Replace light tube (only vital in planted tanks)							✓	
Partially replace biological filter media								✓
Clean aquarium glass and remove algae								✓
Trim plants								✓
		✓			✓			

✓ New aquarium/first four weeks

✓ Established aquarium

manufacturer's directions. An impeller is the device in virtually all power filters and pumps that moves the water. It consists of three main parts: a magnet, a series of blades or fins and the impeller shaft. The magnet and blades will be connected and should slide easily out of the pump. Simply wipe them clean. The impeller housing (where the impeller was) can be cleaned with a small brush or old toothbrush. Some impeller shafts are fixed, while others can be removed. They are usually ceramic or metal. When cleaning the pump, be careful not to bend or break the impeller shaft.

Internal filter sponges should be removed and cleaned in water from the aquarium, not in tapwater. Do not clean the sponge too thoroughly, as bacteria can be removed along with other waste. The frequency of cleaning will depend on the individual aquarium, but most internal filters will need

cleaning once a month. If the flow rate of the pump/filter starts to decrease, it may need cleaning more often. The impeller will also need maintaining as described above.

External filters are not as easy to maintain, but usually need cleaning less often than internal filters. Once again, the sponges should only be cleaned in aquarium water, which can then be thrown away. Any other biological media in the filter can also be rinsed in aquarium water, but unless they are visibly dirty, they need only be cleaned once every three months or so. Replace filter floss every time the filter is maintained. The floss is simply a final 'polishing' medium to remove small particles and has virtually no influence on biological filtration. Open and prime the filter according to the manufacturer's instructions – it may be worth placing the filter in a container to avoid any spillages.

CONFLICTING ADVICE

Aquarium maintenance is different for individual aquariums and the frequencies given here are guidelines only. If you have large messy fish, such as some of the cichlids, you may need to increase water changes and clean the filters more often. Conversely, if you have a heavily planted, understocked aquarium you may not need to do as much maintenance. Experience also helps in making these judgements.

Photos and text from *Water Quality* by Peter Hiscock with thanks to Interpet Publishing. ISBN 1-903098-00-9 Price £5.99. For further information call 01306 873822

Today's Surgery

Ulceration round dorsal fin on goldfish. This can be one of the signs of bacteria infection



PHOTO DALE BEVAN



It is a truth that common things occur frequently, and that this applies as much to fish problems as to any other condition. The five diseases I have chosen to look at span the range of the hobby and are readily seen in pond and coldwater fish, tropical freshwater and marine fish. The main advantage of familiarising yourself with these infamous five is that as soon as you realise that you have a problem you can start to run through these options. In a great many cases it will be one or more of these. Now for a closer look...

1. Ammonia poisoning

Ammonia is the major end product of protein metabolism in fish. Ammonia is excreted from the fish dissolved in the urine, but also directly from the gills. This ammonium disperses into the surrounding water where, because of a chemical reaction, it exists in two forms – ammonium and ammonia. The amount of each form varies with the water temperature and the pH.

High pH and/or high temperature – favour the ammonia form. Low pH and/or low temperatures – favour the ammonium form. The ammonia form is much more toxic than ammonium, which is why ammonia poisoning is commoner in marine and Malawi/Tanganyikan systems than many others. Fortunately our fish are not constantly poisoned by ammonia because it is naturally removed from the water by beneficial Nitrosomonas bacteria present in biological filtration media.

Common causes of high ammonia levels are overfeeding (excess protein leads to high ammonia production), overstocking (too many fish excreting ammonia) or filter insufficiency (filter too small for number of fish or poorly maintained; low ambient temperatures causing the bacteria to "go slow"). Ammonia levels are easily checked with commercial test kits; there are even in-tank ammonia monitors that will give you a constant visual reading to give you piece of mind. Note that those test kits that measure total ammonia should provide you with a table that allows you to work out the amount of toxic ammonia present.



Activated charcoal will absorb a variety of toxic products from the water

Zeolite will absorb ammonia in a freshwater aquarium



Top 5 diseases

This month **Lance Jepson** takes an overview of what he considers to be the commonest five causes of illness and death in ornamental fish

Three spined stickleback with the common disease whitespot



High ammonia levels are dealt with by partial water changes, adding ammonia absorbents such as zeolite (freshwater) or activated carbon, or by increasing the filter bacterial levels by adding commercially available cultures. Longer-term measures involve investigating the underlying causes and dealing with them. Safe levels of total ammonia are considered to be less than 0.02mg/l.

2. Nitrite poisoning

In your biological filter, ammonia is converted to the chemical nitrite by a second group of bacteria known as Nitrobacter. Nitrite is not so toxic as ammonia but is still important because in high concentrations it affects the ability of individual red blood cells to take up and transport oxygen. This stresses the fish making them susceptible to secondary problems such as bacterial infections whilst in extreme cases fish suffering from nitrite poisoning can show similar signs to oxygen starvation – the fish gasp at the surface. Nitrite toxicity is not unduly affected by water quality parameters unless these are so bad as to affect the Nitrobacter populations in your filter.

Treat nitrite poisoning by performing partial water changes plus addition of commercially available filter bacterial cultures. Adding salt to the water also helps – which may explain why some marine fish do appear to be more tolerant of low nitrite levels than many freshwater. Safe levels of nitrite are considered to be below 0.2mg/l with fatalities occurring above 0.5mg/l.

3. Whitespot

This extremely common disease is caused by large numbers of a relatively large, single-celled (protozoan) parasites that embed themselves in the skin of the fish. In freshwater fish, whitespot is caused by *Ichthyophthirius multifiliis* whilst in marines it is due to *Cryptocaryon irritans*.

The classic sign of whitespot is... white spots! Usually these are small pinhead sized dots that can be seen on the fins and body of infected fish. These spots are not the actual parasite itself but are the result of what happens when it burrows into the skin

of the fish. Whilst on the fish the parasite feeds and grows. Once it has reached a suitable stage it emerges from its cyst and then drops to the bottom of the aquarium or pond, where it again encysts and begins to divide. Up to 2,000 tiny infective stages can be produced this way inside each cyst, which when released will seek out a new host to complete its life cycle.

The free-swimming infective stage is the most sensitive stage of the life cycle to chemical attack. Both *Ichthyophthirius* and *Cryptocaryon* infestations respond well to commercial whitespot medications.

Sometimes this disease may not present in typical fashion. I have seen *Pimelodella pictus* catfish dying from *Ichthyophthirius* that infested the gills, but not the skin – both *Ichthyophthirius* and *Cryptocaryon* will occasionally cause mortalities this way without showing the typical white spots. Such fish will show severe respiratory distress with heavy, rapid breathing plus hanging around areas of water disturbance where oxygen levels are highest.

4. Ectoparasitic infestations

Whitespot is an obvious ecto- (external) parasite, but there are many others such as Velvet disease (*Oodinium*), *Ichthyobodo*, *Chilodonella*, *Trichodina* and skin flukes (*Gyrodactylus*). In marine aquaria, *Uronema*, *Brooklynella*, *Trichodina* and the skin flukes *Gyrodactylus* and *Benedinella* are commonest. In most cases the presence of the parasite is given away by the fish, which are often irritated by the problem and will scratch or flick against aquarium furniture. The fish skin responds to the parasites by increasing the amount of mucus produced. This traps some of the parasites, which are then lost when the excess mucus is shed. Infested fish therefore appear duller in colour than normal because of this thickened mucus covering. Damage to the skin caused either by the parasite itself, or by the fish scratching will often allow secondary bacterial infections to invade and establish, causing a whole new set of problems such as ulcers.

