

Today's Fishkeeper

JULY 2004 £3.25

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RENA

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Choosing your first fish

Treating bacterial infection in koi

Keep plants the low-tech way

BACK TO NATURE

Create a wildlife pond

All you need to know about

BREEDING CORYS





INCORPORATING
**AQUARIST
AND PONDKEEPER**
The magazine for every fishkeeper - since 1974

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AngelFish

Welcome!

Well, I said good-bye last month as Miss Guthrie and here I am now saying my welcome as Mrs Evatt! You may wonder at the relevance of the cake-cutting picture, but if you take a close look you'll notice the fish on the icing. I thought everyone was being a bit cloak and dagger about the cake decoration but I have to say it wasn't a huge surprise on the day. We're rather used to the tongue-in-cheek fish references in our household as I'm sure many of you fish-mad people are!

A recent Mintel report said that low maintenance pets such as fish are becoming more popular, with 14.7 million of us keeping goldfish and 9.3 million keeping tropical fish in the UK. Very healthy figures indeed, which are said to be related to the growing number of working women and the rise in the number of one and two-person households. I don't know about you but I can see how an established tank with a couple of goldfish in it could be low maintenance, but there's a few people out there with tropical tanks that demand a fair bit of care and attention. Yes, if you get the right equipment, balanced stocking levels and carry out regular maintenance then tanks can virtually look after themselves, but they do need knowledge, time and effort to thrive.

I also tend to think of fishkeeping as more of a rounded hobby than, say, owning a cat. Collar (if they're lucky), food and water, bed, a toy or two and there you have it - all you need to keep a cat. Half the time they pretend not to need anything from you anyway. However, fish are much more dependant on you for their immediate surroundings and, boy, do we know about the equipment and associated paraphernalia they need! I once heard someone describe himself as a waterkeeper first and a fishkeeper second and I feel that's a good analogy. So, not only do we keep the fish as pets, we also have to keep their water.

Having said all this I have to agree that a fish tank is better option for a working woman than a dog and I should know...

Hope you enjoy the mix of articles this month from our range of worldwide expert contributors. And remember if there's any fish in particular you would like to see profiled, drop us a line.

Happy fishkeeping

Christina



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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		25°C 20°C
	HERBIVORE		10cm SIZE
	SURFACE		NOT SUITABLE FOR KEEPING IN CAPTIVITY

Starting Point...



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

ALL PHOTOS FROM www.photoson.co.uk



Clown barbs, *Borbus everetti*, are a great buy for a larger tank

Are you heading for disaster?

Are you an impulse buyer or do you think carefully about any new addition before you purchase it? As we travel around the country during the summer months we visit aquarium shops outside our normal range,

see fish not available in our own area or that we have never seen before. The temptation to buy on impulse is very great as you can't go home, think about it and return a few days later.

It's very tempting when you are surrounded by irresistibly beautiful fish to make an impulsive buy but one more fish purchased leads to another and before you realise it you are well overstocked. Take a close look at that overstocked tank and you could find fish gasping at the surface. There are fewer places for more gentle species to

escape into so pushing and jostling ensues and those that are stronger hassle the weaker even to death. Frenzied activity occurs at feeding time as competition for food leads to the starvation of some, as bolder, swifter fish gobble it all and heaven help the bottom dwellers which the food never reaches.

Power filters enable the fishkeeper to have more fish in a tank than the advised stocking levels but, like all gadgetry, these can break down and you could be left with a nightmare scenario.

Are Clown barbs the fish for you?

Looking around aquarium shops about six months ago for species for our big barb tank we saw a pair of Clown barbs. These barbs were not displaying their brightest colours but we knew what lovely fish they could become in the right conditions. Over time they grew before our eyes and now are approximately 10cm long and will probably reach at least 13cm. They have a typical barb shape and two pairs of barbels (from which barbs get their name). They are pale golden in colour with greenish blue blotches along the sides from the shoulder to the caudal peduncle. The eyes are clear of these markings and their fins have a reddish hue.

They live in an unplanted tank which is just as well as they would soon make short work of plants. They need plenty of swimming room as they are very lively fish. This was not the case when I first had them as they were very shy, venturing out to grab food or when no-one was passing by. They hid a lot and dashed behind the simulated wood when anyone approached the tank. This is no longer the case and they are out front enjoying the lively environment with their companion barbs. I am fortunate that the two I have are male and female as they were difficult to sex at the time of purchase. Now the male is more brightly coloured and slimmer than the female.

They are soon to be moved to a 180cm tank with their companions. I hope this does not upset them as they're gorgeous fish and I love them. If you have a larger tank, go on, try some.

Beauty comes in small packages

As you may have gathered I do like barbs and here's a beauty for the small tank. Coming in at 5cm, the Five banded barb *Barbus pentazona pentazona* is a suitable tankmate for other small peaceful fish as this one is rather timid. Brilliant red sides are traversed by six blackish bars one of which crosses the eyes. The fins are darkish red, paling towards the body and females are plumper and less colourful.

Courtship is less frenzied than with many other barbs as they tend to circle in a small area rather than chasing all over the tank and they have a marked preference for live foods.



The Five banded barb, *Barbus pentazona pentazona*, is one of the more peaceful barbs

A feast for small fishes

There is no better food for baby fishes than newly hatched brine shrimp. They are not cheap, but if you want a disease-free live food that all breeders recommend it's brine shrimp. My baby livebearers have baby brine shrimp every day and their little pink bellies testify to their enjoyment of this nourishing food. All my fish up to 5cm receive regular feeds of the shrimp as well.

Premium eggs are the best, for the hatch rate of these is high and they are well worth the extra that you pay. They come in various sized packaging according to your needs. The eggs need to be stored in a cool room and kept dry. This is very important if you only use them periodically or in small amounts as it could take a long time to use up all the eggs. They deteriorate over time in warm, damp conditions. Hatching brine shrimp is really easy once you've got the hang of it.

Large barbs and planted tanks do not go together well but you could try plastic plants



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Today's news

All the latest news and products from the world of aquatics

8ft missing fish landed

An 8ft rare fish, recently at the centre of a dispute over legal rights, was handed over to the Natural History Museum on June 8 by Cornish fish merchant Tim Alsop.

Sturgeons are rarely seen in UK waters, this specimen was caught off the coast of Wales on Wednesday, June 2 2004, and mysteriously disappeared a day later becoming the subject of an investigation by the Devon and Cornwall Police.

Legal rights to the fish were already being investigated before the theft took place as the sturgeon is believed to be an Atlantic species and as such is a royal fish. Being a royal fish, if caught, it becomes the property of the Crown. The dealer had therefore approached Buckingham Palace and been granted permission to dispose of it as he wished. However, the species is also protected by CITES wildlife legislation, making it illegal to sell them and the police were looking to clarify the situation when the theft took place.

The controversial sturgeon has now been recovered and the owner has decided to donate it to the Natural History Museum's national collection.

The fish will now be kept by the Museum, alongside Darwin and Cook specimens, for all to enjoy.

Aquatic acquisition

PEAK Aquatics, a leading manufacturer and distributor of aquatic and pet products, has bought Birmingham-based Aquatic Cabinets and its assets.

Peak Aquatics, which already manufactures a comprehensive range of aquariums and cabinets, believes that this acquisition, together with recent investment in top-of-the-range machinery, will enable it to increase production considerably.

A spokesman for the company, in Buxton, Derbyshire said: "Peak Aquatics is already regarded as the largest all-glass aquarium manufacturer in the UK and with this recent development it is only fair to say that we could soon be in the same situation with our wood products. We have great plans and it won't take us long to implement them."



COOLER THOUGHTS

Deltac have produced a system for reducing water temperature, which is environmentally friendly, economical and effective.

In a marine aquarium there is a special requirement for cooling as the need for good water movement and strong light creates heat in the system. This heat isn't healthy if you want a stable aquarium environment and leads to coral bleaching and stressed fish.

The ECO cooler is an evaporative system and borrows its technology from water-cooling towers which are used extensively in industrial applications. The latent heat given out by water as it evaporates is harnessed to produce a significant drop in temperature in the water column. A conventional refrigerant cooler uses 600W of electrical power to produce 1,000W of cooling power where as the ECO cooler only requires 44W. This also means a lower operating noise level.

It is possible to use the ECO cooler in conjunction with refrigerant coolers so that the majority of work is carried out by the ECO cooler. The refrigerant cooler is set to only operate when excessive temperatures occur. This can reduce the size of the users electricity bill substantially and give security in the knowledge that even on the very hottest days of the year the temperature in the aquarium will remain stable.

Schoolgirl saves stranded goldfish

TWENTY people joined in the rescue of a goldfish that had been tipped into a roadside drain, the Daily Telegraph reported.

Ten local residents, an RSPCA inspector, two council workmen, five railway workers and staff from a nearby pub were involved – but it was a schoolgirl who finally pulled the fish to safety after three hours.

The 13-year-old girl, from Jesmond, Newcastle upon Tyne, used a fishing net to rescue the goldfish – although five other fish died in the drain.

RSPCA Inspector Sue Craig told the Telegraph: "By the time we arrived half the street seemed to be out. They really wanted to see these fish get out alive."

TOP SPEAKERS LINED UP FOR OATA CONFERENCE

Aquatic Solutions, Tetra and Underworld have agreed to be principal sponsors of OATA's second conference. Other opportunities for sponsorship will be announced soon, the organisers say.

Every delegate responding to a questionnaire circulated after the inaugural event said that they wanted the Ornamental Aquatic Trade Association to arrange another conference. This year's event will be held at the Coppid Beech Hotel in Bracknell on November 15-16.

Keith Davenport, of OATA, said: "If, as they say the proof of the pudding is in the eating, then the recipe used seems have whetted people's appetites. Sixty per cent of those attending returned satisfaction questionnaires (an extremely high rate), all of whom requested that the OATA conference become a regular calendar feature."

Speakers from far and wide will make presentations on issues of the moment including:

■ **Fish diseases:** Speakers from Israel and Japan will provide updates on ornamental fish production potential and problems. Among the issues covered will be how they are dealing with the threat of KHV. Speakers from CEFAS will bring the conference up to date with the latest scientific research on KHV and how governments globally assess and could deal with the problems that have or might

be caused by the ornamental fish industry.

■ **Who expects what from the industry and why:** Representatives from The Consumer Association, The Chartered Institute of Environmental Health and two animal welfare groups will explain what they feel the industry could do to satisfy them.

■ **Getting fish out of airports:** speakers from airlines, transporters, freight agents, DEFRA Customs and the ARC will explain how the system works or should work, and who is responsible for what.

■ **Buy from us not from them:** Speakers from the Czech Republic, Singapore and Brazil will explain why their fish are the best option. This could lead to debate of a whole range of issues such as is captive breeding good for conservation or the industry? What are the benefits of buying from within the EU? The costs and quality of fish from different sources and so on.

On top of these topics a key-note speaker will provoke and give pause for thought to delegates. A conference dinner followed by a speaker will provide plenty of time for meeting friends old and new in a relaxed atmosphere.

Further details can be obtained from OATA on 08700 434013, via e-mail at conference@ornamentalfish.org or from the website at www.ornamentalfish.org

New aquarium filters

Interpet has launched two aquarium filters to meet the needs of even the most delicate fish species. Bio 50 is suitable for aquariums from 200 litres/45 gallons, while the Bio 250 is ideal for larger aquariums and is suitable for capacities up to 450 litres/100 gallons.

The Bio Filter is ideal either as a stand-alone aquarium filter or as a supplement to existing filtration. Three large blocks of foam are included with each size of filter. With one coarse, one medium and one carbon impregnated foam, the Bio Filter can cope with mechanical and chemical filtration. Once the filtered water has passed through the foam it enters the final chamber and passes through Interpet's Biomedix.

Both models have space allocated for a heater and a removable intake strainer is supplied in cases where the heater is taller than the filter.

The Bio Filter is £34.99 and the Bio 250 is £44.99.



TODAY'S FISHKEEPER AT HAMPTON COURT

You know when summer's well and truly here when the RHS Hampton Court Palace Flower Show comes around again. It's a must for gardening enthusiasts, especially if you have a penchant for water gardens as they have dedicated Water Garden section. Hampton Court is the main garden show for those of us who have an interest in ponds and fish and TFK will be there from 6-11 July on the Federation of British Aquatic Societies' (FBAS) stand.

This year the FBAS will be creating the 'River of Dreams' built and designed by Terry Hill of the Koi Pond Konstruktion Kompany with Keith Clarke of KC Landscapes also assisting in the build.

Sponsored by Rolf C Hagen and Anglo Aquarium Plant Company, this garden is inspired by the movement of running water, from the chalk streams of Hampshire to the Welsh salmon runs and the Scottish Highlands. The garden uses modern technology and materials to recreate the flow of a babbling brook and features only native British river plants.

The enchanting Hampton Court Palace and surrounding parkland provide an idyllic setting for the world's largest horticultural show - it's definitely worth a visit.

RHS Member Bookings: 0870 906 3790 (Please have your membership card to hand). Non-member Bookings: 0870 906 3791 or visit: www.rhs.org.uk and book on-line

Keeping reptiles well watered



ROLF C Hagen has introduced the Exo Terra Water Well water dispenser, which provides reptiles and invertebrates with a constant source of clean, fresh water.

The small basin prevents the animals from spilling or fouling the water, the makers say, while a screen prevents insects or smaller amphibians from entering the reservoir.

The stable design of the Water Well prevents tipping and the water dispenser is easy to clean and has a natural rock-like finish, which makes the Exo Terra Water Well easy to integrate into any type of terrarium setup. It has an RRP of £8.99.



BE A PRO WITH PLANTS

The Plant Pro lamp is the latest addition to the T5 range of high output lamps from Arcadia. Formulated specifically for the enthusiast of the freshwater planted aquarium, the Plant Pro lamp gives a bright light, which highlights the natural colours of the tanks inhabitants, and promotes active plant growth.

The high intensity light is beneficial when trying to grow plants with high light demands such as *Lilaeopsis* sp., and also makes it possible to grow plants successfully in a deeper aquarium, as the light will penetrate the water significantly

further than the light produced by a traditional six diam fluorescent tube.

The lamp is available in three sizes – 22in(24W), 34in and 46in(54W), which retail at £17.99, £19.99, and £21.99 respectively.

As with all T5 high output lamps, the plant pro range can be powered using units with a suitable electronic ballast such as Arcadia's Electronic Controller, or T5 models of the Overtank Luminaire.

LIGHTING THE WAY

If you're a fishkeeper with a planted tropical or marine aquarium then you may be interested in the latest advance in aquarium lighting from Interpet.

TriPlus replaces Triton lighting and offers a more refined spectrum and higher light output. A better colour balance makes it less pink while creating a higher colour rendition index figure.

The TriPlus is available in sizes from 18-48in with recommended retail prices starting at £9.49.



Marine book launch

The long-awaited *Reef Fishes* Volume 2 has arrived but it's had a bit of a change of image. Now titled *Basslets, Dottybacks and Hawkfishes*, it's a must for all marine enthusiasts.



Written by Scott Michael and published by Microcosm, it's available at a RRP of

£29.95. You can order a copy from Pet Marketing Services on Tel: 023 9248 1166

TODAY'S FISHKEEPER JULY 2004

Beware pH fluctuation

Most fishkeepers are aware of the need to test tank water for ammonia, nitrite and nitrate, but often the pH is overlooked. The pH level is a measure of how alkaline or acidic the water is. Some fish like Discus prefer acid water (low pH) and other like the African Rift Lake cichlids, prefer alkaline, or high pH conditions.

Aquarium fish normally live in water with a pH of between 5-9. They will acclimatise outside this range but they won't thrive and will be more susceptible to disease.

In most aquariums the pH will fluctuate over time due to the acids produced by organic matter, respiration and other processes. Regular water changes removing waste matter will reduce these changes. Sudden changes in pH can be very stressful to fish so if you see a problem and you don't keep a close eye on it, it may be worth checking it out.

Do yourself a favour and invest in a water test kit. If you test regularly you will be able to prevent a problem before it starts.

Patented power

Rosewood Pet Products is launching two new aquarium pumps from SICCE. The Airlight is available in three sizes, and the Multi Re-Circulation Pump is available in six sizes. Both are powered by NRG, a unique patented energy system, offering low energy consumption, reliability and silent operation.



SERA BRINGS OUT POWER-MIX FOR POND

Sera bio power-mix, which contains a freeze-dried mix of silkworm, shrimps and provides a well-balanced mixture of healthy morsels for pond fish, the maker

The silkworms in sera bio power-mix are rich in easily digestible protein and essential unsaturated fatty acids – a nutritious food source, rich in energy.

The Gammarus or freshwater shrimp are especially rich in carotenoids, which will intensify the red and yellow colours in koi, goldfish and other colourful pond fish – naturally.

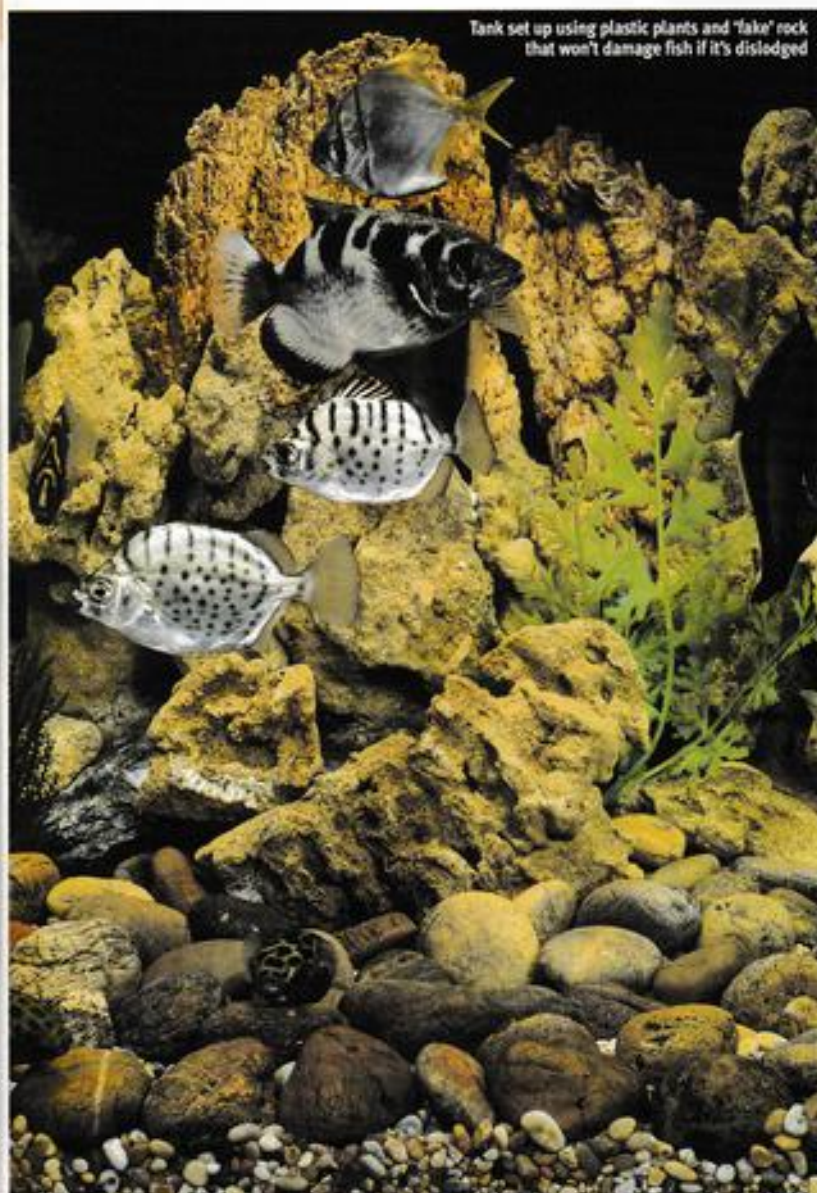
The high content of ballast substances or roughage in gammarus enhances intestinal activity and helps prevent constipation in fish.

Daphnia, too, are a favourite food source, with high roughage content to enhance healthy digestion. Strong and rapid skeleton development is also aided by the high mineral content of daphnia.

Sera bio power-mix is free from artificial colorants and preservatives. The product comes in a 1,000ml package, retailing at £7.99.



It's OK to fake it!



Tank set up using plastic plants and "fake" rock that won't damage fish if it's dislodged

To have a successful aquarium you don't have to have everything 'natural'.

Mary Sweeney says that it's all right if you fake it sometimes

Back somewhere in fishdom there started a vicious ugly rumour. It went something like this: "If you start out with live plants, live food, and natural river pebbles, your natural aquarium will be perfect and all the fishes will live there happily too." There is such emphasis placed on everything natural that sensitive hobbyists have been known to sneak out of the pet shop with a little piece of that famous indestructible plastic plant and a nice piece of ceramic driftwood to jolly up a lovely, but slightly underdressed community aquarium. Whoever dictated that everything in the aquarium had to be living, brought in from the outside, or imported from far, far away in the name of authenticity? It must be those fish police at it again. Ban them from your local fish place, from your guest list, and from the list of people who you would like to invite to speak at your local aquarium society. They're generally up to no good, just looking for yet another way to line their pockets (or those of a friend's) and lighten your wallet (and that of your friends').

Everything in moderation

Of course there are times when it's very nice to view a fish as one would find it in nature. It's classy in moderation and with good

Tetra 
The experts at making fishkeeping easy



PHOTO: www.photomax.org.uk

THEMED TANKS

There used to be a time when aquarium societies challenged their members to see who could create the wildest theme aquarium. Even though the photos were usually pretty abysmal (we are so lucky in the digital age as far as aquarium photography has progressed), there was a real sense of fun that went into the design and execution of these legendary aquaria.

The circus theme was often represented and clown loaches could be counted on to play the game. Scenes from the big top can get pretty inventive, especially when you start to think in terms of tiny replicas. As long as the decorations are inert, they

don't always have to represent the bottom of a jungle stream, lake, river, or even the ocean.

It's up to your imagination. I wish I had some of the photos people had sent me on the job in the past. How imaginative people can be! The time and love that they put into their aquaria. It's really quite phenomenal. There was one photo of an aquarium that originated from somewhere in Asia many years ago. The outside of the tank was ornately carved and painted in tremendous detail. The inside duplicated a tea house with a koi pond (small Bristol shubunkin were lovely stand-ins for the koi in the pond), a garden, and a bridge. For this person, the aquarium really was a full and relaxing hobby. Where is that dedication in our lives? To be so consumed by a task and the pleasure in that task is something to yearn for. I think it is a large part of why so many of us are taken with the aquarium in the first place.



Sometimes it's possible for even the Firemouth cichlid, *Merichthys meeki*, to live in harmony with grumpy tankmates

PHOTO: www.photomax.org.uk

cause, to use natural driftwood or the same species of plant that would be found where your fish would originally have been found in the wild, but to make a cult of it is utter nonsense – unless, of course, that's what your cult of the week happens to be. Some people are driven to duplicate natural environments for certain species of fish, and that's fine and dandy in its place. To insist that this is the only 'proper' way to keep fish is just plain silly and places highly improper stress levels on other fishkeepers... levels of stress entirely inconsistent with the whole fishkeeping hobby in general. Granted, there are times when aquaria are so badly done that the only polite thing to do is to quietly leave the room, but that's someone else's form of self-expression and comments made while leaving the room should be neutral and vaguely complimentary, unless of course there are fishes gasping for air at the surface of the water or there is a stench that suggests that something has died in the not so recent past. Well, enough morbidity, let's talk about community aquaria.

Too freaky by far

Today is the day we stray from the biotope tank, the Dutch aquarium or the natural look. Integrity? Authenticity? We'll save that for where it's really needed, like in diet, water chemistry and quality, and a few other little details, but where it really counts. In decor, the sky's the limit (except no day-glo fishes). Gosh, I feel like I'm on one of those make-over TV shows where I get to change your bedroom or your garden with practically no money and less time.

What set me off on this tangent? It was gorgeous, a little gargoyle-themed village constructed of non-toxic toys – slightly scary ones – demons, gargoyles, creatures from the dark side, all man-made and apparently from some store heavily into Harry Potter artefacts, and totally appropriate scary fishes, like Ancistrus, weather loaches, and the pièce de résistance, convict cichlids. Not one fish was over 12cm and none of the



PHOTO: M.P. & C. REBER

fishes had a criminal bone in its body. The effect was meant to be "Creature Feature", a la Hollywood, not Alcatraz. It was well-done and perfectly Halloweenie. Each fish had a partner or two of the female sex, but even that did not start any troubles as there just weren't any territorial issues.

The water was kept neutral in all aspects, even heat was kept middle of the road for a tropical tank. The gargoyles weren't fed, but the youngsters in the house were convinced that they kept a hidden supply of tubifex in the treasure chest in the dungeon of the castle. Oh, didn't I tell you about the castle? This aquarium was a real toy, and I was truly glad to see it.

Tank harmony

Yes, I often talk about community aquaria with an eye toward how the fishes will treat one another. I am always concerned that there not be mistakes over personality or changes in attitude brought about by adolescence. (We've seen it so often in our own species, there are times I fear what will happen when certain Central American cichlids hit the piscine equivalent of 16.) But that's what nets and isolation tanks are for. If the row is bad, sometimes separation is the only option. But, by the same token, I've had it happen that an Oscar, a Jack Dempsey, a Firemouth, and a Chocolate cichlid lived in perfect harmony.

There was heavy construction in that tank. There was lots to do (dig, dig, dig, all day) and there were no females. They generally couldn't even see each other unless they went out of their way to do so, and it was a stunning aquarium. These were healthy, mature males. Nobody could understand why there was no warfare. The closest we ever came to fighting was when the feeders were introduced. Slow fish lost out. Ultimately though, no fish was going to waste much time fighting if it meant missing out on the grub. Feeders were gone within five minutes. The other days, pellets were inhaled with the same enthusiasm. And then they went back to their digging.

No, I didn't use real rock. That would have been dangerous. Rocks falling on the bottom of the tank can cause real trouble. It's ever so much safer to use Styrofoam® that has been subtly altered in shape, painted with non-toxic paint, and siliconed to the bottom. This is recommended for African cichlid tanks and just about any tank where we have large, strong fishes that are capable of moving rocks and gravel around all day, whether it's to impress the females or just to stave off boredom. Fish will do that you know. Did I feel that I had cheated nature because the rocks weren't authentic? Not a bit. I felt I had cheated financial ruin,

OK, so this isn't to everyone's taste, but it's how a lot of people start out and it's certainly eye-catching

Tetra 
The experts at making fishkeeping easy



which would have been the outcome if I had flooded the living room floor.

Imagination is everything

There are lots of ways of enjoying the tropical fish hobby. Thousands of ways I haven't even dreamt of yet. The pet shops are full of ideas. There you will find countless plastic things designed for the inside of the aquarium. That's nice and safe, but it sure isn't the end of the rainbow. It might be a bit boring if the only thing you used was plastic plants, but it's not the worst place that you could start. The fish absolutely won't know or care. They will, however, be quite interested in the little rotifers that will start to grow on the plastic plants in a few weeks, and so will their fry. That's right, living organisms will appear on the plastic plants and they will be good food for young fishes. Imagine that. Free fish food on those totally unnatural plastic plants and ornaments. It's true. Every surface of the aquarium is a potential site for algae growth, rotifers, planaria, and other tiny organisms that contribute to the diet of tiny and not-so-tiny fishes. Happy fishkeeping. ■

PHOTO: www.fishbase.org.uk

The odd-looking *Ancistrus dolichopterus* can be used to create a 'horror' aquarium



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.



Tetra

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 boisterous tank-mates. Keep the temperaments of your community fish similar.

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

Tetra UK Ltd, PO Box 271, Southampton SO18 3ZX



Tropical



Neon tetras don't usually cause problems but you do get the odd rogue

Problem neon

Q We set up a tank some months ago, 36in wide 20in deep 12-15in depth. We have been slow to get it set up and rested between each set up stage to allow it to mature. We bought our first fish once the plants were settled - five cory pandas and rainbows. They settled very well so after 10 days we bought five XL Neon tetras. However, within a day one was bullying the others, so we did as the book said and added 10 more to see if they would call a truce... no such luck. We are now down to 10, and another looks as if it will die after being bitten across the back. We don't want to add anymore until we get them settled down but it's looking like they will just be picked off one by one. We have kept fish before and have never come across this problem with neons. What can we do to sort it out? Our PH is 7.5 and there's no problems we can see. Peter and Jill, via email

A If the only fish you have in your tank are the Corys and Neons and you have seen one of the Neons bullying the others, then it is likely that you have a problem fish. Neons are among the best community fish and are not usually trouble makers, however, it is possible to have a rogue fish among your first five (I had a platy once that was a rogue). Small groups are usually OK. I don't know which book told you to add a lot more but this would not solve your problem (as you found out to your cost!) - the rogue is still there - isolation of the aggressor is the answer. A rogue neon could inflict a lot of damage as it has teeth and some of its relatives can be quite nasty. Beautiful Serpae tetras can be rippers, and read about the Buck toothed tetra in Starting Point (May issue). Neons, however, are not well known for nasty behaviour but neither are platies. Pat Lambert

PLEC CARE

Q I bought a Peppermint pleco and can't seem to find much information on how to care for it properly. Could you give me some top tips?

Secondly my Gibbicep, Royal and Peppermint pleco all seem to want to live under the same piece of wood even though some very nice alternatives have been offered. The Royal and Peppermint are best of buddies but the Gibbicep is like Eeyore on a bad day! Can you give me some advice on how I can get my gibbi to accept a new home?

Also, can you advise me on alternative foods other than plec waters? Darrell, via email

A Firstly you do not say what size aquarium your fish are housed in, so I will comment the 'Gibbiceps' (*Glyptoperichthys gibbiceps*) first. These are potentially very large boisterous fish, which can reach sizes approaching half a metre (18in). I would not consider them at all for the average community tank as they become very dominant and will bully anything that's in the space it wants for itself. By 'Royal pleco' I assume you are referring to Paranaque nigrolineatus, although reasonably peaceful this is also a potentially large fish, which can reach 40cm (15-16in) albeit at a far slower rate than than the G. gibbiceps. Now with regard to your 'Peppermint pleco' there are at least four undescribed species that come under that name, L030, L031, L176, LDA04 the size of these can range between 12-25cm (5-12in). To give your three 'Plecos' an ideal living space I would suggest they should be housed in an aquarium of at least 1.23m x 50cm x 50cm (4ft x 18in x 18in) and furnished with large pieces of soft bogwood and inert rocks, affording plenty of nooks and crannies for the fish to find homes amongst.

The G. gibbiceps and the Peppermint require a similar diet and tablet, pellet and wafers are OK, but insects and their larvae form a good part of their natural diet. Blood worm, Mosquito larva, Daphnia and tubifex are readily available in frozen form at most aquarium shops. Your Royal plec, Paranaque nigrolineatus, is some what more of a specialist when it comes to food - its number one requirement is a good piece of soft bogwood, the hard petrified decorative wood that is available is not suitable. They also require vegetable matter and courgette is pretty good, they will also take tablet and pellet foods.

Ian Fuller



Male ram (Butterfly cichlid) standing guard over developing eggs

SPAWNING RAMS

I have been keeping tropical fish for two years. I have a 350-litre community aquarium with Emperor, Neon, Glowlight and Black phantom tetras, four large Clown loaches, a male Dwarf gourami, a pair of Pearl gouramis, two Peppered cats, four Rams and an albino Red finned shark. My rams have recently spawned but the eggs didn't survive. They have spawned three times in the past two months and my local dealer tells me this is due to excellent water conditions (is this true?). I have moved the spawning pair to a 60-litre tank in which they have once again spawned. I haven't been able to find any decent advice on breeding these beautiful dwarf cichlids and I hope you can provide me with an insight. I am culturing infusoria and am quite excited to find fry in the tank.