The common ectoparasites are usually easily treated with proprietary medications from your local retailer – in particular those

Bacterial infections can present in a variety of ways:

- Sudden death. A rapid synthesis of large amounts of toxins by a small number of bacteria, or else an overwhelming bacterial spread may not give the fish any chance to mount an immune response of any description. Such fish appear to mysteriously keel over and die.
- Reddening of skin and haemorrhages. Blood-like streaks in the fins and skin, or reddened areas (particularly obvious if on white or pale patches of skin) can be typical of bacterial disease.
- Ulcers – shallow to deep erosions of the skin, often red-rimmed.
- Weight-loss. Damage to important internal organs by bacteria, especially mycobacteria (fish TB) can lead to severe loss of condition.
- Abnormal behaviour. Shimmying in mollies is due to toxin production by *Flavobacteria*; any bacterial infection that affects the brain or spinal cord can trigger abnormal behaviour or patterns of movement.
- Bacterial infections can be difficult to treat. Many commercially available antibacterial medications are of limited use against the usual types of bacteria that are encountered in fish. Those products based on tea tree oil do have some merit but are unlikely to cure severe infections so for mild try these. For severe infections either seek professional help or consider humane euthanasia of the fish.

containing formalin are very effective, but the secondary problems of bacterial infections can be a different matter altogether.

5. Bacterial infections

Bacteria are naturally present on, in and around the fish. Some are pathogenic (*Aeromonas* and *Flexibacter* in freshwater, *Vibrio* in marine) whilst others are beneficial. Each fish carries in it and on it a natural flora. These harmless and beneficial bacteria help to protect the fish by taking up attachment sites on the fish that the bad guys could otherwise use to establish themselves. Pathogenic bacteria typically will kill fish by the toxins they produce. These toxins can have localised effects such as breaking down the muscle and tissue of the fish to help the bacteria spread further, or can be carried in the blood stream causing damage at a distance from the infection such as in vital organs like the kidneys, liver and brain. ■

Lighting the way



Lighting picks out the various waterfalls

Incorporating lights in and around your pond can make such a difference.

Ben Helm answers some common lighting questions...

Lighting has been used in and around ponds for years to convey different moods and effects. Underwater lighting can extend the life and entertainment from a pond well into the night, creating a focal point of both sight and sound for an evening around the barbecue, while subtle lighting can be used to delineate a path or give a lit backdrop.

Q. Do I need lighting in my pond?

Unlike say a pump or filter, a pond's health and well-being does not depend on pond lighting. Lighting will not impact on the biology of the fish and other pond life and will not affect the water quality in a pond.

Q. What are the benefits of lighting a pond?

Lighting is not installed out of necessity, but by choice, benefiting the aesthetics and presentation of your pond after dusk.

Artificial lighting gives us the opportunity to direct light in ways that nature did not intend, shining light upwards out of ponds, bouncing off the underside of bridges or from beneath stepping stones. Underwater lighting also gives us the opportunity to see fish illuminated from below, watching silhouetted fish darting about in the twilight.

Underwater lighting can be used in a number of ways to add atmosphere to a pond. Simple spotlights can be used to cast shadows in the misty water. These can also usually be used outside a pond as their low wattage bulbs will not overheat and their waterproofing seals make them very weatherproof.

Q. What power options can I choose from?

Lights in and around your pond can be powered in a number of different ways.



220v underwater lighting

These consist of a single spot light that is supplied on its own base to be positioned within the pond for maximum effect. Like the majority of other underwater lights, interchangeable coloured lenses may be available to add different moods as required.



Transformer



The lights add a new dimension to the waterfall

Low voltage (12v, 24v) underwater lighting

The vast majority of underwater lights are low voltage as they pose far fewer risks than mains-voltage lights. Unlike submersible pumps, lights cannot be encased in resin to make them water tight but must be accessible for maintenance and bulb changes. This can make sealing them satisfactorily quite problematic, especially when you consider that pondkeeping DIVERS will be responsible for resealing them after a bulb change.

A low voltage light system requires a transformer to drop the current down to 12 or 24v. Usually the transformer must be housed indoors in a well ventilated site. However, recent advances have meant that some transformers can now be sited within the pond itself (exploiting the resin-encasing safety measures that have benefited submersible pumps). At least there won't be any overheating problems for these transformers. Another benefit of low voltage lighting is that the wiring can be carried out tool-free, using

clamping systems etc that pinch through the low voltage cable to make contact – something that would be far too risky for mains voltage lighting.

Solar powered lighting

This type of lighting has many benefits from the point of installation and running costs, as there are no wires and no running costs. They have an integral rechargeable battery that is charged up via the solar panel during the day. At night time a photocell in the light automatically switches the light on (a feature found in many low voltage systems also). To be most effective, these lights need to be installed in direct sunlight as their night time output is directly related to the power stored in the day. They are not as bright as low voltage lights, providing more of a glow. Solar lighting also has its limitations in the winter months when sunlight and day length do not work in the rechargeable batteries' favour.

Q. What light options can I choose from?

a. Submerged:

- Single spotlights
- Multiple lights fixed to the pump
- Either in white or with coloured lenses

b. Fountain lights

These units illuminate the water as it is ejected through a fountain head. The ejected water that forms the fountain then picks up the light "fibre-optic-style" as it cascades onto the pond.

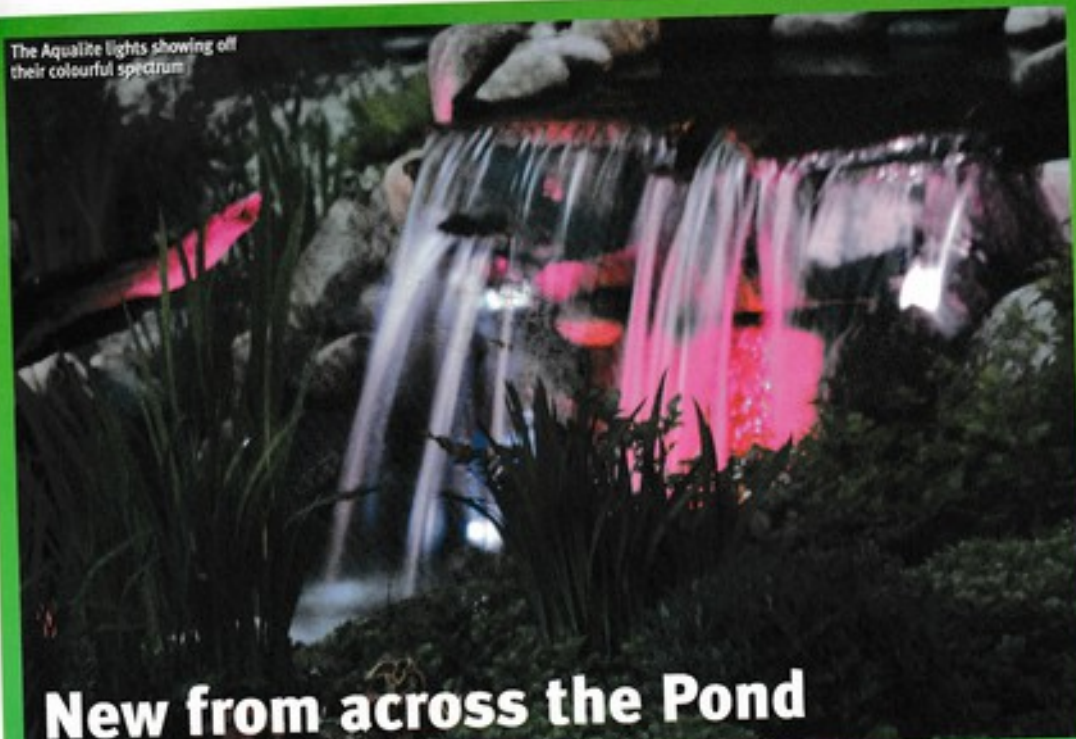
c. Floating lights

Solar and low voltage options of floating lights are available in various shapes and sizes, including a floating Perspex ball.