I also have a fish which I would like you to try and identify for me. It was sold to me as a Golden ramirezi. It's 4cm long, a rich golden colour with no iridescence and is quite timid and shy. It has the same body shape as a ram and is definitely a dwarf cichlid. I don't think it is a ram though as all the photographs I've seen of Golden rams shows them with bright iridescence.

Brett Pietersen, Cape Town, South Africa

I think you have done the right thing by moving the pair of Rams to this smaller tank. You could put the Dwarf gourami in the tank together with the pair, as this will occupy the male so he does not disturb the female. The temperature should be around 28°C. The pH should be acid 6 or lower. Just because the fish have spawned it doesn't necessarily mean that the water is perfect. The reason for egg disappearance could be that the pair is young. It may be their first attempt and they may have eaten the eggs. If the pH of the water is not correct, the eggs won't develop. So this could also be the reason. You can filter the water with peat moss to lower the pH. Give them another chance to see if they can do it, and be ready to start hatching Artemia as soon as you see swimming fry. Since the fish have already chosen his/her own partner among four fishes, then the pair should be ok. Your last fish is probably a Golden ram – sometimes the iridescence just doesn't come through.

All Stalsberg

Breeding egglayers

I have been keeping fish for some time now and have a 90 x 30 x 30cm community tank. I really want to breed some egglayers. I don't want to set up a separate breeding tank but would like the youngsters to survive in my community tank. This is a well-planted tank with some rocky caves for fish to hide in. I am not overstocked and there is room for more fish. Can you recommend a species for me to try?

Many of the easy egglayers are egg scatterers and none of their eggs are likely to survive in the community though the fish will often spawn in there. Even if you set up a separate breeding tank, the adults are avid fry eaters and will need to be watched and removed immediately after spawning has finished they might

even eat a few during spawning activities. The first egglayers to spawn for me were Kribensis and as you have rocky hiding places already set up in your tank these make ideal spawning caves. Sideways-on plant pots are also popular. One adult pair is enough in the tank and the pair will often surprise you. The first I knew of the event was when the young were brought out into the community by their attentive parents who herded them around. Before this you may be aware of the male chasing off other tank mates from the spawning site. If you provide them with good aquarium conditions they will breed with no help from you and you will have the pleasure of seeing one of the most delightful sights in the aquarium when the parents take their young out for a swim.

Pat Lambert

Today's Answers Expert Panel

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

Questions by Post

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

Internet Service

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Can I have Convicts?

Q We have bought a new tank 36 x 24 x 15in I would love to have Convict cichlids but I don't know what other fish to have in with them. I am debating about using aqua sand instead of gravel, with slate structures and floating plants. The tank has a Fluval 2 and a 200 watt heater. How many fish should there be in this size aquarium? Is there anything I have missed out or need to know for a happy, healthy tank?

Steve Capstick, Barrow in Furness

A It's a nice new tank you have and it would be great for a pair of Convicts, but, if you have not read any information about the cichlid, you should do so. The Convict cichlids are beautiful fish, especially the original type, but there is one BUT – they are very prolific. When they settle down they will spawn, spawn and spawn again. So, do you have room for a lot of fish? Also, they are very aggressive towards other fish in the tank, to protect the eggs and fry. If

you have fish with long fins, like Scalare they won't look very nice after a while. I think I would suggest other cichlids for your tank such as Pelvicachromis or Dwarf cichlids like Apistogramma. But if you have fallen in love with the Convict, you can't have too many fish in the tank. If stocking rates are low, the Convict will have a part of the tank as its territory and the other fish will be left in peace most of the time unless they trespass.

I would use sand, because after visiting South America and studying different biotopes this is what is most common. A temperature of around 24-25°C covers most of the fish. Floating plants could be Ceratophyllum, Ceratopteris, Pista or Salvinia.

It's a bit difficult to give you any advice as to how many fish you can keep in the tank. It all depends on what kind of fish you would like to keep. With Tetras, Rasboras or Danios you can keep many together, because these fish are shoaling but cichlids demand a lot more space. Alf Starlsberg

Convict cichlids, *Herichthys nigrofasciatus*, are beautiful fish but they're prolific spawners



Do koi get sunburn?

Q I have a koi which is about 12in long. It has recently developed a reddish sore on his head. I noticed a 2in patch of loose skin about two weeks ago. It then fell off leaving a lighter colour underneath. It basks in the weeds with its head above water. Could the fish have had sunburn? If so could you recommend any remedies which may help?

Steve Jones, via email

A Carp and koi love the sunshine and in the summer can be seen close to the water surface, soaking up those rays! The problem is that koi are a bit more delicate than common carp and do indeed suffer from sunburn. A mild antiseptic cream applied to the area can reduce the effects of the sunburn but if the koi is fit and well, it should recover quite quickly. My only concern for your koi is that you say the fish basks among the weeds with this area of the head out of the water. It is unusual even for a koi basking in the sun to leave any area of the body exposed to the air, because it will quickly dry and can allow the skin to become sufficiently injured as to suffer secondary bacterial or fungal infections. I assume the koi is feeding and otherwise behaving normally but if not, I would suggest seeking some professional advice.

Bernice Brewster

Feeding topical fish



FOOD POISONING?

Q I had a terrible experience recently – I fed my fish in my community tank as usual. I watched the fish hungrily eat the flake and tablet food as they usually do. Less than an hour later I returned to take a look at my tank and saw the most terrible sight... my fish were DEAD. All the fish that had eaten from one particular brand of tablet food were dead or dying. My large Clown loaches (the biggest loach was almost 15cm), large Red-finned albino shark, Tetras, Danios (the tetras and danios always rush to eat the crumbs of tablet that floats up after the loaches maul the tablets). The only survivors were my Rams, Pearl gouramis and Peppercorn catfish. These fish never eat the tablet food. I have been feeding them this tablet twice a day for over a month with no problems at all. My water has been tested and is fine so it has to be the food. I am completely devastated at the loss of my fish and it feels as if I've lost a close family member. I would like justice to be served but I am at a loss as to how I should go about this?

Brett Pietersen, Cape Town, South Africa

A This really does point to an extreme case of food poisoning – and my first piece of advice is to stop feeding the tablet foods immediately. I have never heard or experienced what sounds like such an obvious cause-and-effect case of food poisoning – which makes me very curious. I would recommend that you do the following:

1. Check the best before date (and other batch references). Out of date or poorly stored food can deteriorate to be 'toxic' to fish.
 2. Contact your retailer the manufacturer immediately with your observations.
 3. If your retailer is willing, offer a few tablets to a store aquarium containing a few fish similar to yours and see what happens. This would then be conclusive proof that the tablets are the cause. If there is no similar reaction, then it is difficult to conclude that it was the food (even though there seems to be very little else it could have been as your other fish that did not feed are still alive).
- Your next steps will then be guided by 1-3 above.
- Ben Helm

Q & A

Star Letter



Before you add large fish such as the Emperor cardinal make sure your tank is ready or you could suffer losses

Tank wipeout



I have been running my 120 x 50 x 50cm marine reef system for seven months now. It has a Deltac Turbo 1250 skimmer, a Rowaphos reactor, and Kalkwasser is added via a stirrer on an automatic top up system. The biological filtration is via 50kg live rock and there's plenty of water movement – the total turnover of water is 21 times per hour and lit by a series three twin 250w metal halide unit.

Stock includes, 50 hermits, six shrimps, four serpent stars, various other crabs, 12 soft corals, fish include a pair of clowns, Emperor tang, Regal tang, Powder blue tang, Flasher wrasse, Iridis wrasse, Pyjama wrasse and a pair of Emperor cardinals.

The water quality is as follows, nitrate 15ppm, nitrite 0, calcium 450ppm, KH 8.4, magnesium 1150ppm, phosphate 0.3, iodine 0.06ppm, and pH fluctuation between 8.1 and 8.3.

I feed my corals with a constant drip of live phytoplankton, and I cannot stress how much my corals improved when I initiated this method three months ago. They also receive Marine Snow and Cyclop-eeze once a day. My fish get a mixture of five different frozen foods twice a day.

I have taken my time with stocking and apart from the early days of an algal bloom I have had no real problems until I added the Powder blue tang. Within two days it developed the dreaded white spot, it died within two days taking with it every one of my fish. I suffered a total wipe-out and I am devastated. My question is would a UV steriliser have stopped this and what did I do wrong, could I have treated the aquarium with any chemical and how long do I have to wait before I can add any other fish.

Bruce Edmington, Bucks



I am so sorry that you have suffered – this is the downside to the hobby and all of us are at risk. You have set up your system fantastically and followed the rules but you have learnt the hard way that even if you take every possible precautions every

AQUA MEDIC

for all your marine keeping answers

aquarium can suffer. However, I feel you may have made a couple of mistakes.

I think you added your Powder blue tang too early in your aquarium's life, as your water quality would still be unstable. I personally would only consider such a fish when a system is 18 months old as you then have stability with age. When choosing this fish make sure it is feeding, has good coloration and a big fat body – if uncertain then leave it in the dealer's tank and keep looking.

You mention the use of a UV steriliser in your reef aquarium. Any live planktonic animals that are in your sump will be killed off by impellers in the pump however your phytoplankton cells will not, yet any passing through a UV will be.

A rule of thumb when considering to restock after an incident of white spot is: never add another fish until six weeks after the last whitespot has disappeared – this will ensure no re-infection of the new introductions.

You mentioned that you fed your fish twice a day, this would have put a strain on their immune system, feed as many times a day as you can, without increasing the total amount of food but spreading it over time. Also add vitamins to your frozen food – this really helps. With tangs it is important to offer them seaweed attached to a lettuce clip, this allows them to graze on the food over time.

Sump sizes



I am planning a sump system, the main tank will be 120 x 75 x 75cm with one weir and a drain taking water back down to the sump. I will have one return pump pushing 6,500 litres back per hour. I can only fit a sump 80cm long x 40cm wide, can you please advise me how high it will have to be to contain the water back siphoning if the main return pump fails.

Frank Broadbent, Rochdale



A very good question indeed because the last thing anyone wants is a flooded front room and a very unhappy spouse. What you first have to work out is the amount of water that will drop out of the main aquarium when the return pump is turned off. This comes from two sources, the



A sump with all the inner workings out of sight of the main aquarium. Photo with thanks to Interpet Publishing from *A Practical Guide to Setting up a Marine Aquarium*

main drain to the sump and also back down the return pipe.

To minimise the volume of water returning to the sump you will have a watertight weir which is in front of the drain. The overflow comb should be 3cm deep so water loss from the main aquarium via the drain is only the top 3cm of aquarium water. If your return pipework is deeper than 3cm then drill a 6mm anti-siphon hole in the pipework at 2cm below the water surface. When the draining water falls below the drilled hole then the siphon action is lost and no more water is lost via this passageway.

GROW-YOUR-OWN ZOOPLANKTON



I would like to add a refugium to my marine sump system. The main reason is to help stabilise the pH and also cultivate live zooplankton in the main aquarium for feeding my corals and fish. Please you could inform me of the best way to do this as I have no space in the cabinet but I could put one above the aquarium in a cupboard. Is this a possible site for a successful refugium.

Howard Johnston, Isle of Wight



Not only is it possible but it is the best place for a refugium. Many people install refugia in a section of a sump (not a miracle mud system) hoping to feed the corals and fish with natural life. One big problem here is that when the zooplankton enters the return pump it is killed by the pump impeller.

So pump up water from the tank into the refugium and then drain via gravity back into the main display aquarium so any live food remains live. A substrate of very fine particles (minimum thickness of 5cm) allows the algae to 'bed in' and provides the best environment for your beasts that will develop. Use plant growth bulbs and keep the photo period on 24 hours a day if all you intend to grow is zooplankton and algae, this stops the algae from reproducing sexually and dying. If you intend to keep it in a cupboard then make sure it is well ventilated.

Calculations

So your aquarium is 120 x 75 x 75 cm, the volume of dropping water is, 120 x 75 x 6cm. The equation is as follows:
 $120 \times 75 \times 6 = 54,000$ then divide by 1,000
 $= 54$, so your total drop of water is 54 litres.

Your sump is 80 x 40cm with a running depth of water of say 40cm.

$80 \times 40 \times 20 = 64,000$ divide by 1,000 = 64 litres which gives us a 10-litre safety margin.

If we have a water depth of 40cm we need to add another 20cm to catch the water draining so your sump dimensions would be as follows: 80 x 40 x 60cm high.

Star Letter Prize from

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Success with Cory breeding



C. paleatus getting friendly!

PHOTOS: Ian Fuller

Ian Fuller has some advice for those of you who want to try your hand at breeding corydoras

Among the many groups of fish that I have bred over the years it's the group of small armoured catfishes from South America belonging to the family Corydoradinae that have intrigued me the most. In fact my interest in them started within the first three years of taking up the hobby, it's an interest that has continued to this day.

There are nearly 150 described species, with almost as many more species awaiting scientific description. At any one time there are probably 20-25 species available to the hobbyist, these range in size from a little over 1in (25mm) body length, to 4in (100mm). Their body shapes also vary, which is an indication that although they belong to the same family, they do not necessarily live in the same type of habitats. This means that providing the correct breeding conditions for them is not always a simple task.

Aquarium set-up

The substrate where most corys are found is sand and, unlike common building sand, river/stream sand is different, because it is constantly being moved by the flow of the water the granules have been worn rounded and smooth. In some areas there is larger

gravel and in others the substrate is clay, which is not an ideal substance to use in the aquarium. In slower-moving rivers, streams and flood plane pools and lakes, there may be thick layers of leaf litter or even deep silt. Therefore selecting the correct substrate can be a problem.

Water condition requirements also vary from species to species, at one end of the scale there are some that require very soft acidic water (0-2 dGH; pH 5.6-6.0) and at the other end the water needs to be medium hard and neutral (8-12 dGH; pH 7.0). As aquarists it's almost impossible to determine the exact needs of each individual species, so we need to have to start from a starting point. I would normally start with what I call a basic set up, the size of the tank is not that important, most of my cory breeding tanks are quite small, holding between 6-8 gallons of water.

Choosing species to breed

The first decision is to select the species you want to breed and here I would recommend one of the so-called easier and more readily available species. *Corydoras*

genus the 'Bronze Cory' and *Corydoras paleatus* the 'Peppered Cory', there are also albino forms of both species available, which are equally as easy to breed. The ideal breeding group for any of these species would consist of two females and four males. To house them, an aquarium of 18 x 12 x 10/12in deep (45 x 30 x 20/25cm)

A dwarf species, *Corydoras habrosus*



Corydoras paleatus the 'Peppered Cory'.



would be a suitable size for a breeding set up. For those of you that have a limited amount of room there are one or two dwarf species that are also very easy to breed, these are, *Corydoras habrosus* and *Corydoras pygmaeus*. A small to x 8 x 8in (25 x 20 x 20cm) aquarium would be an ideal size for these species.

No more than 1/2in (10mm) layer of smooth grained sand should be used as a substrate for the larger species and about half that for the dwarf species. The reason for the shallow depth of substrate is so that when the adult fish are sifting through it in their constant search for food, they can actually penetrate to the base of the aquarium. Which alleviates the risk of uneaten food causing pollution problems. By way of filtration I would recommend the use of air driven sponge filters, these once they have matured not only do they help to keep the water clean with their biological action, but provide what can only be

described as a dining table for small fry. To mature new filters I set them up in an already established tank, usually the stock tanks that house the fish I want to breed.

Getting the tank ready

A new breeding tank set up will have thin layer of well washed sand, water will be taken from the stock tank that the potential breeding stock are housed in, filling the tank to about three quarters full and topped up with new water of the same temperature. One or two sponge filters are added depending on the tank size and the species to be housed. The temperature is set to suit the species to be bred and then the tank is left to settle for a couple of days. For *C. paleatus* the temperature would be set at 70°F (21°C), for *C. aeneus* a little higher at 75°F (24°C), once the tank has settled the adults are introduced. If the water parameters in the stock tank are different to those in the breeding tank the adult fish should be acclimatised, which is done by catching the fish and putting them in a container with water from the stock tank and floating it in the breeding tank. The water in the container is then slowly exchanged for water from the breeding tank; once the acclimatisation has been achieved the group of adults can be released.

Water conditions

Water changes of 30% should be made twice weekly to keep conditions at their best, making sure to siphon all the fish waste and any debris that has accumulated on the bottom. In many cases when the fish are in the best possible condition a basic water change will be enough to trigger them into spawning mode, some species however will need a little encouragement, which may

Make a spawning mop

Adding a floating spawning mop to a breeding tank is a good idea and this can be made cheaply out of synthetic four-ply knitting wool. To make a spawning mop simply take a piece of stiff card about 18-20cm wide and wind the wool around it 50 times. Tie off the loops at one end of the card and then cut through the strand at the other, attach a piece of cork to the tied off end and you have a spawning mop. The colour of wool is immaterial but I find that dark green or brown seem to be favoured more than any other colour. Once the mop has been soaked it will provide an ideal egg deposit site. Java moss and Java fern also make good spawning sites; both plants are hardy and will tolerate being moved from tank to tank as required.

be achieved by a 50% water change using replacement water that is about 10°F cooler (6.5°C). Other species may prove even more difficult and daily water changes may be needed to start spawning interest. It's usually at this point that I advise people to make notes of what they are doing and to record all relevant details, such as tank size, water parameters, food and feeding regime, water changes; how often, how much and temperatures etc. Another tip here is to only ever change one parameter at a time because by altering more, one thing could counteract another.

It will be pretty obvious when the fish are interested in breeding by their increased activity, what usually happens is the males will start to pay a female a lot of attention





C. kronel at the bottom



An albino C. p...

by performing little dances around and all over her, often offering themselves in arched sideways stances in front of her. They will stay in constant contact in an attempt to arouse a female's interest. It may only be one two or all four males taking part in the ritual each one competing for the chance to mate. The females will be more interested in cleaning various sites around the tank in readiness to deposit her eggs. When a female is sufficiently aroused the roles are reversed and she will pursue the male of her choice, nuzzling into his side just above his ventral fins. At this point the male will clamp the female's barbels to his side using his pectoral fin spine, the male will be seen quivering for a second or two before releasing his grip on the female. This is what is known as the Corydoras "T" mating position and depending on the species is the time when the female releases eggs into a pouch formed by clamping her ventral fins together. There are some species where the female releases her eggs into the pouch after the male has released her. There is a lot of conjecture how or at what point the egg/s are fertilised and has been the subject for some lengthy discussions, which I do not intend to delve into here.

Spawning

After mating the female will rest momentarily and then swim off in search of a suitable site to deposit her egg/s, which may be on the tank glass or on one or all of the other tanks furnishings. I have found that *C. paleatus* seem to prefer the tank sides to deposit their eggs on, with *C. aeneus* having a preference for plants and mops. Egg size varies from species to species; the smallest I have measured was from *Corydoras* sp. *pestai* at 0.7mm diameter and the largest from *Corydoras* 2.8mm diameter. The size and the quantity of eggs seem to be related, a species laying

DIET REQUIREMENTS

The potential breeding group need to be given the best diet possible get them into top condition for breeding. A staple daily diet of a quality flake or tablet food alternated with live or frozen foods. *Daphnia*, *Tubifex*, bloodworm or *Cyclops* would be ideal.

small eggs produces large numbers and a species producing large eggs only produce small numbers.

Once the spawning activity has ceased it is best to remove either the adults or the eggs to avoid any possibility of the eggs being eaten, if there are a large number of eggs it is best to remove the adults and return them to their original stock tank. A small number of eggs can be housed in a small container left floating in the spawning tank, where eggs have been deposited in the mop or on the plants it's a simple case of lifting the whole plant or mop out and putting it in the container. Eggs that have been placed on the tank sides can be carefully lifted by using a razor blade, some species produce very sticky eggs that are quite difficult to remove and others have hardly any adhesion at all. Eggs that are removed should be put in a small hatching container (I use 1.5 or 2 litre ice-cream tubs) with water from the spawning tank and with an airstone added. If the container is floated in the spawning tank it will be maintained at the same temperature. The addition of a proprietary anti fungal solution will help keep any infertile eggs from contaminating the fertile ones. Over the four or five day gestation period the water in the container should be changed for water from the spawning tank, which will reduce the content of the anti fungal solution to zero by the time fry start to emerge from the eggs.

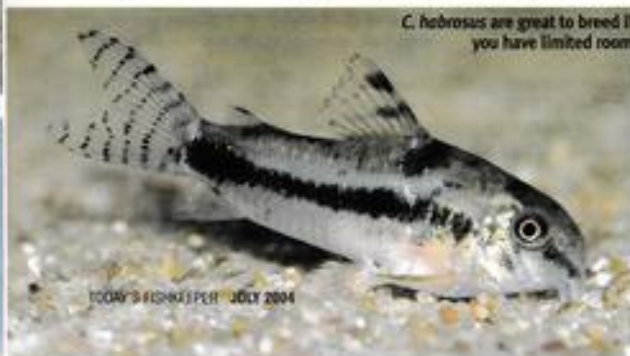
The popular Bronze Cory, *C. aeneus*

Now you have fry...

Once the fry have escaped the confines of the egg membrane it will take a further two to four days for them to become free swimming, the daily water changes should be continued. When the fry can be seen to have totally absorbed the contents of their yolk sac they will need to be supplied with food and there is nothing better to start them off than small helpings of micro worm, here the term little and often should apply but this is not always a practical option. Therefore feeding twice a day will suffice making the daily water change before the second feeding. After two days of micro worm other foods should be introduced, preferably live food, newly hatched brine shrimp or *Cyclops* are ideal. Pre-soaked powdered flake can also be given alternating with the live food. At this time it will be necessary to increase the amount of water changes to before each feeding.

Corydoras paleatus fry grow very quickly and within four or five week the fry will need to be moved to larger accommodation and by the time they are 10 weeks old they should be about 1in in body length.

Finally, do remember to keep notes because not everything you do will go according to plan and the record you keep may be invaluable at a later date if you want to know how to improve things. ■



C. hobrosus are great to breed if you have limited room

TODAY'S FISHKEEPER JULY 2004



C. paleatus fry grow quickly



Keep cool!

How is your marine tank faring in hot weather and what can you do about it? **Andrew Caine** takes a look

Summer is now upon us, bringing sunny days in the beer garden, sunbathing by the sea and playing with the children in the garden soaking them with the hosepipe! However, it can bring us the same old problem we meet year after year. The same old complaints raise their ugly heads again... "The temperature is creeping up in my aquarium what can I do?"

Is this scenario familiar? You ventilate the top of your aquarium, install powerful fans to blow over the surface in an effort to cool via evaporation and take away the heat caused by your lighting. You reduce the length of time your lights are on to minimise heat input, then keep your fingers crossed. Your family are all enjoying themselves in the sun whilst your mind is elsewhere. You speed home risking a ticket with the good lady giving you grief because you have cut short the day out. Finally, you run in and your aquarium is still there but very hot. We all know the correct solution to this problem and we all know that installing an aquarium cooler is an expensive episode, but let's think about a few things first.

Temperature stabiliser

Ninety per cent of people think of aquarium coolers as a solution to stop your aquarium from overheating and thus stopping mass death in the aquarium from temperature stress. That my friends is what they do but the main reason for installing a cooler is to keep your temperature fluctuation to within 1 degree 365 days per year, day and night.

Every, and I mean every, chemical reaction both physical and biological are governed by temperature. The physical reactions within the aquarium all act on the biology



A micro cooler – ideal for hot spells, Image with thanks to TMC Ltd

within that water body, and exert or relieve biological stress. Then we get high temperatures and high temperature fluctuations then these physical stresses get worse and worse. This has a double whammy effect on the biology in the aquarium as the temperature exerts stress on the animals but to add to this we have an increased physical stress as well – not good.

So to stop this from happening you should install a cooler, which should be really called an aquarium temperature stabiliser. Yes you are looking at a bill of many hundreds of pounds typically between £400-£800 depending on water capacity. Think of this, how much money have you got tied up in your aquarium? I'm not just talking about livestock but everything, for that is what you are risking.

When you install a cooler you stabilise the whole aquarium – all the chemical reactions remain at a constant speed. It is hard to explain the effect this has on a system and the livestock contained within that system.

Slowly but surely

It is one of those items where you can only appreciate the effect when it is installed, as it's not like a new light where you can visually see the effects immediately. You see the effects of a cooler over time as the health of the livestock improves. The one thing I do know is those people who have bitten the bullet and purchased one always cite it as the best piece of kit they have ever installed. Do yourself and your fish a favour: save if you have to, but do get one.

AQUARIUM FILTRATION
– Bio-engineered

This Banded shark is a great talking point – but make sure you have adequate space for it

A fish for you

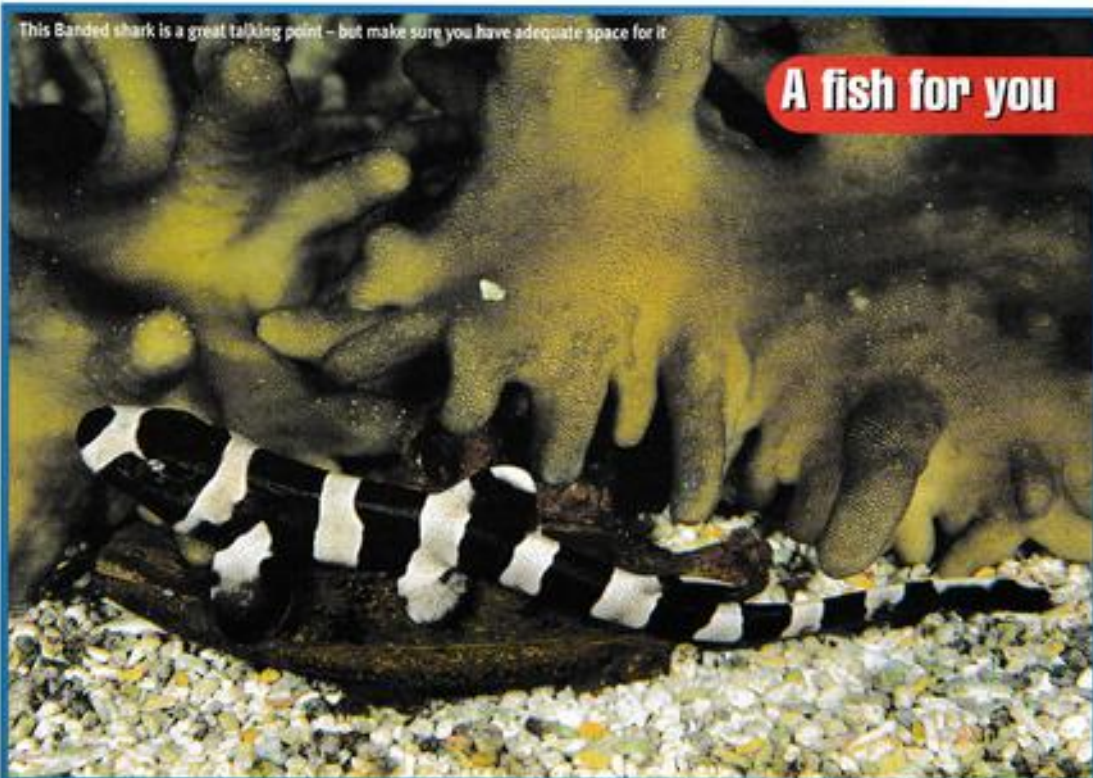


PHOTO: www.photos.com

CHILOSCYLLIUM PUNCTATUM, BANDED SHARK

This is one of my favourite sharks, and one that many think is ok for a reef aquarium, yet how wrong they are. Also, because of this shark's relatively small size, many fishkeepers try to keep them in 6ft long tanks. Again, I don't think this is a good idea for the aquarist or the shark. This whole situation arises because of the ready availability of the shark eggs and let's face it, most people would like to hatch a shark in their aquarium.

Choosing a 'good' egg

When you go to buy a shark egg, if it is exposed to air or floats then leave it alone, as the entrance of air to the egg can kill it. A floating egg indicates a build up of gas inside, indicating a dead egg, if your egg sinks then it is good. When you get home and introduce the egg to your aquarium you can wait up to 160 days before the egg starts to move around, then one day you come downstairs from a good night's sleep and there it is.

The new baby will survive on the egg yolk for five days then you have to

initiate a feeding response. Carefully place a small piece of fish under its snout with tongs. If it doesn't feed leave it alone, don't stress it. Leave it alone for an hour and try again until it snatches at the food.

In one year your small shark will have grown to 30cm. This is a big fish in a reef aquarium, the length as well as the girth of the fish will cause problems as it can knock off corals and rockwork. Your shrimp population will be eradicated and this together with the huge biological load on the system may mean the reef will suffer from rapidly deteriorating water quality. The only places you can turn to are the public aquariums and then you'll have to strip down your aquarium to get it out.

This is a fantastic shark but only for aquariums at least 3 x 1 x 1m, if you have such a system then they're great fun if given strong rockwork and plenty of open sand to crawl over. They're peaceful tank mates, and what better conversation piece then to drop in the fact you have a shark at home.

PROFILE

Family:

Scyliorhinidae

Name:

Chiloscyllium punctatum

Location:

Western Pacific

Feeding:

Vitamin-enriched meaty foods

Size:

Up to 40cm

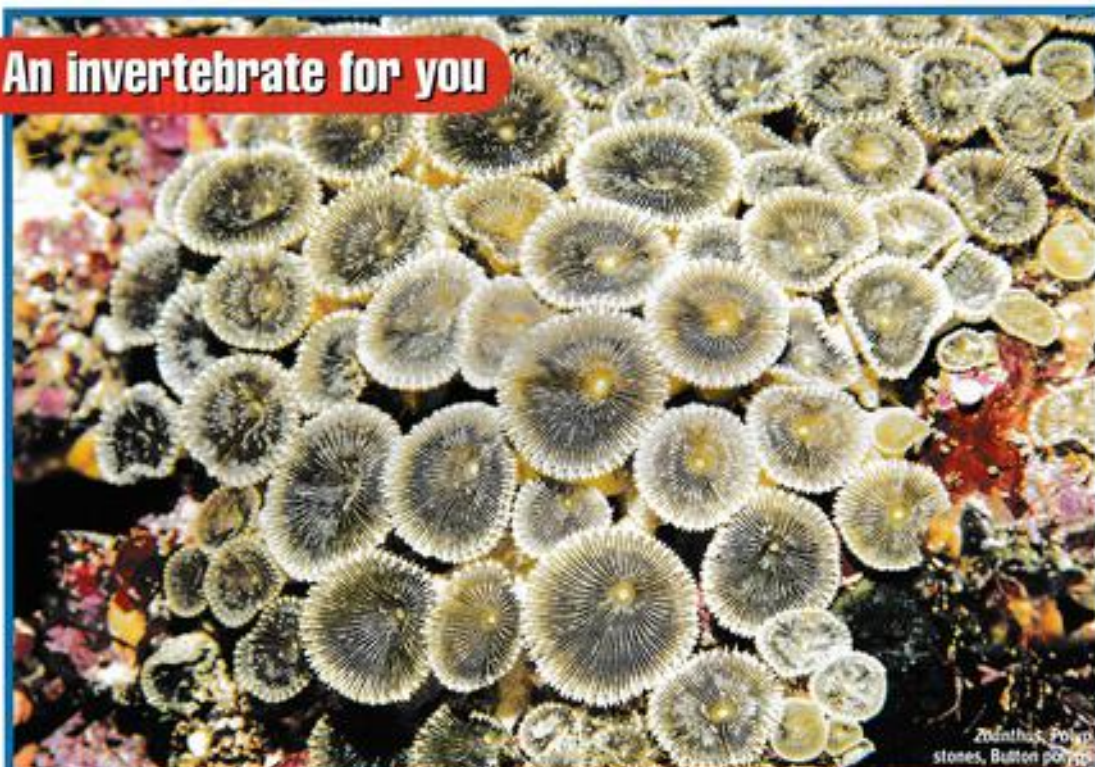
Reef compatibility:

Not recommended

Difficulty:

Easy but needs a big home

An invertebrate for you



Zoanthus, Polyp stones, Button polyps

ZOANTHUS, POLYP STONES, BUTTON POLYPS

When creating a soft coral reef aquarium we look at the different species of coral that we can keep. There are many growth forms to consider: tall, branching, squat growth, movement in the current, colour and the list goes on... One growth form is short and encrusting polyps that spread low over the rockwork. If you want colour, then look no further than the taken-for-granted, humble, polyp stone.