Directional spotlights from Laguna



The Aqualite lights showing off their colourful spectrum



ALL PHOTOS: BEN HELM

New from across the Pond

While I was on an aquatic trade seminar tour in the USA earlier this year, I was fortunate enough to witness a truly innovative pond lighting system which used cutting-edge fibre optic technology to achieve stunning pond effects. Called the Aqualite, this system, offers many benefits over conventional pond lighting systems and deserves a mention all to itself.

The fibre optic technology allows up to 16 different light fixtures to be driven off just one light bulb. This means that the light box can be remote from the pond, with the fibre-optic cables transmitting the light risk-free into the garden and pond. This means that should it need replacing, only one bulb is required rather than 16 – and all that without getting your hands wet or disturbing your pond.

There is no heat or electricity in the pond and the inconspicuous light apertures at the end of each fibre-optic cable means that they are easy to hide and position in and around the pond – waterfalls are a speciality.

Furthermore, colourwheel technology means that with the flick of a (remote control) switch, white light can be turned into a moving rainbow of colours throughout your pond and garden. This dynamic lighting effect is something that just cannot be achieved with standard pond lighting.

Overall, the Aqualite produces a low-risk, hi-tech moving kaleidoscope of colours – all of which is completely concealed and effortless to control and maintain. Well worth a look!
www.unitraceenergy.com/pondlite.htm

Q. What do I need to know before I can buy the right light?

Unlike choosing other electrical pond hardware, the choice of lighting is down to personal taste. The biggest considerations will be the light output you require, the number of lights and the length of cabling required. If choosing low voltage lighting, you will have to plan where the transformer is going to be located as this will determine the lengths of 220v and 12v/24v cable required. From experience, in practice you always seem to use more cable than anticipated so add 20% extra to the planned length when purchasing cable.

Q. What are the running costs?

Solar powered units will of course have no electrical running costs, with replacement

bulbs being the only expense.

Low voltage running costs can be calculated approximately by adding the total wattage of the bulbs in use. This will amount to several pence each day (or night) for an average pond. The wattage displayed on your transformer will give you the best indication for power consumption of your lights.

Mains voltage lights will be the brightest and most powerful of the three options and will consequently consume more power than other lamps on a like-for-like basis.

Q. Will I need anything else?

■ RCD circuit breaker for safety when using underwater lighting. A circuit breaker should be fitted as standard to the electrical supply of any pond. It may be wise putting the lighting on its own dedicated supply so

that if the circuit trips, it doesn't cause your pump to cut out also.

■ Additional cable and water proof connectors when using mains (220v) lights, depending on the run of cable required.

Q. Is there a lot of maintenance involved?

The most common and regular maintenance carried out on underwater lighting is cleaning the light/lens to remove algae and slime. Be sure to do this when the light is turned off.

Q. Do they come with guarantees?

Many light units are available with guarantees longer than the statutory 12 months. Replacement bulbs are usually standard halogen-type and are available from most DIY stores. ■

Ponderings



Going native

The garden wildlife pond is a tiny natural habitat in its own right so if you want to develop a self-perpetuating and balanced system it makes sense to use native plants. Our native wildlife is happier with, and in some cases dependent upon, native plants in order to complete their life cycle.

The swallowtail, a rare wetland butterfly which occasionally turns up in neighbouring flower-rich gardens is dependent upon the Milk parsley plant to feed its caterpillars whilst the orange tip relies upon Ladies smock and Garlic mustard.

Many of the creatures we regard as pests in the garden pond are only pests because

they are so plant specific and capable of decimating a small stand of plants. The Iris sawfly larva on flag iris and the water lily beetle on water lilies are two examples.

By sticking with native plants, particularly if you allow them to do their own thing, you should still retain a reasonable range of plant life - although in the struggle to survive the strongest plants will ultimately dominate the pond. This will usually take several years as they respond to natural changes in the system. The use of alien plants can be disastrous as they literally take over the whole pond and its margins within a couple of years. Beware Parrot's feather, *Tilix recurva* and azolla.

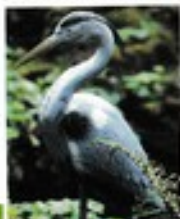


HERON DETERRENENTS

It is claimed that one of the best ways of keeping the heron away from your pond is to install a look-a-like plastic heron - apparently herons will not tolerate each other's company. However, they nest in colonies and there are reports of herons trying to mate with plastic herons!

When I suggested this to one supplier I was told that positioning of the plastic heron was critical. It must be placed where the heron lands not at the edge of the pond. The trouble is my local heron has landed in at least 10 different places round my pond before hopping up onto the wall to try his luck.

They may have limited success when used in conjunction with other deterrents but they are not going to keep a determined hungry heron away from an easy meal for long. However, they make great pond side ornaments, some so realistic they can be mistaken for the real thing.



MINNOW FACTFILE**Species:** Minnow (*Phoxinus phoxinus*)**Other names:** Tiddlers**Other forms:** None**Size:** 6-10cm**Weight:** Up to 10 grams**Availability:** A native species occasionally available through aquatic outlets.**Habitat:** Prefers the clean, well oxygenated water of fast flowing streams but can be found in large slow running rivers.**Identification:** Smallest member of the carp family. Rounded body covered with very small scales with an incomplete lateral line. The back is brownish green and the sides light green with a row of dark spots or stripes. Males

develop spawning tubercles together with red on the lips and the tips of the fins in the breeding season.

Habits: Live in large shoals, for protection against predators, feeding on minute plankton and insect larvae, foraging amongst the stones on the stream bed. Often bask in large numbers in shallow water. Can live for up to six years producing around 1,000 eggs each year.**Pond fish value:** Only for the clean well aerated pond with plenty of natural cover.**Grass carp catch**

Under ideal conditions the grass carp, an import from China, can reach more than a metre in length and weigh over 35 kg. It is one of the species recently introduced for the coldwater pond – a rather plain fish not unlike the common carp.

So what is the attraction? One of the main selling points is the fact that it will eat vegetable material so if you substitute rampant oxygenators and algae for grass you have a fish which is going to keep these problem plants under control.

However, there is a catch. How often does the temperature of the water in your pond approach 20°C let alone 25°C which is the temperature at which the grass carp starts to graze efficiently even eating blanket weed? At around 15°C it will eat a few choice tender plants but below this temperature it grubs around on the bottom looking for insect larvae just like the common carp – whilst the blanket weed grows apace.

**How barley straw works**

When you are pulling out stringy blanket weed by the metre it is hard to believe that a large handful of barley straw could be the answer to your problems.

How does it work? As the barley straw decomposes it releases algal inhibitors. These complex phenolic compounds inhibit the growth of most algal species but there is a catch – it is not an instant cure and may take from one to three months, depending upon temperature, before any effect is seen.

The best results are usually obtained if the straw is loosely packed in a net and placed in a water flow or at least just under the surface as the decomposition must take place under aerobic conditions. Early spring, well before the algal populations start to build up, is the best time to introduce the material to the pond. A natural cure which really is a win-win situation (if it works) as the rotting material boosts invertebrate numbers providing welcome snacks for your fish.



SPICK AND SPAN

There is no best time to do a full clean out of the average garden pond. It is a messy business in summer and very cold in winter. Not only will the fish become stressed but it will destroy or interrupt the breeding cycle of the resident wildlife.

It makes sense to try to maintain a balanced environment in the pond so unless the liner becomes punctured or some other catastrophic event overtakes the pond then always try to put off the evil day!

By September most of the early flowering plants will have completed their growing cycle and set seed. Remove dead and dying material as it appears.

Established oxygenators will be spreading rapidly. Remove some every week to keep the clumps down to a manageable size, leaving them on a mesh to allow the pondlife to return to the water. Aim to eradicate any alien oxygenators like Parrot's feather or *Tillo recurva* because no matter how hard you try they will keep coming back.

Floaters like azolla and duckweed will cover the surface. Net it out periodically because if it builds up to form a thick mat and starts to sink the rotting material will soon reduce water quality.

Finally, bite the bullet, and take a hard look at your fish stocks – an overstocked pond is an unbalanced pond which is storing up a whole host of problems for next year.

Foaming water

As pond keepers we need to be on our guard against the possibility of pollutants getting into the pond. Many commonly-used chemicals are lethal to fish.

The presence of a persistent foam on the water surface is often an indication that all is not well and warrants further investigation. At best it may be due to higher than normal levels of protein in the water due to overfeeding or decay, but in the worst scenario it could be run off from surrounding land which may have introduced pesticides, herbicides or large quantities of fertiliser, any of which can result in fish deaths.



Damselflies

Damselflies, the smaller and much more delicate cousins, of the dragonflies, are often found in large numbers around the pond. Flitting in and out of the marginal plants, Large red, Common blue, Azure, emerald and Blue tailed can be seen between June and October. They are at their most obvious when they start egg laying when the male grasps the female and they fly in tandem from plant to plant whilst the female lays her eggs just below the water surface.

Delicate they may be, but like the dragonflies, they are masters of flight taking midges, mosquitoes and other small insects on the wing. Being cold-blooded they are at their most active when the sun is shining as they need the extra heat to get their wing muscles moving. On cold or wet days they perch amongst the foliage with their wings closed over their body. When autumn approaches their numbers dwindle as this year's adults finish egg-laying and die, so they are rarely seen after the end of October.



Horse Leech

The horse leech is our largest native leech with an extended length of up to 100mm. It probably got its name from a belief that it could suck blood back in the days when horses were taken to the local pond to drink. Actually nothing could be further from the truth because this leech does not suck blood. It feeds upon small pond creatures including tadpoles and swallows them whole.



Which plants where?

Peter Hiscock helps you choose the right plants for your tank and how to plant them for a stunning display

By the time the aquarium is ready for the introduction of plants, the equipment to care for them should already be in place. Selecting the right mix of plants and introducing them in the correct way is equally as important as the choice of equipment, and the plants you choose will dictate the style of display you end up with.

There are wide ranges of aquatic plants available for aquariums and some are easier to care for than others. Choosing the correct mix of plants should be based on aesthetic function, their ease of keeping in the aquarium, and their requirements compared to your aquarium environment. For most

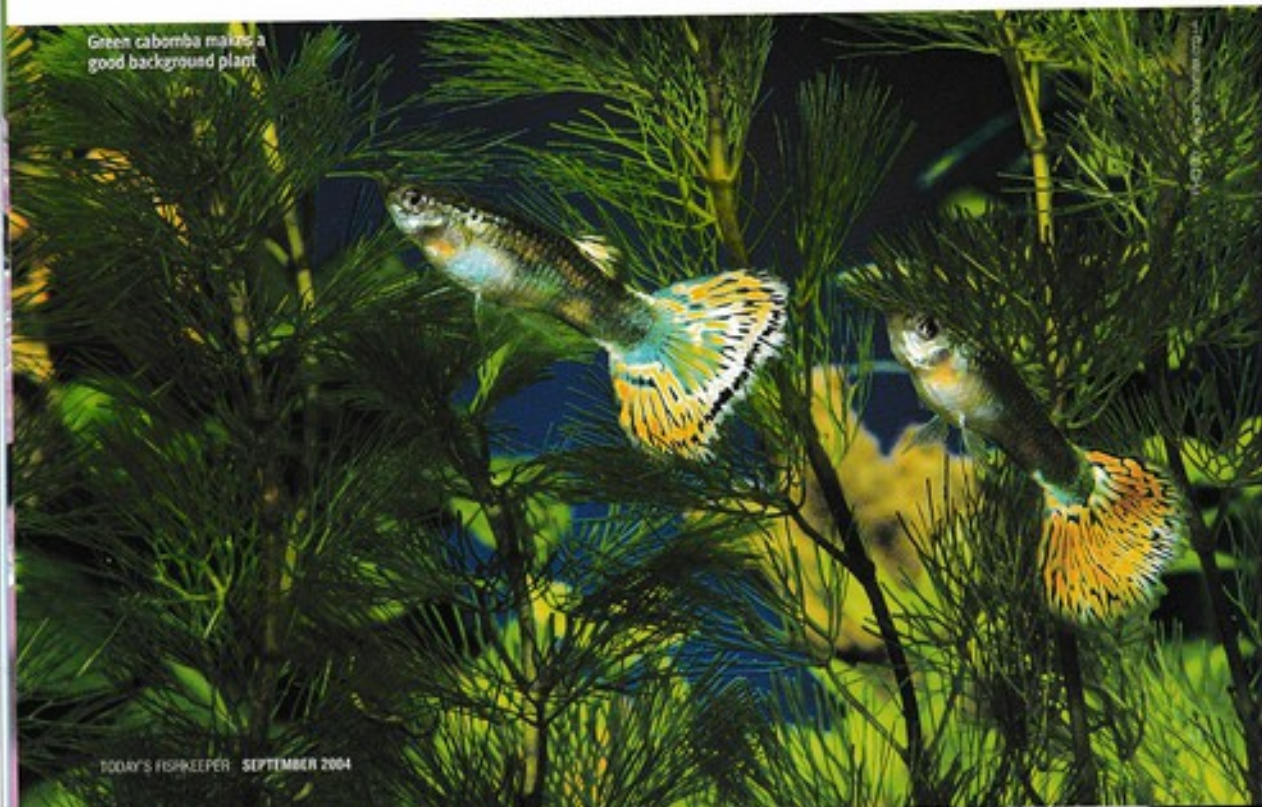
aquariums, a little trial and error will be required. Even in the best conditions some plants will do better than others. An aquarium should be a dynamic and evolving environment though, so plants can be continually added or removed as required.

Planting areas

Plants can be grouped as background, midground or foreground based on their size and a mix of these plants will usually produce the best effect. Foreground plants such as small *Cryptocoryne* sp. or grass-like

plants such as *Eleocharis* sp. are ideal for creating large dense areas of "lawn"-like vegetation towards the front of the aquarium. Midground plants can be placed around other items of decor such as bogwood or rocks and are best used in small groups. Background plants will grow quite large and can be used in dense groups to give the aquarium a heavily vegetated appearance. When choosing plants for the aquarium, make sure your selection includes plants for all of these areas. Larger groups of a few different varieties can often create a better effect than a large number of individual species.