As for coloration, the question here is what colours do the many species not display? All the colours of the rainbow are evident and if that's not enough as a bonus we also get metallic coloration that shines under the actinic lighting. Many different colours are displayed on one polyp if you take the time to look closely, and some colonies on a single stone will display totally different coloration – the visual delight just blows you away. Get the right conditions and you will have to issue sunglasses to view the aquarium.

It's a coral that's easy to care for if given the correct placement in your

aquarium. It likes nice medium to low water movement and medium lighting under halides or T5s. Place it at the bottom to mid height in the aquarium. Feed polyp stone with coral foods such as Marine Snow or Marine De-luxe as their main form of nutrition is dissolved organics which are taken up through the body. A few species directly capture prey items so feed these particulate food such as a newly hatched brine shrimp. A very good food which nearly all your corals will thank you for is Cyclop-eeze. One of the best foods is the juice from your frozen fish food, as this is laced in amino acids and vitamins, which you add. Gently squirt this over the top of your corals twice a week. If you take time to feed your corals correctly, it's the difference between a nice coral and one that stands up and screams at you.

I said that these corals are taken for granted and that is a bonus for you, the reason being that compared with other fawn-coloured soft corals they carry a lower price tag.

PROFILE

Phylum:
Cnidaria

Name:
Zoanthus sp

Location:
Circum tropical

Feeding:
General coral foods

Size:
Average 5-3cm height

Water flow:
Low to medium

Lighting:
Low to medium

Difficulty:
A very long lived hardy coral given the correct conditions

AQUARIUM FILTRATION
– Bio-engineered

Cichlasoma istlanum male from La Huacana, Balsas; Michoacán, México in the aquarium of Don Danko. This fish, collected by the author, was named *Cichlasoma istlanum* subspecies *fusca* by De Buen in 1946



Heaps of personality

Juan Miguel Artigas Azas takes a look at the feisty *Cichlasoma istlanum*

Originally described in the genus *Heros*, the fish was reclassified by Tate Regan in the *Cichlasoma* section *Parapeteria* in 1905 (Regan, 1905).

Cichlasoma istlanum has one of the largest geographical distribution areas of all Central American cichlids. It is however, the only natural cichlid species found in its range. Its distribution extends from N.lat 20° in the north, in the Rio Armeria and Coahuayana basins in the pacific slope of Mexico (west of the country), to the South in Rio Papagayo (south of the country). *Cichlasoma istlanum* can be found in rivers and lakes not over 1,000m above sea level.

The large range of this cichlid gives place to at least two well-defined geographical varieties. Cichlids in the Papagayo, Coyuca and Balsas rivers show a red coloration in the lower body with abundant yellow markings, and an elongated body shape. On

the contrary, cichlids from northern areas of the distribution (Rio Coahuayana and Armeria systems) have a slightly higher body profile and a dominant overall green coloration.

Habitat

Cichlasoma istlanum inhabits freshwater rivers and lagoons within its range. Most rivers are shallow, under 2m deep, with a pronounced gradient resulting from the geography of their distribution. The rivers tend to shrink during the dry season, from December to May, and later increase their volume torrentially as heavy rains arrive.

Major plant life is scarce – in some rivers you can see large *Vallisneria* that the fish use for cover (Rio Amacuzac), but mostly no aquatic plants are found in the main

FEEDING

Cichlosoma istlanum is known to be omnivorous (Bejar, 1983) feeding mainly on organic matter, insect larvae, crustaceans, plant material, arthropods and small fish. My observations show that they are usually a shy, gregarious cichlid moving close to the river floor in small groups among the banks, stopping once in a while to shovel their mouths several times in the sandy or muddy bottom. In doing this they get a mouthful of substrate which they sift through in search of any edible matter. Afterwards they spit the rest back to the riverbed. In this situation they look like a peaceful fish.

courses of the rivers where *C. istlanum* lives. However, big boulders are common in the fish range, and these are efficiently used by *C. istlanum* for cover purposes. Sandy bottoms are common in the rivers among the boulders, and muddy areas are to be found everywhere in back water or shallower zones.

According to my own measurements in several areas, water temperature is in a tropical range from 20-30°C. Note the high temperature in which it is sometimes found.

The chemistry of the Balsas water is from neutral to alkaline and hardness readings are from hard to very hard. Measurements I took in Rio Amacuzac at the town of Tehuixtla yielded temperature readings of 27°C, PH 6.9, GH 65, KH 11, confirmed closely in two occasions with a timespan of several years. At Rio Papagallo, a southern affluent of the Balsas, measurements I took were very much alike, with a temperature of 29°C, PH 7.6, GH 43, KH 15.

Description

Cichlosoma istlanum is not a very large cichlid – the largest male I have ever seen in the wild was no more than about 20cm in length, and this includes males with frontal gibbosities. However, aquarium specimens are known to have reached 25cm (Adcock, 1991.) The overall shape of the fish is elongated with a compressed body, a slightly curved profile with a concavity above the eye and a slightly exposed, almost straight, pre-maxillar pedicel. Large males develop gibbosities in the frontal area when breeding. Other features are thick lips and a lower jaw a bit longer than the upper one. Dorsal and anal fins with filaments that extend beyond the middle of the rounded caudal fin, in some cases the dorsal filament beyond the end of it.

In normal coloration the fish shows several black blotches along the middle part



Cichlosoma istlanum female from rio Huaramo, Balsas system at La Huacana, Michoacán, México in breeding coloration in the aquarium of Don Banks.

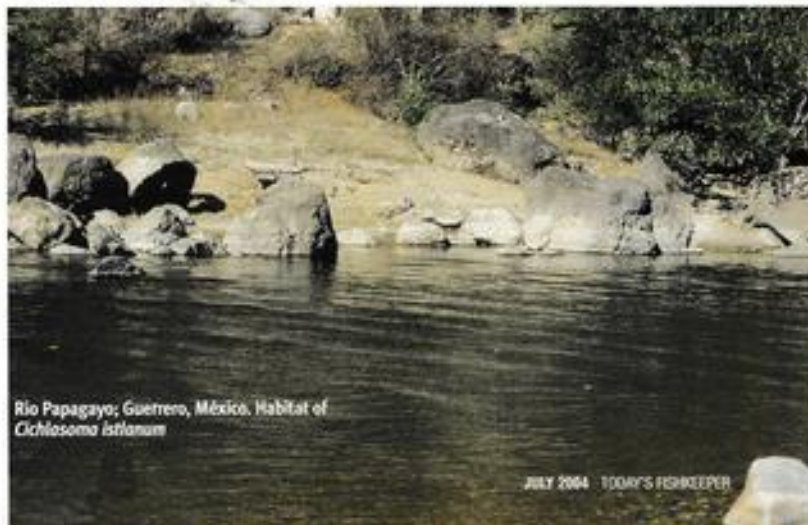
of the flanks, those more conspicuous being the first, located at the base of the head, one in the middle of the body (which is the only one seen in juveniles), and one at the base of the caudal fin. The first and last blotches are ocelated with small scales containing blue spots in the middle. The basic colour base is yellowish, lighter in the lower half of the body and much darker to brown in the upper one, the lower part also with a lot of red. Every scale on the flanks shows a blue spot larger than those in the ventral area. The head of the fish is dark green in the dorsal area and yellow with an intense green hue in the ventral one. Fins are translucent showing blue-iridescent spots and small red lines that become dots in the first third of the caudal fin.

Breeding

Breeding activity takes place during the dry season in the slower-flowing parts of the rivers near the shores. On muddy substrates the already-formed pairs look for a rock or

sunken log where they can dig a small cave at the base. The female then deposits well above 500 small, almost invisible, yellowish eggs on the ceiling or vertical surface of the nest, pre-cleaned by the pair – the male

Cichlosoma istlanum female guarding her babies in the shallow water of Rio Papagayo, Mezcala, Balsas river system



Rio Papagayo; Guerrero, México. Habitat of *Cichlosoma istlanum*

then proceeds to fertilise them. Eggs are yellowish-orange and not more than 1.9mm long. It has been shown that in captivity *Cichlasoma istlanum* can produce over 1,200 eggs with a fecundity rate of almost 80% (Luna-Figueroa & Figueroa-Torres, 1997). A particular counting of a spawn in the wild (Bejar, 1983) produced the astonishing number of 2,339 eggs!

In breeding fish the red of the lower half of the flanks becomes very intense as well as the dark in the upper part. Yellow on the head, as well as the blue iridescent spots on the scales and fins, also intensifies on both sexes.

A word comes to mind when I summarise my experiences with *Cichlasomas* in captivity, that is aggression!

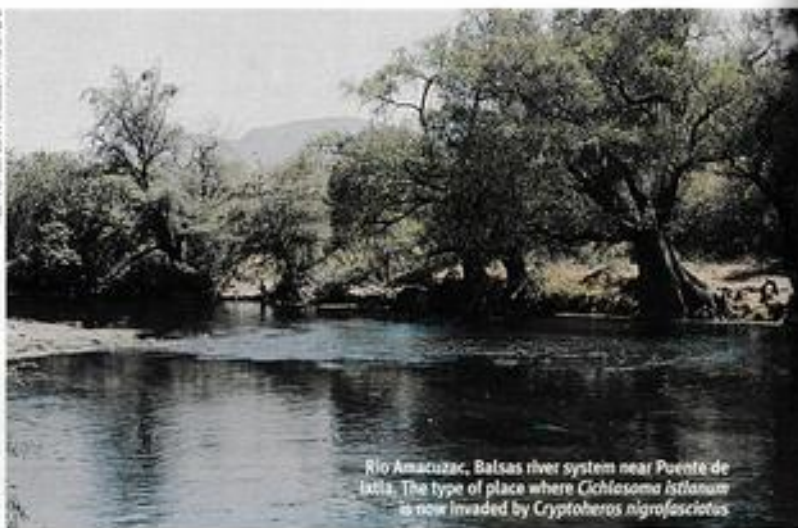
Eggs are cared for by the pair, males in the vicinity of the spawning place and females staying close to the eggs and mouthing them most of the time. Females are substituted by the males every once in a while when they go off in search for food. At her return, they flank each other like a sign of taking the turn and the male then disappears from the area.

The eggs hatch (after two days under aquarium conditions) and small wrigglers are placed in the bottom of the cave where they remain until they become free swimming (after five days in aquarium). At this time the female stays closely above the cave just peaking her head to take a close look at her babies every couple of minutes. The male will circle the nest about a metre in radius.

I have observed that other cichlids at the sight of the guarding male subtly change their route to avoid the nest vicinity – any careless fish that comes too close is then chased away by the angry male.

When wrigglers become free swimming they start grazing for food, guarded by both parents which stay close and guide them. It's mainly the male that shows the route with the typical Heroine spasmodic body shakes and closing and opening his fins, while the female stays close to the herd of fry. Fry can be watched grazing on any surface where they can find algae and small invertebrates.

Luck and parents care will tell at this point the future of the little fish. I have observed lucky parents with herds of more than 1,000 2cm fry, strolling proudly with their babies in the shallows of the river. I have also observed pairs of cichlids with small fry just



Rio Amacuzac, Balsas river system near Puente de Ixtla. The type of place where *Cichlasoma istlanum* is now invaded by *Cryptoheros nigrofasciatus*

Plenty of oxygen

This fish is found in areas with fast water flow and low fish densities, so good oxygen density and good circulation are always present. Try to provide these conditions as anything less seem to make them susceptible to digestive problems and other ailments.

Food is normally not a problem, although I like to avoid high protein food like meat, beef heart, or too many earthworms. This cichlid tends to develop digestive problems if heavily fed on a frequent basis. A mix of pellets designed for cichlids and worms should be fine and keep them happy.

the day before an unexpected storm falls – when the storm has passed not a single pair with fry was observed in the river.

Juveniles can be encountered gregariously in the shallows mainly close to overhanging vegetation, where they seem to stay until they become strong enough to swim in the currents.

Aquarium keeping

A word comes to mind when I summarise my experiences with *Cichlasoma istlanum* in captivity, that is aggression! This fish requires both space and hiding places for its well-being. They like to hide, but they also have a strong personality and enjoy strolling around their surroundings and avidly chasing conspecifics. I would personally not house this fish in anything less than a 1.5m, 400-litre aquarium, but for full enjoyment I would advise a tank of 1.80m or longer.

Provided you have the room, a sand substrate, rock and log wood decoration is



Cichlasoma istlanum female guarding her wrigglers hidden in the pit at the base of the rock. Rio Papagayo

ideal. A fine layer of sand no more than 2cm and an external filter allows for a cleaner environment, but I'm not saying something different won't work. Once conditions are met, a group of *C. istlanum* can then be kept together. As far as tankmates go, I would keep them as the only cichlid, but otherwise I would recommend other medium sized Mexican or Central American cichlids like *Herichthys*, *Paratheraps* or *Chuco*. Dither fish are a necessity in most set-ups due to the natural shyness of this cichlid. Fast tetras or other large schooling fish are ideal. *Astyanax fasciatus* or *Ilyodon furcidens* would be the natural choices, if available.

When breeding, things get rough as with other Central American cichlids in captivity, but they are good parents, won't normally eat their eggs and will take good care of their numerous babies.

Comments

One of the main attractions of this wonderful animal is its outstanding personality, which has endeared so many Central American cichlid aficionados to this fish. They can tell you how it has managed to obtain their respect and love. Give this wonderful cichlid a go and you won't be disappointed! ■

Our readers write

Dick Mills is in the chair for your opinions

When diving on the reefs great care must be taken not to touch the fragile ecosystem



Reading the various, more modern aquatic books, one senses that a more conservation-based emphasis is being applied to fishkeeping. This, in itself, is no undesirable thing but maybe it can perversely lead to actions that undermine any worthy intentions.

Take, for instance, marine fish books; these often take great care to point out the futility of trying to keep certain species that, due to their particular feeding requirements, are best left on the reef. Usually, such books advise that any monies saved, by not buying such species, should be put to the airfare required to see these fish in their actual natural environments.

The outcome of this is that coral reefs are then subjected to increasing numbers of visitors, amongst which can only be described as the

Caring for coral

'heavy-footed brigade'. These inconsiderate folk cause quite a bit of physical damage to the reef and, in the process, actually help to destroy the very attractions they have travelled thousands of miles to see. This damage, in turn, results in a smaller friendly, live-supporting territory for fish.

It is true that some areas are aware of such 'tourist wear and tear' and try to minimise this by clearly marking out underwater 'trails' to contain inexperienced scuba/snorkelling visitors to follow. Have you seen any 'vandalism' occurring that would upset the environment whilst you've been on holiday? It doesn't just apply to coral reefs, rock pools are just as much at risk.

The natural approach

Faced with a problem in your aquarium, how do you react? Do you reach for a bottle of treatment or seek a more natural remedy?

It might be a disease problem or an explosive growth of algae. In my case, my marine tank was plagued by Glass Anemones. Resorting to tearing them out physically appeared impossible – they retract at the speed of light and, reportedly, any broken off remnant left behind simply regrows. There are various injection treatments (including boiling water!) but again you've got to get within easy reach of them to administer any lethal dose. I chose to try a more natural method and invested in some Peppermint Shrimps and (making doubly sure, with a belt-and-braces, hang the expense approach) a Copperband butterflyfish.