Green cabomba makes a good background plant.



Choose plants to suit

Much like fish, different plants have different needs. Some are far easier to keep than others. The plants you choose should all be suited to your aquarium. If you do not have very bright lighting then plants with red leaves or light green leaves may not be suitable, as these may require bright light. If the water in your aquarium is quite hard, or has a high pH level, use only plants suited to harder water. A good retailer should be able to help you choose plants based on your aquarium conditions although you may need a good reference book to help out.

The right mix

Plants are available in a number of different leaf forms and colours, to create an interesting display a good mix of these should be used. Contrasting leaf shapes look best when placed behind or in front of each other rather than next to each other. Using this method, the foreground, midground, and background plants should look distinctly different whilst plants within the same group should have similar leaf shapes. A good method of creating subtle variations in leaf shape or colour is to use different species of a related group. Using this method, foreground plants could consist of a number of different *Cryptocoryne* sp. whilst background plants could consist of different species of the similar *Cabomba* or *Myriophyllum* sp. Of course, this is only a guide and by all means you can personalise a display rather than follow the 'norm' I always find a greater satisfaction by creating displays through inspiration and ideas rather than textbook solutions.

Transporting plants

There is no rule to follow when choosing the amount of plants and it is purely up to the individual. It should be noted that if a large number of plants are used then good lighting, fertilisation and abundant carbon dioxide is required. The plants do not have to be bought all at once, and you can simply increase the number of plants until the aquarium appears as desired. If you introduce plants over a number of weeks, they will have less competition in the aquarium and will establish quicker. Taking a longer period to choose all your plants also means that you have access to a wider variety of plants, as your retailer is likely to have a few different species each week. A good tip here is to find out when plants are delivered to the shop, then you can choose your plants when they are 'fresh' and a wider selection is available.

PHOTO: www.photos.org.uk



Foreground plants such as *Glossostigma elatinoides*, *Lilaeopsis* and small *Cryptocoryne*

Preparing plants

During the move from a retailer to your aquarium, plants are susceptible to physical damage and drying. To prevent this they should be packaged in sealed bags, and carefully handled. The plants do not need to be transported in water; a sealed bag will retain enough moisture to prevent the plants from drying. Ideally, get the plants home as soon as possible, although they will be fine in the bags for several hours providing they do not get too hot or cold.

Plants bought through mail order will arrive in bags and/or wrapped in a wet medium such as newspaper. Mail order plants will not arrive in air filled bags due to the space needed to package such large objects. This does mean that they are more likely to experience damage during transport but specimens which are damaged or do not establish due to damage, will be compensated for through the overall lower cost of mail order.

To encourage plants to settle into the aquarium and begin growing healthily they must be prepared and planted carefully. By planting them in a specific way, any damage can be minimised, allowing the plant to quickly establish new roots and adapt to its new environment.

Most plants are sold either in pots or in bunches, in many cases there will be more than one individual plant in each pot or bunch. Bunched plants are normally fixed together with a lead weight, this should be carefully removed. The individual plants within the bunch can then be separated for planting. Potted plants contain plants that are rooted in a wool-like substance and placed in small pots. The pots should be removed and if the wool comes away easily, then this should also be removed.

If the plant has significant root growth,

Planting an *Anubias* into the substrate of a tropical tank



PHOTO: www.photostock.org.uk

the roots should be trimmed down to around 2-3cm. Cutting the roots will encourage the plant to grow new roots downwards into the substrate. If the plant is planted with its existing roots they may become damaged and placed in an unsuitable position. Use a sharp pair of scissors to ensure a clean cut.

Most plants are grown in snail free conditions although it is virtually impossible for a retailer to eliminate the possibility of plants containing some snails or even snail eggs. The plants should all be carefully checked, and any snails removed. Check for snail eggs as well which appear as a small clear jelly like substance normally on the underside of leaves. The best way to avoid snails overrunning the aquarium is to avoid excess feeding and introduce scavenging fish such as small catfish or loaches to eat any snails.

Planting

Aquatic plants should be planted in a similar fashion to terrestrial plants. First create a dip in the substrate into which individual plants can be placed and then cover the root section with substrate. The plants should be covered up to the point where the base of the plant turns from white to green. Most stem plants should be planted at least 4cm apart, although the distance varies with the eventual size of the plant. Some large *Echinodorus* sp. may grow to cover a large area and so should be planted up to 20cm apart. In contrast, small grass like plants such as *Eleocharis* sp. can be planted together with virtually no space between individual plants.

A few plants such as java fern (*Microsorium pteropus*) and *Anubias* sp. prefer to root on wood or porous rock rather than in the

substrate. These plants have a thick main root, called a rhizome from which smaller roots grow which attach to solid objects. These plants are particularly good for aquariums without a deep, or otherwise unsuitable, planting substrate. To position these plants, the roots (not the main rhizome) should also be trimmed and the plant can be attached to a piece of rock or wood using cotton thread. Black cotton is normally best, as it cannot be seen as easily. Over a period of a few months the plant should produce new roots that will attach to the rock or wood. The cotton can be removed carefully after the plant is established, or simply left to naturally break down.

The new plants in your aquarium can now be left alone for a few weeks to establish, with regular additions of fertilisers. It is perfectly normal to have a few species die at first whilst others thrive, if the plants that die are particular favourites, simply wait around four months until the aquarium is a much more balanced and stable environment and try them again. ■

PHOTO: with thanks to Vasept



Splitting plants before you plant them can make them go further

A planted aquascape using natural plants



JOANNE SCHNEIDER SEPTEMBER 2004

Koi world



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Why is it that many koi ponds can have problems even though they have state-of-the-art filtration systems? **Bernice Brewster** sheds some fish light on the matter

Have you ever stopped to consider just exactly what your koi pond system is? Probably not – to most of us it is simply a means to an end in keeping our koi. We all know that koi ponds differ markedly from other types of garden pond with their oxygenating plants, lilies, goldfish and often other assorted species of fish. Yet, how many times do we bemoan the fact that someone with a typical garden pond has grown their koi and ghost koi to in excess of 30cm (24in) and without one fish getting sick or dying. Meanwhile, we have provided our koi with the ideal environment of a beautiful pond, with a state of the art (or should that be science?) biological filtration system and yet the koi have suffered ulcers, parasites and seemingly caught everything else they can conceivably manage. There must be a reason...

Pros and cons

Firstly, whilst we might scorn the low technology garden pond, the plant life in these ponds is actually more effective at removing the ammonia waste produced by the koi than any biological filter. Plants are anathema to many koi keepers, who prefer the simplicity of the koi pond, which allows nothing to distract from the beauty of the fish, of course there is the additional problem of the koi consuming the plant life. So we have the koi pond system, technically a recirculating system which exploits the continued use of the water, with the



Koi ponds belonging to serious koi hobbyists very rarely have plants in the water

occasional water change or top up. The benefit of the recirculating system is that it is very economical with water, although many of us whose water is filtered might disagree. The problem with recirculating systems is that they are less stable than the traditional garden pond. Whilst we endeavour to monitor the water quality on a regular basis, there are inevitable fluctuations which we miss. Most of us test the water weekly at best but think about what can be happening during the period in between testing. We are completely reliant on natural populations of bacteria and other bugs in the filter system to work on our behalf to keep the water free of ammonia and nitrite and no matter how careful we are, there are natural fluctuations in the populations of these microscopic organisms. Even temporary glitches in the water quality can lead to stress which in turn affects the efficiency of the immune system and therefore our koi are more susceptible to outbreaks of disease.

Importance of hygiene

The recirculating system allows us to stock with koi at higher densities than would otherwise be possible, this alone increases the likelihood of outbreaks of disease. In addition the recirculating system can actually encourage the parasites and bacteria which cause fish disease to thrive in the organic debris which accumulates in pipes and filters. If the immune system of the koi is suppressed as the numbers of these disease-causing organisms increase, the likelihood of the koi becoming sick is increased. Where the numbers of these disease-causing organisms can increase unchecked, eventually even the healthy koi will become affected and there'll be an outbreak of disease.

The very nature of the recirculating system requires a high standard of hygiene, and if we don't set our target high enough with the cleanliness of our filters and ponds, disease is the price we will have to pay. ■



The Cunene River at 'Hippo Pool' was a slow flowing river at the end of May. Its high watermarks can be seen on the fairly eroded tree

In search of cichlids

Erwin Schraml
visits 'Hippo Pool'
in Namibia and
finds an array
of interesting
cichlids and other
fish species

What finally inspired me to write about my journey to Namibia at the end of May 2003, was a recent article by Nick James which appeared in the American magazine *Cichlid News* where he wrote about the capture and breeding of a cichlid from Namibia, which he called *Thoracochromis buysi*.

An article by Nick James

The published pictures of his fish astonished me, as they show only a very slight similarity to the *Thoracochromis buysi*

which we caught in the Cunene River. Until recently there has been no photo of a living specimen of this species in any literature known to me. Useful paintings of all freshwater fish known in southern Africa are illustrated in Skelton (1993). In the recent book by Lamboj (2004), there is also a photograph of *T. buysi* easily recognisable because of its long snout, which gives the animal a geophagine appearance. On the contrary James' pictures show a very short-snouted and clearly deeper-bodied fish. I am sure that James' fishes are not *T. buysi*. Both species have numerous yellow spots on the anal fin. These are reminiscent of the diverse *Aulonocara* and *Lethrinops* from Lake Malawi, with which *T. buysi* has some similarities. But *T. buysi* has egg-dummies each surrounded by a corona, which are missing in representatives of the named Malawi genera. Through mtDNA investigations it was ascertained anyhow, that *T. buysi* is not closely related to corresponding Lake Malawi cichlids.

At the shoreline of the Cunene River at 'Hippo Pool' the soil is sandy, a bit earthy and the water only slightly transparent, even though it's only flowing very slowly. There is no submersed vegetation visible.

James caught his fish in the Cunene River, without referring to the exact place where he did this. He writes, that *T. buysi* is

A loop of the river, which is separated by an island from the main river, forms 'Hippo Pool'



endemic in this river and one of its influxes (the Que in Angola), and would not also occur, like many other Cunene fish, in the Zambezi, Okavango, and Kafue systems. This matches the literature/references, however, on our journey through Namibia, which led us to the Kavango (as the Okavango is called here), there is a very similar looking species to *T. buysi*. But I would like to discuss this further later on.

James said the males of his species were aggressive towards each other, but not unduly so. He kept two of them along with six females in a 60-gallon aquarium (60 American gallons = 227 litres, English gallons = 272 litres). This, and his reference to brooding females not tending to spit their eggs when netted, are differences in behaviour of the *T. buysi* caught by us. Ours, which I am sure are the real *T. buysi*, are very aggressive and individual males have managed to kill rivals of their own kind in aquariums four times the size. My females spat out the larvae in the netting whenever I wanted to catch them for removal into a breeding aquarium.

So, there is the problem. What kind of species did James catch? Because of the

head shape I would classify them most likely as *Sargochromis*, but the *S. coulteri* which we caught looked a little bit different, and so I want to be noncommittal. Perhaps James found a species still undescribed?

Our journey to the Cunene River

The first stage of our journey to Namibia was to the Cunene River at the small town Ruacana, not far from the waterfall of the same name. The Cunene river is about 325km long and flows from the mountains of Angola, which at Ruacana becomes the border of Namibia and flows ultimately into the Atlantic Ocean.

Thoracochromis buysi

Skelton (1993) refers to *Thoracochromis buysi* as 'Namib-happle', and James (2004) uses 'Namib River bream' as the popular/native name. The fish should reach 14cm total length, and we caught some animals this big. James maintains he caught animals almost 23cm – a further indication that he has confused this species with another.

A female *Thoracochromis buysi* caught at Hippo Pool



THE CONDITIONS AT CUNENE RIVER

In the Cunene the water temperatures fluctuate between 18.5°C (July) and 28.5°C (February), the pH-value is between 6.8 and 7.2 and the conductivity lies beneath 50 µS. Shortly before Ruacana the Cunene is dammed by the Calueque Dam, which lies completely in Angola, and its water is re-routed into a power plant for power generation, whereby only a runnel flows over the original Ruacana waterfall. Immediately behind the outlet of the power plant, about 37 km west of Ruacana, lies a loop, which is detached by an island from the main river, it is referred to as 'Hippo Pool' (GPS – coordinates: 17° 26' 27" S; 14° 21' 01" E). 'Hippo Pool' is the more common name for a fenced weekend - destination, which is also called 'Otjipahurir Remainder Camp'. It is used by the better-off inhabitants for social barbecues and the like. As the name implies, some hippos but also crocodiles and rare birds come here from time to time.



Thoracochromis buysi, raised in an aquarium

T. buysi occurs frequently over a sandy substrate with vegetation. The biotope on the river at Hippo Pool matches this exactly, so it doesn't surprise me that *T. buysi* was found here in great numbers. While the females are more or less grey, males can have very pretty yellow shades on the body and an especially striking metallic blue snout. Not forgetting the numerous yellow-orange egg dumplings in the anal fin which have already been mentioned.

Oreochromis macrochir

The 'Greenhead Tilapia' which grows to 40cm is one of the most commonly-caught cichlids at the Cunene. This is because it



Drawing of *Tilapia steindachneri* (*Sargochromis mellandi*) from Boulenger (1915)

prefers the quiet waters along river margins, which were also the easiest to reach. This species feeds mainly on microscopic food, like algae, especially diatoms, and detritus, which it takes from the bottom. Juveniles feed predominantly on zooplankton and insect larvae. This species is also bred in ponds and is a popular edible fish.

From this species there exist several taxa from the southern Africa, which are today treated as synonyms: from Lake N'gami in Botswana *Chromys chapmani* and *C. spornmani* were described by Castelnau (1861), likewise from Botswana, from the Botletle River at Maun originates *Tilapia allenii* of Fowler (1931). From Zimbabwe originate the taxa *Tilapia intermedia* (Sawmills, Bulawayo) and *T. sheshekensis* (Shesheke), both described by Gilchrist and Thompson (1917). By the way, the lectotype of *Tilapia macrochir* was found in the upper Zambezi.

Tilapia rendalli

A further tilapia cichlid, which we caught at Hippo Pool is the Redbreast Tilapia, *T. rendalli*. This species also prefers quiet biotopes like well vegetated stretches along river littorals, backwaters, flood plains and swamps. It feeds mainly on vegetarian food, like aquatic plants and algae but also takes water animals, like invertebrates and even small fish. This species can reach 40cm length and is cultivated as edible fish as well as for weed control in dams.