To date, my tank is almost free of the fast-spreading pests with only one specimen left, cowering under a piece of living rock. Nature to the rescue seemed to work for me. What's your experience of dealing with problems like this?



Do you employ a cleaner such as *Stenopus hispidus* to help with the tank debris?

PHOTOS: M.P.A.C. FREDNOR

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SICCE

Quest for colour

Here's a quest for you. Have you come across a black goldfish? No, not a Moor or any of the more familiar telescope-eyed fancy varieties, but simply a fish that looks exactly like a common goldfish but it's jet black. It gives you quite a start when you first see one. How far have they spread? Let us know.

A favourite motto of *Fools and Horses* star Del Boy (apart from *Lovely Jubbly!*) was "Who Dares Wins", although I do believe its true originators were a quite different group of fearless people. However, the sentiment could be applied to those fishkeepers willing to take risks in order to win, especially in the apparently endless search for perfection or a new variety? In the horticultural world there has been the mythical search for such things as blue tulips, black daffodils and probably green roses too for all we know, and fishkeepers are never too far behind.

How far would you push the boundaries in obtaining a new strain? Are all the efforts and dedication really worth it, should the end result turn to be only a short-term success? And at what cost to all the thousands of fish-lives thrown away in the process?

Cruel crazes

How do you feel about any latest craze that just happens to include fish? One such fad is that of keeping a peace lily in a vase – accompanied by a Siamese fighting fish. Defendants of the practice may think that the fish won't suffer too much as it can always breathe atmospheric air, can't it? That's all well and good if there is enough atmospheric air available to be breathed but usually such presentations involve a practically totally sealed container.

A few years ago, paperweights featuring Seahorses embedded in an acrylic cube were all the rage, or miniature dried Pufferfish complete with miniature wind chimes were on offer. How do you countenance such invasions of any animal's right to live its expected lifespan in its expected manner? Is tourism a two-edged sword? On one hand it brings in welcome revenue to communities but will this increase in human traffic actually wear out the very attraction that lure it into its locality?

One of the most popular aquarium fish are guppies and this echoed by revenue of certain fish farms in Singapore



Most popular fish

If you were asked to take part in a national survey to name the most popular aquarium fish, what would your reply be? It would be easy to study sales figures to find out the most commercially-successful fish import but what makes a fish popular to you?

Last year, whilst I was in Singapore visiting Aquarama 2003, I visited a fish farm. This was an excellent establishment that, in addition to going about its business, also encouraged visits by the public and, more importantly, visits by school children. A special area was set aside, the 'Agro-Education' area where the whole structure of a fish's life was explained, its place in nature and how it could (and should) be cared for. Elsewhere in the fish farm was a notice that showed the financial importance of fish

exports and the resulting revenue from it.

Top of the list was the Guppy, followed by the Neon/Cardinal tetra with the Corydoras catfish coming in third. Respective earnings were \$7 million, \$6 million and \$5 million. So you can see which species were the most popular with the exporters. But what about your favourites?

Do fish drop in and out of favour? Many years ago, one can remember the impact that African Rift Valley species caused when introduced. Here were the ideal fishes for hard water areas – joy upon joy – no more water-softening problems. But what's the trendiest fish around today? Rainbowfishes seem to have peaked and maybe it's just the 'L' numbered species that attract the most interest? What's your opinion?



people and their pets

... somebody has to understand them

telephone: 01952 883408

July's show, auction and club meeting dates

Ornate bichir *Polypterus ornatipinnis*



Copy for Today's Diary Dates

Copy for Today's Diary Dates should be sent to Today's Fishkeeper, 6-7 The Rickyard, Clifton Raynes, Drury, Bucks MK43 5LQ. Telephone 01234 714784, fax 01234 714633 or e-mail editor@today-fishkeeper.com. Copy deadline for August issue July 12.

Thurs 1st	Fairley A.S. meeting. Contact 01738 642921 or 01774 488907	Club 2000 Open Show Stockport. Contact 09281 832320	Selway A. S. meeting. Contact 01387 750606
	Mild Sussex A.S. meeting. Contact 09294 662407	Midsussex A.S. meeting. Contact 0151 260 3644	Mersyside A.S. meeting. Contact 0151 260 3644
	Kings Lynn Fish Club meeting. Contact 0533 769522 or 01553 761743	Ayrshire Fishkeepers Assoc meeting. Contact 01924 6062772	Ayrshire Fishkeepers Assoc meeting. Contact 01924 6062772
	Isle of Wight meeting. Contact 01883 721246	Oldham A. S. meeting. Contact 0561 652 6207	Oldham A. S. meeting. Contact 0561 652 6207
Fri 2nd	Basildon A.S. meeting. Contact 01828 970 1461	Port Talbot & District A.S. Meeting. Contact 06539 270736	Port Talbot & District A.S. Meeting. Contact 06539 270736
	South East Marine Aquarist Society. Contact 01279 301542	Greater Manchester Child Society meeting. Contact 01206 850046, 01206 353301, 0161 266 4457 or 01422 942 155	Greater Manchester Child Society meeting. Contact 01206 850046, 01206 353301, 0161 266 4457 or 01422 942 155
	Yorkshire Child Group meeting. Contact 01924 365906	Midlands Marine Aquarists Society. Contact 0121 392 4469	Midlands Marine Aquarists Society. Contact 0121 392 4469
Sat 3rd		Lang Toun Aquarists and Pondkeepers Group meeting. Contact 05921 595835	Lang Toun Aquarists and Pondkeepers Group meeting. Contact 05921 595835
Sun 4th	VVAAS Open Show Southwark. Contact 01463 801389	Wyke A.S. meeting. Contact 01482 445543	Wyke A.S. meeting. Contact 01482 445543
Mon 5th	Kirkcaldy A.S. meeting. Contact John Reid on 01738 634689 or Jo Graham on 01927 782964 after 6pm or email: joegraham@freemove.co.uk	South Park Aquatic Study Society. Contact Eric 0208 6792680	South Park Aquatic Study Society. Contact Eric 0208 6792680
	Selway A.S. meeting. Contact 01387 750606	West Yorkshire Marine Aquarist Group meeting. Contact 0924 420001	West Yorkshire Marine Aquarist Group meeting. Contact 0924 420001
	St Helens A.S. meeting. Contact 01924 671463	Claxton Fish Keeping Club meeting. Contact 01335 428065	Claxton Fish Keeping Club meeting. Contact 01335 428065
	Ayrshire Fishkeepers Association meeting. Contact 01294 606272	Tongham Aquarists Society meeting. Contact 01252 256886	Tongham Aquarists Society meeting. Contact 01252 256886
	Bolgate & Redhill A.S. Contact 01293 728128	Persensouth A.S. meeting. Contact Gill Unth-B, 9 Inverness Rd., Gosport, Hants. Contact 01703 621204 or 01506 510558	Persensouth A.S. meeting. Contact Gill Unth-B, 9 Inverness Rd., Gosport, Hants. Contact 01703 621204 or 01506 510558
	Mersyside Aquarist Society meeting. Contact 0151 260 3644	Perth A.S. meeting. Contact 01189 732874	Perth A.S. meeting. Contact 01189 732874
	Warrington A.S. Contact 0925 483979	Workington A.S. meeting. Contact 01920 679951	Workington A.S. meeting. Contact 01920 679951
	Port Talbot AS Meeting. Contact 01639 270736	Thurs 2nd	Mild Sussex A.S. meeting. Contact 01273 662407
Tues 6th	Southend Leigh & D.A.S. Contact 01702 393740	Eastbourne & District Pondkeeping. Contact 01323 7731369	Eastbourne & District Pondkeeping. Contact 01323 7731369
	York & District A.S. meeting. Contact 09204 434272	West Cornwall Fishkeepers meeting. Contact 01209 614538	West Cornwall Fishkeepers meeting. Contact 01209 614538
	Pudley & District A.S. meeting. Contact helens@thelshelmers.com	Sat 24th	Selway Open Show Bantry College. Contact 01387 750606
	The Irish Tropical Fish Society meeting. Contact 0146661836	Sun 25th	Kirkcaldy A.S. meeting. Contact John Reid on 01738 634689 or Jo Graham on 01927 782964 after 6pm
	Hullion A.S. meeting. Contact 0151 2898990	Tues 27th	Northwich A.S. meeting. Contact 01606 882966
	North Bucks A.S. meeting. Contact 01908 377333	Lang Toun Aquarists and Pondkeepers Group meeting. Contact 05921 595835	Lang Toun Aquarists and Pondkeepers Group meeting. Contact 05921 595835
	Preston A.S. meeting. Contact 01772 321145	Wed 28th	Grenock D.A.S. meeting. Contact 01475 704239
	Lang Toun Aquarists & Pondkeepers Group meeting. Contact 01924 662407	Sun 29th	Croydon Aquarist Society meeting. Contact 020 8654 0984
	Wyke A.S. meeting. Contact 01482 445543	Mon 30th	Strood & D.A.S. meeting. Contact 01924 221291
Wed 7th	Corby & D.A.S. meeting. Contact 01536 790932	Tues 27th	Lang Toun Aquarists and Pondkeepers Group meeting. Contact 05921 595835
	Oasis Fish Club (Sunderland) meeting. Contact 0191 9841433	Sun 28th	Strood & D.A.S. meeting. Contact 01924 221291
	Perth A.S. meeting. Contact on 738 621204 or 01506 510558	Thurs 29th	Castledard A.S. meeting. Contact 0977 730754
	Claxton Fish Keeping Club meeting. Contact 01335 428065	Wed 28th	Housslow D.A.S. meeting. Contact 020 8890 6933
	Persensouth A.S. meeting. Contact 01673 889 352	Thurs 29th	Halifax A.S. meeting. Contact 01274 880471
	Bracknell A.S. meeting. Contact 0189 732874	Workington A.S. meeting. Contact 01920 679951	Workington A.S. meeting. Contact 01920 679951
	Ryedale A.S. meeting. Contact sdemursh@btinternet.com	Thurs 29th	Tameside A.S. Contact 0161 339 6593
	Tameside A.S. meeting. Contact 0161 339 6593	Sat 30th	Greater Thames meeting. Contact D. Smart, 4 Lochy Ave., Kingslisse, File
	Plymouth & District Aquarists & Pondkeepers Society meeting. Contact 0795 642150	Sun 1st	Bristol Tropical Fish Club meeting. Contact 0117 973 2145
Thurs 8th	Glenrothes meeting. Contact D. Smart, 4 Lochy Ave., Kingslisse, File	Sun 1st	Fairley A.S. (Perth A.S.) meeting. Contact 01738 662881
	Bristol Tropical Fish Club meeting. Contact 0117 973 2145	Mon 2nd	Sandgrounders A. S. Contact 01204 541177
	Fairley A.S. (Perth A.S.) meeting. Contact 01738 662881	Fri 6th	Eastbourne & District Pondkeeping. Contact 01323 7731369
	Sandgrounders A. S. Contact 01204 541177	Sat 7th	West Cornwall Fishkeepers meeting. Contact 01209 614538
	Discus Ireland meeting. Contact 061 318593	Sat 14th	Mersyside Open Show. Contact 0124 805469
Sat 9th		Sun 15th	Carthix Shiny Group. Visit www.carthixshinygroup.org
		Mon 16th	North East Yorkshire Killi Group meeting. Contact 01513 618971
		Mon 19th	Kirkcaldy A.S. meeting. Contact 01738 634689 or 01927 205665
		Sat 26th	Northwich A. S. meeting. Contact 01603 446239

EXHIBITORS FLOCK TO SUCCESSFUL SOUTHEND SHOW

The Southend Fish show was a great success attracting exhibitors from as far afield as Port Talbot to the west, north to Corby and south as far as the Isle of Wight. There were 314 exhibits on the bench, the two Championship classes being for Goodeids (sponsored by Tetra) and Rasboras.

The Goodeid class consisted of 19 entries and was won by a *Zoogoneticus quitzeoensis* owned by David MacAllister. The rasbora class was won by a *Rasbora daniconius* owned by John Egan. Best in show was a large Goby owned by Keith Sollitt from Bracknell.

The highest pointed exhibitor was Southend member Roy Chapman (winner of the 2003 TFK Show league)

The British Livebearer Association and the Anabantoid association attended the event, a raffle being held by the Anabantoid Association to raise funds for a conservation project in South Africa.



Isle of Wight club profile

The fish club was formed in 1950 and its success is based on aquatic interests allied with a good social scene. It is also a club that supports many other shows and events on the mainland.

From September to May meetings are held at The Binstead Community Centre, Coniston Avenue, Binstead, Isle of Wight on the 2nd and 4th Wednesdays of the month from September to May inclusive.

Talks have included diving, fossil fish, snakes and reptiles as well as general fishy subjects. During the summer months club meetings take the form of walks along the beach or river, bbqs and aquarium visits.

Their largest, and very successful event is Grocklemania, which is held from Friday to Sunday on the 3rd weekend in May. A weekend for all the family it is a great social event with a very fishy orientation. It culminates in the Isle of Wight's Open fish

show on the Sunday, which attracts fishkeepers from far and wide.

For more information contact Mrs V Pearce Email: webmaster@iowas.co.uk

EDDIE MAKES CLEAN SWEEP

The first of the championship breeders classes was held at the FBAS General assembly on June 5. Eddie Wayne from the Isle of Wight A.S. made a clean sweep of the class as follows:

- 1 *Ameioba splendens*
- 2 *Araucarioxylum toweri*
- 3 *Zoogoneticus quitzeoensis*
- 4 *Brachyrhaphis rhabdophora*

These fish will be eligible to go forward to the Grand Championship final at the Festival of Fishkeeping at Bracklesham Bay on October 15-17.

Catfish Society

The Southern Catfish Conservation and Rescue Society meets quarterly in Basingstoke. It is a club devoted to the keeping of catfish. They also aim wherever possible to find homes for unwanted catfish.

Contact Sue Bungay-Perin, 20 Pickwick House, Dickens Estate, George Row, London S.E.10 4UT. E-mail: scalesntails@btinternet.com

■ Learn about these fish before you buy. If you are interested in catfish why not join the above group or The Catfish Study Group. Contact for further details is Julian Dignall Tel 07976 814387 e-mail: jools@planetcatfish.com

FOOTNOTE: Large catfish are a major problem, as Wendy and Graham Booth found out when their Red-tailed catfish outgrew its 180cm long home. They were fortunate to find a home for it in the twilight zone as reported in April 2001 issue of Today's Fishkeeper.



Choosing stock

1. Visit a reputable and knowledgeable dealer.
 2. Never buy a fish from a tank with dead fish in it.
 3. See that the tanks are well maintained and in sparkling condition.
 4. Look for fish swimming in a lively manner with outspread fins.
 5. Choose fish with a robust body shape. In many species males are slimmer than females but there is a difference between slim and emaciated.
 6. In livebearers look for a strong caudal peduncle (where the tail joins the body).
 7. Ask for the pH and dH of the water in the shop tanks (a good stockist will have these to hand).
 8. Always examine the fish once they have been bagged to make sure you're happy with them. This is particularly important when they're coming from large shoals.
 9. Where possible quarantine all new stock before adding them to your tank. This can save money and heartache in the long run.
- The seven fish featured in the rest of the article are just a few beginners' fish to whet the appetite. There are of course a whole host of others out there and researching can be great fun. Remember if you have any questions *Today's Fishkeeper* is here to help.

Your first fish

Buying and adding new fish is one of the best bits of the hobby. Here are a few of our favourites that are suitable for beginners

While your tank is maturing, read as much as you can about the fish you want to keep. Look around the aquarium shops in your area to see what's on offer and remember to take your identification book with you. It may be that your heart is set on a particular fish but make sure it's suitable for your tank and experience.

At this point you really do need to be patient as you have to wait for the tank to have a zero reading for ammonia, nitrite and nitrate before you add any fish.

Size is important

Many small 5cm fish are very pretty young fish but without some research you may not know that these could grow into enormous fish. Only buy species that are clearly named and that you can identify in your book.