Sargochromis coulteri (Bell-Cross, 1975) The Cunene Happle was netted by us at Hippo Pool. This is a further haplochromine cichlid. This species can reach 22cm long and also because of its body shape it is, in my opinion the closest possibility to being the animals illustrated and described by James in his article, but differences are also visible. The species has a relatively high/wide body, females have predominantly greyish greenish sides, while males develop pretty golden reflections on the sides and numerous reddish egg-dummies on the anal fin. In James' article the animals appear to be even more yellow (courtship-coloration?) and seem to have a particularly shorter snout.

S. coulteri was originally described as a Haplochromis from the Cunhangama River, an influx of the Cunene in the Angolan Huambo district. The pharyngeal teeth of this species are molariform, evidence that they devour snails in nature.

The non-cichlids

Certainly the assortment of different fish, which we caught at Hippo Pool is not really representative of the Cunene River. We were in search for cichlids, nevertheless here's what we caught otherwise.

Aplocheilichthys johnstoni

The small lampeye occurred in large quantities and was netted on and off close



Oreochromis macrochir



Tilapia rendalli



Sargochromis coulteri, female



Aplocheilichthys johnstoni



Barbus unitaeniatus



Brycinus lateralis

the shorelines. The species has a very extensive distribution area across the whole southern continent from the Atlantic to the Indian ocean (type locality: Fort Johnston, Malawi). The animals reach about 5cm long.

Barbus unitaeniatus

A 14cm barb which has a very extensive distribution area in the northern part of the southern Africa (type from Angola). It is not specific to particular habitats and feeds on aquatic invertebrates as well as grass seeds.

Brycinus lateralis

This species was more frequently found in the faster running stretches of the Cunene than in the quiet Hippo Pool. However, in the descriptions of the habitat the slow-flowing and well-vegetated waters are mentioned. These fish feed on small aquatic organisms and such terrestrial invertebrates which frequently fall onto the water surface. I also have a suspicion, that they gnaw on the fins of other fish. The tetra reaches about 14cm in length and has a similarly extensive distribution area as the two other previously mentioned species, but with gaps in the eastern part. Type-locality is Lake Dilolo, Katanga, Zaire. Local people call this fish 'Saradina', but according to Skelton its common name is 'Striped Robber'.

Microlestes acutidens

A further tetra, reaching only 8cm length, is the 'Silver Robber'. It shoals in clear, flowing or standing stretches of water, which indicates a preference for the open water. The species is omnivorous, often observed feeding on winged insects from the water surface. Zooplankton is also taken. Anglers use them as bait. The species is spread in the entire northern part of the southern Africa. ■

References:

- Boulenger, G. A. (1905): On a collection of fishes from Lake Bangweulu. Ann. Mag. Nat. Hist. (Ser. 7) v. 16 (no. 96): 642-647.
- Boulenger, G.A. (1913): Descriptions of five new cichlid fishes from Africa. Ann. Mag. Nat. Hist. (Ser. 8) v. 12 (no. 71): 482-485.
- Greenwood, P.H. (1984): The haplochromine species (Teleostei, Cichlidae) of the Cunene and certain other Angolan rivers. Bull. Br. Mus. Nat. Hist. (Zool.) 47 (4): 187-239.
- James, N. (2004): *Thoracochromis buyisi* from the Cunene River, Namibia. Cichlid News, 13 (2): 26-29.
- Lamboj, A. (2004): Die Cichliden des westlichen Afrikas. Birgit Schmettkamp Verlag, Bornheim.
- Regan, C.T. (1922): The classification of the fishes of the family Cichlidae.
- Skelton, P. (1993): A Complete guide to the Freshwater Fishes of Southern Africa. Southern Book Publishers (Pty) Ltd. Halfway House.



Eye Guard – based on glass of a window frame was providing belly warmth at the end of the day

In the glasshouse

Caring for herptiles outdoors can add a whole new dimension to your hobby. **Val Davies** looks at what you'll need

Older readers may be familiar with the term 'glasshouse' from time spent in the armed forces – although a spell in such an establishment would not have been a particularly enjoyable experience. However, in our glasshouse the captives find life to their liking. There is a plentiful and varied diet, spacious, well-decorated surroundings and the opportunity to go courting whenever the mood takes them.

The glasshouse

The glasshouse is a 2.5m x 2.5m greenhouse, constructed of wood with a deep, brick base to prevent inmates emulating Steve McQueen and other tunnellers from escaping. The roof is twinwall PVC which is more durable than corrugated acrylic sheeting. Any gaps between this and the frame are sealed with foam eaves-filler. Being built onto the end of the garage the brick wall acts as a storage heater. During hot weather such accommodation soon warms up so ventilation lights must be opened. To prevent escapes by both inmates and food items hinged frames of 3mm plastic mesh covers the inside of the opening lights. A fine mesh door gives additional ventilation. If housing fast-moving species such as

anolis lizards it is advisable to have a safety porch fitted as used in aviaries. We once spent an entire afternoon catching a colony of anoles when they went AWOL as the door was opened.

Ordinary soil is a suitable substrate. If amphibians are to be among the inmates then small pools should be sunk into the ground. However, a word of caution, salamanders are poor swimmers so some means of exiting the ponds must be provided. A smaller, shallower container of water is used by these creatures. Sufficient hiding places must be provided on the floor. These can range from clumps of moss, cork bark to broken flower pots. If temperatures become too high then greenhouse shading can be used. Reptiles which are to be overwintered in this structure need hibernation chambers. These can be built from bricks and pipes but must be at least 45cm deep with sloping access. They also act as refuges in summer for aestivating creatures.

The lifers

For over 25 years a colony of European green tree frogs (*Hyla arborea*) have been living and breeding in my greenhouse. These attractive amphibians with adhesive disc-like toes spend most of their time on

the framework. They can often be seen making spectacular leaps in pursuit of insects. As temperatures rise their colour lightens to reflect the heat. Males do have an embarrassingly loud call, especially at 3am. Spawning only occurs when nights are mild and there is a heavy downpour. Over the years the date of this event has varied from mid March to almost the end of July. Tiny clumps of eggs are deposited in the ponds. The eggs are removed to a prepared container for hatching and rearing of the tadpoles.

Green tree frog – attractive to look at but can be noisy on summer evenings



Balkan wall lizard – a sandy area in one part will encourage egg deposition



Green toads (*Bufo viridis*) thrive in these conditions and are more likely to breed in a greenhouse than a vivarium. The addition of leaf litter to some of the substrate provides a friable substance into which they can burrow during the day. Specimens are often seen in the mornings and evenings and become quite tame even taking food from fingers.

The two remaining species of lizards are the Balkan wall lizard (*Podarcis taurica*) and

the Eyed lizard (*Lacerta lepida*). The former is a relatively small (25cm) lizard from Eastern Europe which lives in semi damp lowlands and highlands in its native habitat. The latter, at 50cm, is considerably larger and can only be housed with the other species until two thirds grown before being moved to separate accommodation.

Winter temperatures experienced in the greenhouse are ideal for conditioning all

these species for breeding. Once mating has been seen in the lizards a record of the date is made and about one month later the females observed each day. The eggs are laid in an excavated hole, and then filled in and the surface tamped down giving no indication of the site. The eggs are removed to an incubator.

Mixing species

The mixing of species in a vivarium is not advisable. In this instance the accommodation is spacious, all specimens are captive bred and therefore free from disease and all are European requiring the same conditions. Foods placed in the greenhouse consist of crickets and locusts of varying sizes. Greenfly are transferred from outdoor plants to those in the greenhouse. Spiders, slugs (from specially prepared areas in the garden), hoverflies etc. are also caught and given to the inmates. As the days shorten and temperatures fall the amount of food given is reduced. On a cautionary note – sunny winter days can tempt these creatures from hibernation but as temperatures fall they become too cool to move and remain in the open. Check at the end of such days and if necessary return any creatures to their hibernation chambers to avoid fatalities. ■

Green toad – a terrestrial amphibian and ideal inmate



TOP TIP

Amphibians dislike being handled – human hands are warm and dry. When moving these creatures wet your hands first with cool water or coax them into a moist container to avoid damaging their skin. Do not handle dead amphibians without plastic gloves. When dying the stressed creatures often exude secretions which may cause skin irritations, blisters or sores if the substance enters a cut.

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Onwards and upwards

Aquatic Solutions, supplier of aquatic products to quality retailers, seems to be unstoppable...

Aquatic Solutions, based in Kings Lynn, Norfolk, was founded in April 1998 by Andrew Werendel, the current Managing Director and owner.

He saw there was a gap in the UK market for an importer-distributor who could source and supply quality retailers with a wide range of marine and other aquatic products at competitive prices.

It all started when Andrew attended a trade show in Nuremberg, Germany and got talking to Jack Kent, owner of Georgia-based Kent Marine Inc. He, too, was looking for an opportunity and wanted someone who could distribute his company's products in the UK and Ireland initially, then in mainland Europe.

Taking the plunge

A year later, after further conversations with Jack, Andrew decided to take the plunge and launch Aquatic Solutions Ltd. When he first started, only Kent Marine products were sold but now he is also the sole UK, Ireland and European distributor for Python Products and sole UK and Ireland distributor for Hobby, Ratz and Dupla.

"I always felt that by offering goods at the right price to retailers, there was the potential for huge growth in the UK marine market," he said. "Aquatic Solutions supplies products to some 800 retailers throughout the UK and Ireland. We only deal with retailers, not wholesalers which means Aquatic Solutions can offer its customers a much better deal, price-wise."

"Aquatic Solutions imports and distributes literally hundreds of different lines, from salt to protein skimmers"

The company's clients are mainly well-known, upmarket aquatic retailers – a mixture of small chains and big independents. Aquatic Solutions imports and distributes literally hundreds of different lines, from salt to protein skimmers. Salt, in fact, is by far the biggest selling product, around 40 tons being shifted every month.



The products

Among the many other Kent Marine lines handled by Aquatic Solutions are water treatment products, specialist cichlid and discus fish liquids, the Botanica range of supplements, Platinum fish foods, filtration systems and cleaning equipment.

Python Products' lines include the black mesh Ulti-Net (described as the ultimate aquarium and pond net), Aquarium Maintenance Kit (a start-up or general maintenance kit for any size of aquarium) and the famous 'no spill, clean and fill' units and gravel vacs.

Among the diverse items in the Hobby catalogue are artemia-breeding products, rigid plastic tubing, auto feeders, fish traps and hundreds of other useful things.

New premises

Due to its success over the past few years, Aquatic Solutions has moved premises to accommodate its new product ranges and increased business.

On its official opening day this summer, the new 3,500 sq. ft warehouse was named after Derek Lambert, the late editor of *Today's Fishkeeper*. A plaque was erected as a tribute to his many years as a respected aquarist in both the hobby and the trade.

His mother, TFK columnist Pat Lambert, attended the opening and said: "I would like to thank Andrew and his team at Aquatic Solutions for honouring my son, Derek, by naming their new warehouse and offices after him. Derek loved all aspects of fishkeeping and was well known to hobby, trade and scientific communities worldwide. The plaque in the entrance to the building says all that needs to be said."

Aquatic Solutions has gone from strength to strength over the past few years and this has to be testament to a great range of products backed up by excellent service.

For further details:

Aquatic Solutions Ltd, Unit 3, Beveridge Way, Hardwick Narrows Industrial Estate, Kings Lynn, Norfolk PE30 4NB
 Telephone: 01553 776788 general enquiries
 Telephone: 01553 776198 technical enquiries
 Fax: 01553 773495
 Website: www.aquaticsolutions.co.uk
 e-mail for general enquiries: info@aquaticsolutions.co.uk
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...End Point



The freshwater stingray, *Potamotrygon motoro*, is a fascinating fish but make sure you have the right conditions for it

Pat Lambert writes about livebearers with a difference for the more experienced fishkeeper

Freshwater stingrays are members of the Potamotrygonidae family. Although their distribution areas are in West Africa, South-east Asia and South America it is those from South America that are usually imported.

The species most often sold in aquatic outlets is *Potamotrygon motoro*. This species' disc is an overall brown colour which is overlaid with light spots surrounded by dark rings. A long whip-like tail extends from the back of the body. The tail has a poisonous long barb on its end. In the wild the ray lies buried in the sand and if a fisherman unwittingly steps on it the tail is whipped round and the sting embedded in the flesh. The embedded venomous barb needs immediate medical treatment or the victim could die. This is a defence mechanism but great care should be taken when netting as the fish may be frightened into using this weapon. This disc shaped species grows to about 50cm and newborn babies are the size of tea plates and present difficulties in feeding, so it is best to buy one as large as possible.

Great care must be taken when selecting stock as shipping may have weakened them. The fish should be moving around looking for food, it's a good idea to see them feeding. Avoid fish in which the pelvic girdle protrudes onto the upper surface for this is a sign of starvation. It should be noted that larger specimens are more difficult to find.

Even when very young, stingrays are

easily sexed. The inner edge of the male's pelvic fins are formed into claspers which elongate with maturity.

Housing

Do not purchase these fish unless you have a tank at least 180 x 60 x 60cm, but if you wish to breed them then 240 x 90 x 90cm would be needed. They are best kept in a species tank.

Provide a sandy substrate (river sand is the best option) to a depth of 10cm and any planting should be to the rear and sides of the tank as they need plenty of open swimming room. They adapt well to most water conditions but hard, alkaline water should be avoided. Ideally water should have a pH 6.5 and be on the soft side (50-100ppm) with a temperature 24-26°C.

Although at first feeding could be a problem, once acclimated they become veritable pigs. They eat large insects, worms and diced fish. Stingrays live to eat and are such ravenous feeders that they can be trained to hand feeding. There are dire consequences, however, if good filtration and high water quality are not maintained. This means power filtration and frequent water changes of 25% per week as they are more sensitive than most species to the slightest build up of nitrogenous waste. In the past this has made them very difficult to keep but with modern filtration and good husbandry stingray keeping is less problematic.

Breeding

Although you may not observe the actual breeding, look for prominent bite marks around the female's disc which are signs of breeding having taken place. Two to five young are born about four months later. The initial feeding of newborns can be a problem but mashed minnows are often accepted. Once feeding has started, however, due to their large size at birth they eat the same range of foods as their parents.

PROFILE

Name:

Freshwater stingray

Scientific name:

Potamotrygon motoro

Aquarium type:

Best kept in a species tank

Difficulty:

Maintaining high water quality is of supreme importance. A fish for the more experienced aquarist

Diet:

Mosquito larvae, earthworms, worms, diced fish

Temperature:

24-26°C