With all the choice available it's a temptation to buy too many fish all at once. Six small fish should be your first purchase, then add another six every other week until your tank is completed. Adding new fish slowly allows the tank system to mature and is an important part of stocking a new tank.

As a rule of thumb allow 12cm² of surface area for 5cm of fish. The full adult size of the fish should be used in your calculation not the size at which you buy it. Therefore a 60 x 30 x 30cm tank will house about 24 5cm of fish.

DWARF NEON RAINBOWFISH

Dwarf neon rainbowfish, *Melanoternia praecox*. Size: Males and females 5cm (2in). Origins: Mamberamo River, Northern Irian Jaya, New Guinea

This little rainbowfish is a joy to keep. It is undemanding as far as water conditions are concerned, providing you avoid the extremes of hardness and pH. Keep a minimum of 6 of these peaceful, shoaling fish in the aquarium, but to see them at their best house 10 or more in a well-planted tank with plenty of swimming space. In the wild they are found in streams and benefit from a gentle flow of water through the aquarium. Ensure that the filtration system is efficient and remember to carry out regular water changes.

Adults are bright blue in colour, which contrasts well with their red fins. To help maintain their coloration, feed them well with live and frozen foods, such as mosquito larvae and bloodworm.

IDEAL CONDITIONS

Water: Slightly acidic, slightly soft to slightly hard.

Temperature: 24-27°C (75-80°F)

Food: Small live or frozen aquatic invertebrates, such as daphnia, mosquito larvae and bloodworm. Flake foods

Minimum number in aquarium: 6

Minimum tank size: 60cm (24in)

Tank region: Midwater

CHERRY BARB

Cherry Barb, *Barbus litreya*. Size: males and females 7.5cm (3in). Origins: shady rivers and streams in the lowlands of Sri Lanka

Cherry barb are gregarious and popular little fish that get their common name from the deep red colour of the males. By contrast the female is pale brown with a darker brown stripe that runs from the snout through the eye, along the body to the caudal peduncle. Bred by the thousand for the aquarium trade, the fish are now under threat in the wild.

Cherry barb are peaceful. They gather together in a shoal and then go their separate ways to rest quietly among the plants on their own. This is quite normal behaviour. Young fish show little of the adult colours, but given plenty of frozen and live foods, supplemented with flakes and some green foods, they grow quickly.

IDEAL CONDITIONS

Water: Slightly acidic to neutral, soft to slightly hard.

Temperature: 23-26°C (73-79°F)

Food: Small live or frozen aquatic invertebrates, such as daphnia, mosquito larvae and bloodworm. Flake foods. Green foods.

Minimum number in aquarium: 4

Minimum tank size: 45cm (18in)

Tank region: Bottom: middle and top

NEON TETRA

Neon Tetra, *Paracheirodon innesi*. Size: males and females 4cm (1.6). Origins: River Putumayo in Peru

The Neon tetra is probably the most popular of all aquarium fish. Today, nearly all the Neons offered for sale are captive-bred and some shops offer a choice of size: youngsters at 1-1.5cm (0.4-0.6in) and 3-4cm (1.2-1.6in) adult fish. Neons are a long-lived species – a 10-year life span is not uncommon.

A planted tank with an open area in the middle will display the fish at their best. Some people keep a tank just for Neons and use a dark substrate such as a black gravel, and plenty of plants to create a stunning display. Although these tank-raised fish will tolerate a wide range of water parameters, they will not tolerate poor water management, which results in low oxygen levels and high nitrate levels.

IDEAL CONDITIONS

Water: Slightly acidic to neutral, soft to slightly hard.

Temperature: 20-26°C (68-79°F)

Food: Small live or frozen aquatic invertebrates, such as daphnia, mosquito larvae and bloodworm. Flake foods. Provide a varied diet to maintain the colours

Minimum number in aquarium: At least 6 but preferably 10

Minimum tank size: 60cm (24in)

Tank region: Middle

ZEBRA DANIO

Zebra Danio, *Brachydanio rerio*. Size: males and females 6cm (2.4in). Origins: Eastern India, from Calcutta to Masulipatam

When you see the deep blue and gold stripes along the body of mature healthy specimens you will agree that the common name Zebra danio is an obvious choice for these popular aquarium fish. (An albino form and a long finned variety are also available.) A shoal is constantly on the move around the tank but cause no problems, blending in well with other species of a similar temperament. It is not easy to distinguish the sexes in young stock, but mature males have more intense coloration and are slimmer than the females. In a group of four fish you should end up with at least one pair, but to increase the chances, buy six. Allow the fish plenty of swimming space.

IDEAL CONDITIONS

Water: Slightly acidic to neutral, soft to slightly hard.

Temperature: 18-24°C (64-75°F)

Food: Small live or frozen aquatic invertebrates, such as daphnia, mosquito larvae and bloodworm. Flake foods. Green foods and algae

Minimum number in aquarium: 4

Minimum tank size: 60cm (24in)

Tank region: Middle to top



PLATY

Red wagtail platy, *Xiphophorus maculatus* var. Size: Males 3cm (1.2in), females 6cm (2.4in). Origins: Mexico, Guatemala and Northern Honduras

The platy is an excellent fish for the novice aquarist. It adapts well to aquarium life and makes a colourful addition to the community tank. The fish are peaceful, even with each other. Males can be distinguished from females by their gonopodium (fused anal fin used for internal fertilisation) and, in mature fish, smaller size. Plant the tank with more robust plants such as Vallisneria, Amazon swordplants and Java fern.

Like its near relative, the swordtail, it has been developed to produce such well-known forms as Red wagtail (pictured), Moon, Tuxedo, Blue hifin and Sunset, to name but a few.

IDEAL CONDITIONS

Water: Neutral, slightly hard.

Temperature: 21-25°C (70-77°F)

Food: Small live or frozen aquatic invertebrates, such as daphnia, mosquito larvae and bloodworm. Flake foods.

Minimum number in aquarium: One pair

Minimum tank size: 45cm (18in)

Tank region: Mid to upper water



BRONZE CORYDORAS

Bronze corydoras, *Corydoras aeneus*. Size: males and females 7.5cm (3in). Origin: Trinidad and northern South America

Corydoras aeneus is ideal for the novice fishkeeper. It's easy to feed and like all *Corydoras* species, but unlike some other catfish, active during the day. The fish dig into the substrate for food, so keep them in an aquarium with fine, rounded substrate, such as river sand or fine gravel, otherwise they could damage their delicate barbels.

Although they dig, they do not uproot your plants: if you watch them carefully, they are sifting through substrate as they would in the wild to find small worms and other invertebrates.

Being a widespread species, the colour on *C. aeneus* can vary. It can also vary because the majority of fish now available are captive-bred on fish farms. An albino form is also available.

IDEAL CONDITIONS

Water: Slightly acidic to slightly alkaline, slightly soft to slightly hard.

Temperature: 22-26°C (72-79°F)

Food: Small live or frozen aquatic invertebrates, such as daphnia, mosquito larvae and bloodworm. Flake, tablet and granular foods.

Minimum number in aquarium: 4

Minimum tank size: 60cm (24in)

Tank region: Bottom

GUPPY



Female 'Super' guppy, *Poecilia reticulata* var. Size: males and females 6cm (2.4in). Origins: Central America to Brazil

The guppy is one of the most popular aquarium fishes. It is bred commercially by the thousand and has been selectively bred to develop all the different colours and fin forms available today. These cultivated forms are more delicate than their wild counterparts. (Wild guppies are quite plain in comparison, but because they are rarely available they are much sought after by dedicated hobbyists.) When buying your fish be sure to include males and females. The males are the favourites because of their long flowing caudal fins and often gaudy colours. Although the females are less colourful the males do require something to show off to. Guppies have been introduced in some tropical regions to control mosquitoes as they love eating the larvae.

IDEAL CONDITIONS

Water: Neutral, hard.

Temperature: 18-28°C (64-82°F)

Food: Small live or frozen aquatic invertebrates, such as daphnia, mosquito larvae and bloodworm. Flake foods.

Minimum number in aquarium: One pair

Minimum tank size: 45cm (18in)

Tank region: Mid to top



Beware of buying dyed fish. There are strong concerns that it isn't ethical and the coloration doesn't last anyway

With thanks to...

Fish species copy taken from *A Guide to Choosing Your Tropical Freshwater Fish* by Gina Sandford.

Published by Interpet at £5.99

ISBN 1-902389-95-6

For further information call 01306 873822

...and an apology

In last month's *Back to Basics* we quoted extensively from the website www.thetropicaltank.co.uk

Unfortunately, we failed to credit the site and its author, Sean Evans, for using the information on setting up a tank. We apologise for this omission.

www.thetropicaltank.co.uk is a useful reference point on a range of fishkeeping issues and includes a fish index and product information.

Beef heart mix



I remember reading an article you wrote on how to make your own food for Discus but I have lost the issue it was in. I can remember the basic ingredient was beef heart but can you tell me what the other ingredients are?

Peter Miles, Newcastle



I have had a number of enquiries of late asking for info on the beef heart mix.

The basic ingredients are:

- One whole beef heart (trimmed of all fat, skin and tendons etc)
- 40g cooked peeled prawns (stir fry will do)
- 40g spinach (frozen is OK – bring to the boil)
- Good quality flake food
- Any other brand of fish food

Size issues



I have been keeping Discus for over a year now and the original shoal of small Discus I bought have all grown except one that is more or less the same size. Will this fish grow if I remove it into a tank on its own? Also one of the other fish is the 'boss' but it's not the largest – is it a male?

Mick Jones, Stamford



I'm afraid it may be a little late for the slow grower. As Discus grow they form a pecking order and it's Nature's way of ensuring survival of the fittest. If you remove it another fish will automatically become bottom of the order and therefore suffer.

As for the 'male' – it could just as easily be a female. This is a case of where personality matters more than size. In the past I have witnessed a 7cm fish bullying a 15cm fish!

Swimbladder problems



One of my Discus has suddenly developed a problem – it appears to swim with its head pointing to the bottom with its tail up. It's feeding fine and its colour is normal. Is there anything I can do?

Terry Michaels, via email



This is known as a 'headstander' and the condition occurs when the gases are expelled from the fish's swimbladder. This can happen if the fish swims through cooler water when

you do a water change. It can also be caused by a growth depressing the swimbladder. Check for swellings on either side of the fish in the area just above the vent. If none are apparent the condition very often corrects itself or you can try turning the temperature up to 32-33°C for a few days.

Beware though, as this temperature will be loved by your Discus but may kill other fish in your tank such as catfish. It will also cause oxygen depletion so extra aeration should be added.



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

DISCUS PROBLEM SOLVER



PHOTO: M.P. & C. PREDATOR

Tank bred vs wild caught



I am in the process of setting up a tank for Discus and I have been told that some Discus are easier to keep for a beginner than others. Is this true and which fish would you recommend I start with?

Liz Knowles, via email



The majority of Discus that you're liable to encounter are tank bred and as such are all relatively easy to keep if you give them good quality water and good food. Wild Discus are a little harder to acclimatised but well worth the effort.

Any pool can be dedicated to wildlife as long as it has the right number and types of plants and there is plenty of cover for wildlife in approaching the pool.

A walk on the wild side

Peter May is in no doubt that the best way to encourage wildlife into your garden is to build a pond

We yearn for contact with nature and to be close to the natural world. This is less about garden style, but more about fulfilling a need. With the added concern for the decimation of wildlife habitats, many of us want to share our gardens with real indigenous wildlife, and to do that we have to encourage it to arrive of its own accord. We cannot force it to come and we cannot force it to stay.

Now we are not just content to be part of a 'toing and froing'. Even the most barren garden has the occasional fox or badger come through every now and then. We want wildlife to come stay, so how do we get a party invitation organised for wildlife to come and have a 'wild' time in a way that gets delivered by the biological equivalent of a megaphone. The best way of doing that is to BUILD A POND. If you already have a pond then you will have to get rid of the non-indigenous fish and bulk up the plants. Also make sure it's really easy for animals to get in and out.

TODAY'S FISHKEEPER JULY 2004

Creating a wildlife pond

Building a pond for wildlife is certainly the easiest style of pond or water garden to build.

■ **TOOLS:** all you need is some digging device like a spade or a mini-digger. A long straight edge, good spirit level and a number of stout pegs that are longer than you propose the pool to be.

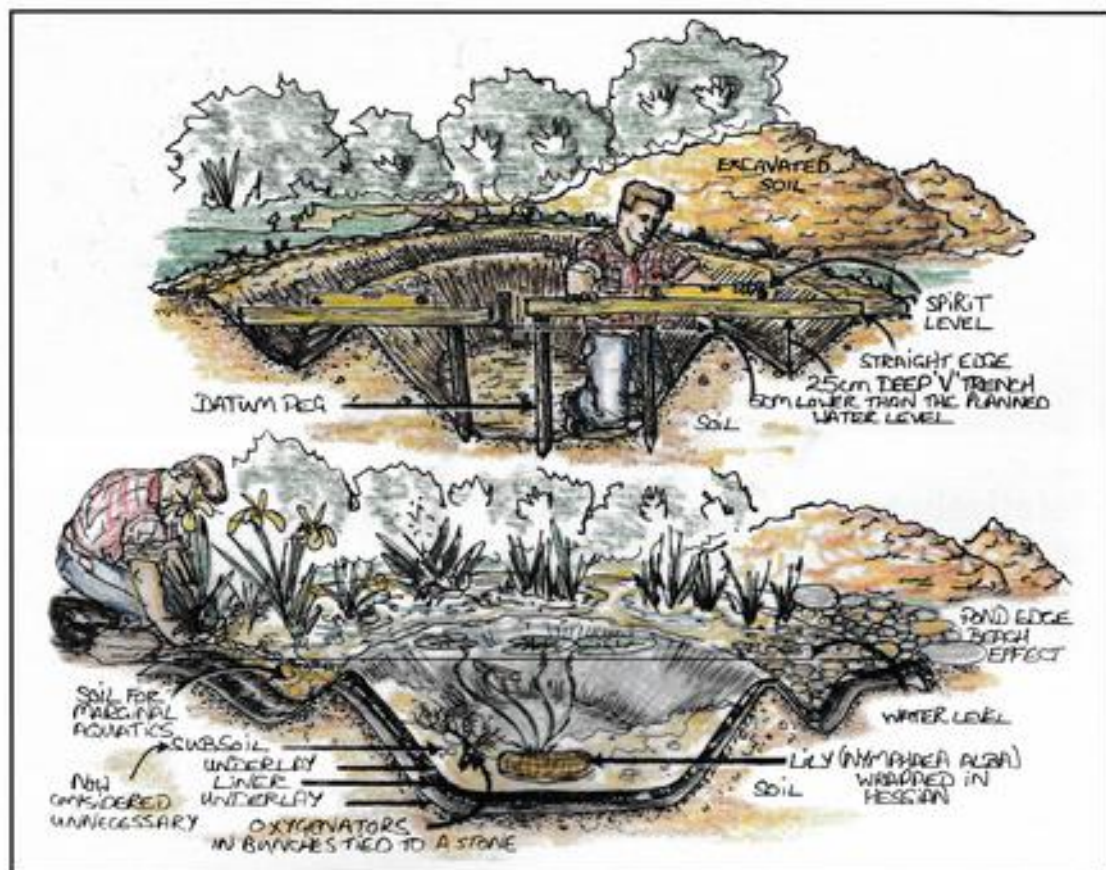
■ **EXCAVATION:** (See illustration). It needs to be built in fairly level ground and is usually built with a flexible liner. Keep the shape as simple as possible. The inside pool or deep water area must be more than 600mm deep and less than 1m. The sides can slope in at anything between 35°-45° and the edge of the main part of the excavation needs to be

Essential tools for simple hand-digging including the pegs for levelling



level and this will be just below the water level (approximately 5cm). You can make sure you get this right by hammering in a series of level pegs that give you the final water level. Leave enough room beyond the outside edge to cut a groove roughly 300mm deep and 60mm wide. The new outside edge, which is the outside edge of your groove, needs to be well above the inside edge of the groove that is the water level.

■ **LINER:** The liner will need to be big enough to line this groove as well as the main excavation, coming well up the outside



edge of the groove. This is going to be the marginal planting area that also holds the liner in place. You can also make it a beach area if you want by filling it with river washed pebbles of mixed size. The odd boulder here and there gives it extra credibility.

■ **PROTECT THE LINER:** Lay in a 25mm layer of sand and/or a textile membrane to line the excavation this will protect the liner against the intrusion of stones from below. Then the liner is laid and the creases collected up into folds and tucked into place. On top of the liner goes another protective membrane to protect the liner from above.

■ **PLANTING MEDIUM:** It used to be the practice that the whole thing was then lined with 10cm of heavy subsoil, but since that only has to come out at the first big clear out, and detritus and a build of sediment on top of the protective membrane seems pretty instantaneous anyway, the groove is just filled with a heavy washed sharp sand as a planting medium. This can be topped off with pea shingle to keep it in place if necessary.

■ **Fill it with water and you are ready for biological life off.**

Planting the pond

To speed up the establishment of your water garden world you need to add plants, otherwise you will just be cultivating algae. You can add your choice of wild indigenous plants, but if the pool is small, do this with care. The main thing is to get in representatives of all types of plants found in any water garden, submerged oxygenating plants, deep-water plants, floaters and marginal plants. The ultimate aim is to have two thirds pool cover from plant life. That will guarantee the visible water will remain clear, as this bulk of plant



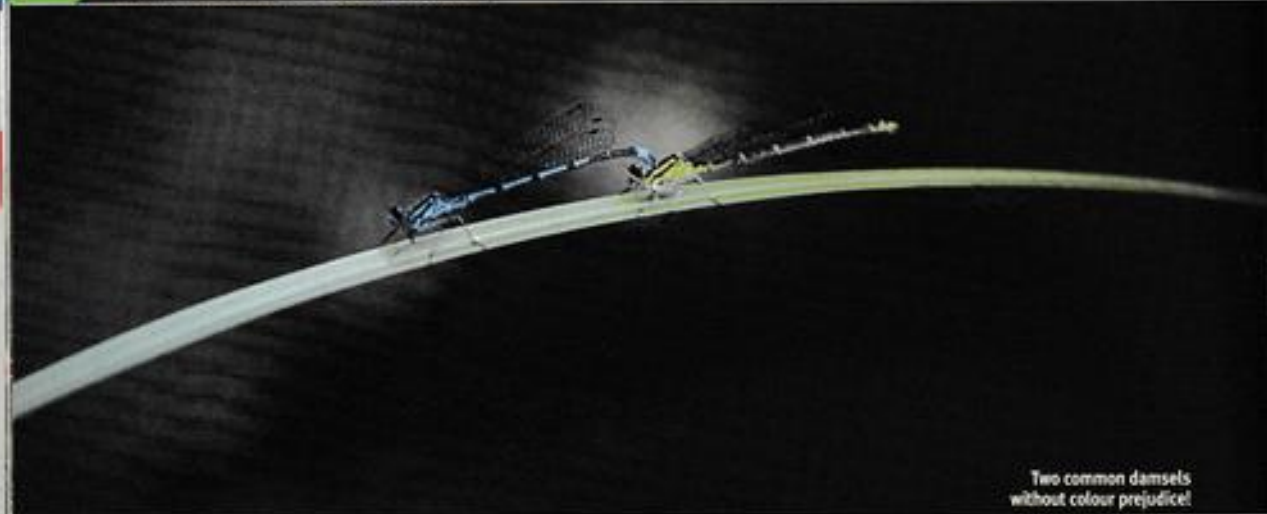
Butomus umbellatus, Flowering Rush



Nuphar luteum or Brandy Bottle



Lysimachia nummularia, Creeping Jenny



Two common damselfly nymphs without colour prejudice!

Relatively tame native marginals suitable for wildlife ponds

- *Acorus calamus*, Scented Rush
- *Alisma plantago*, Water Plantain
- *Butomus umbellatus*, Flowering Rush
- *Callitriche palustris*, Marsh Marigold
- *Cyperus longus*, Sweet Galingale
- *Eriophorum angustifolium*, Cotton Grass
- *Iris pseudacorus*, Yellow Flag
- *Lysimachia nummularia*, Creeping Jenny
- *Mimulus guttatus 'luteus'*, Monkey Musk
- *Myosotis palustris*, Forget me Not
- *Veronica beccabunga*, Brooklime

But between you and me, no-one is going to mind if you mix in a few of the more interesting flowers like the Irises, small Lythums or the Lobelias.

life starves out the algae and deprives it to a certain extent of its source of essential light. You don't want to get rid of algae altogether because it is an essential (nutritional rich) keystone to the fabric of pond life.

■ Most important are the oxygenators like water milfoil, *Myriophyllum spicatum* or Hornwort, *Ceratophyllum demersum*. These provide oxygen to the fauna of the pool and for the essential bacteria that develop in the bottom of the pond digesting all the muck that falls down there.

■ Deep-water plants like the lily, *Nymphaea alba* or the yellow *Nuphar luteum* are a little rampant and small pool owners may be happier with the South African water hawthorn, *Aponogeton distachyos*.

■ Floaters can be the water soldier,

TODAY'S FISHKEEPER JULY 2004

The common frog



WILDLIFE CORRIDOR

Wildlife in the garden could mean hedgehogs, bats, badgers, foxes even deer in some gardens, not forgetting the vast array of bird life and insects from bumble bees to butterflies. Then there are the frogs, toads, newts, slow worms and grass snakes too. These 'unsexy' animals are all part of the whole picture and not the least food for higher animals. Some gardens are

made for it, being attached to a 'wildlife corridor' that is a safe cover of trees, shrubs, hedges and groundcover all linked to a wildlife haven down which wildlife can travel without fear of predators. Other gardens depend upon their neighbours for some continuity of cover. Those neighbours from hell that have just left their garden to get completely overgrown with brambles have indirectly provided better wildlife cover than could have been contrived in any other way.

Stratiotes aloides and Frog bit, *Hydrocharis morsus-ranae*. Avoid the duckweeds and Fairy moss, *Azolla* unless you are contemplating having ducks.

The marginals are going to be planted in groups or swathes in the sand in your groove. Though many of the indigenous varieties can seem a little over zealous, seeming only intent

in turning your pond into little more than a bog, there are often small, tame varieties of some of the more rampant species of water plant that will do. The wildlife will not notice the difference. The Reedmace family is an example of a very vigorous species of water plant whereas the *Jypha minima* is a much more reserved foreign cousin.

ROUGH GUIDE TO NON-POND FISH

Some fish offered for sale for ponds are not necessarily suitable. At best these need special consideration if not total rejection.

Barbel: may be predatory and they need plenty of oxygen.

Bitterling: although a member of the Carp family, they are only suitable for deep ponds with a low pH 7-7.5. They need the freshwater mussel to breed as they lay their eggs in the gill cavity of the mollusc; in turn the mollusc lays its egg in the gill of the fish. This hatches into a weird shell-less alien creature that is parasitic on the fish until it has grown enough to be self-sufficient as a shellfish.

Bream: are bottom feeders and constantly stir up detritus making the water cloudy.

Carp: make water cloudy in small ponds. Keep them separate from Bream.

Catfish: hard as nails. Tolerates pollution, shrugs off parasites. Grows to an enormous size and will eat anything including all other fish; the sort of fish that ends up very lonely.

Chubb: very predatory.

Grass Carp: eats everything you don't want them to. They especially do not eat algae or blanket weed and have a nasty habit of jumping out.

Gudgeon or Stone Loach: need a fine gravel substrate and plenty of oxygen. They bully small fish especially minnows.

Minnows: get eaten by virtually everything else that eats live food. They need to shoal for their own protection. They also need plenty of oxygen.

Perch: carnivorous, aggressive and very upsetting. They will soon decimate those minnows.

Pike: may be a way of getting rid of that Perch you accidentally introduced.

Sterlet (Sturgeon): need clean substrate



Some people have success with minnows in wildlife ponds

to sift through on the bottom of the pool. They like a lot of room, depth and cool water. High protein sinking food or live food is essential for them.

Sticklebacks: will harass and damage much larger fish than themselves. They are aggressive to anything red. Prone to whitespot disease and prefers live food. They are dangerous to other fish if eaten and males are dangerous to each other if there are more than two in a pond.

Tench, the Doctor fish: they are said to have healing powers for other fish, possibly because they are so slimy and it has been seen that other fish slide along side them

possibly to pick up on this slime which is really just a thick mucous layer. If the Tench is the green one, take a good look at it before you put it in because it will be the last time you see it until it's time to clear the pond out. You will know it is there because the mud will always be stirred up, living on the bottom, it will be rooting around consuming all the useful caddisfly and bottom dwelling grubs.

Trout: need masses of oxygen and a gravel bottom. Visual feeders so the water needs to be perfectly clear. They need 2m depth and should never be mixed with carp.

Other ingredients

Frogs, toads and newts will get a sniff of your pond in the air and within three or four years there should be a representative cross section of whatever exists locally, making your pond their home. If you are keen to introduce some frog spawn beware that there is not the deadly disease of 'Red leg' in your area. It is triggered by the collapse of the frog immune system and seems to be spreading unabated partly because of spawn being moved from pond to pond. It is particularly bad in the South East.

As the pond matures different sorts of insects will be attracted to it at different stages of development. Your first visitor will be the pond skaters, small beetles including boatmen and backswimmers and larvae of various sorts.

It is not until you get some cover around the edge and on the surface that the damselflies and dragonflies will pay any attention. They need somewhere to land to lay their

eggs and then emerge out onto as mature nymphs ready to metamorphose.

When the pond is totally choked it forms an equally valuable habitat and becomes home to another range of animals like the pea mussel and the bladder snail.

Fishy friends or foe?

Fish? It depends on what and how many. The general rule is, do not introduce species from the wild. Also remember that a fish is a huge drain on the resources of a small pool environment and will always be a detriment to the diversity of wildlife in the pond, for instance some breeds like tench will decimate the caddis fly population. Others like carp and catfish constantly stir up the bottom. The fish population at the very maximum should not exceed 2in of fish per square foot of surface area. This translates to 42cm per square metre. So perhaps forget fish for this particular bit of the garden. ■

The common toad



Should I filter my pond? Part 2

In part two of this filter Q&A special, **Ben Helm** takes a look at the different types of filters, how they work and how to maintain them



A three bay filter system used on a koi pond

Q. Before I buy a filter, what are the options I can choose from?

A. Internal Filters

Internal filters sit inside the pond and are only really suitable for smaller ponds. They should not be confused with the strainers that are placed on a pump's intake to protect the impeller from taking up debris. Internal pond filters generally consist of large foam blocks that replace the pump's strainer and benefit from being concealed within the pond. They are also easy to fit, but can have a tendency to block up easily, reducing the output of the pump. Cleaning them can also disturb life within the pond.

B. External Filters

These consist of an external chamber (or chambers) that are placed outside of a

pond. They are either pump-fed (see later) or gravity-fed where the filter is buried and runs at the same level as the pond. The water from a gravity-fed filter is returned to the pond from the final chamber via a pump whereas the water returning from a pump-fed filter, depending on the design, will either return under gravity or under pressure from the pump.

The pump-fed single chamber filter units (either trickle or pressurised) are the most widely used filters. They can be installed in a matter of minutes (even on an existing pond) and because the largest units can filter a 1,500 gallon pond, it is easy to find an off-the-shelf filter that is up to the job of filtering most ponds.

The guts of a filter are made up of a combination of inert, washable filter media – usually a porous bio foam (in several

grades) used in conjunction with ceramic media of chopped-up pipework. The media will take months to fully mature and should be rinsed carefully to prevent it from blocking up while trying not to disrupt the beneficial bacteria.

C. Pressurised or trickle?

One of the obstacles when installing a pump-fed trickle filter is how to conceal it – often resorting to hiding it behind rockwork, feeding a waterfall. A pressurised filter solves this problem by being able to bury the unit underground, with the return simply consisting of a hose feeding either directly into the pond or via a waterfall. Pressurised filters can have a tendency to collect more debris over a shorter period of time, making it necessary to carry out more regular maintenance.

D. Gravity-fed filtration

This represents the premier type of filtration and is tailored to ponds containing several thousands of gallons, usually heavily stocked with koi. Gravity-fed filters need to be planned as an integral part of the pond's design and will consist of a series of chambers, divided into mechanical and biological functions. These units alone can cost more than an average garden pond and can be bought 'off-the-shelf' or constructed in-situ with the pond out of concrete blocks and fibreglass – something for the serious koi keeper with a handsome budget to spend.

Q. Will I need to buy anything else?

A filter will come complete with all the media you will need. You may need to buy a few pieces of pipework, sufficient hose and clips to connect your filter to a UVc and pump. Also, to aid the maturing process, you may wish to consider buying a bacterial filter-start which adds friendly filter bacteria to your filter, speeding up the whole process.

How does a pond filter work?

Q. If a filter does not have any running costs, how does it work?

A garden pond filter's function can be broken down into two different yet complimentary functions:

- A. Solids removal
B. Biological Filtration

A: Solids Removal

A filter's first function is to remove solid matter that is pumped from the pond. This could vary in size from fallen leaf matter down to microscopic particles that may make the water slightly cloudy. Solids are the first to be removed first to enhance the subsequent biological filtration processes.

Traditionally, mechanical filtration is likely to be the most limiting part of a pond filter. Most filter space should be designated for solids removal as debris will soon collect (especially if a UVc is installed) and then pass through to the other filter media.

Entrapment is the method used in standard external black box biofilters, where two to three grades of foam, from coarse through to fine act to trap solids as they pass. Acting in a similar way to a sieve, the first filter media that the pumped dirty water encounters is quite coarse in structure, trapping and removing suspended solids from the water.

Many submersible pumps are supplied with a foam or perforated plastic guard to prevent debris from choking the impeller. This can prevent leaves and other larger solid particles from reaching the filter, being retained in the pond, causing the water to cloud or silt to build up on the pond bottom.



Installing an internal filter and pump

Clear isn't always healthy

Just because water is clear doesn't mean that it is healthy. Solids are removed largely for aesthetic reasons, as pond fish quite paradoxically prefer the turbid waters of a clay pond. Ammonia and nitrite are soluble, colourless and undetectable to the eye and these are toxic to fish. They are broken down into less toxic substances through biological filtration.

B: Bio-filtration

Having safely removed any solids from the pond water, the clear water now passes through the part of the filter specifically designed for bio-filtration. As its name describes, a bio-filter is a living filter, colonised by many millions of bacteria whose role is to consume and breakdown the toxic ammonia that is constantly being excreted by fish (and other aquatic organisms).

These beneficial bacteria will colonise any hard surfaces (including the pond liner, pipework and rockwork making them feel

slippery and slimy). However, a bio-filter is designed to provide a vast surface area on which these bacteria can colonise, providing the surface area in a filter which may naturally be found in a natural pond or lake bottom.

Keeping a filter alive

These well-housed bacteria are provided with a luxury lifestyle, receiving all their requirements for a long and healthy life. The steady turnover of water through the filter provides a constant source of 'food' – in the form of ammonia, as well as an essential supply of dissolved oxygen. It is recommended that the pond volume is turned over at least once every two hours.

As this vital part of filtration is 'living', unlike mechanical filtration, the bacterial colony takes time to become established or 'mature' and a filter must be run-in gently over the first months of its life. Fish should be added a few at a time, so that the bacteria can adjust and catch up with the rate of ammonia being produced. If too many fish are added too quickly, then ammonia levels will rise rapidly ultimately leading to disease.

Watch out for nitrite!

Aerobic (oxygen-loving) bacteria breakdown the toxic ammonia into nitrite, which unfortunately, is still toxic. In fact, nitrite has a nasty habit of being more difficult to break down than ammonia and will persist longer than ammonia in water that is suffering a quality problem.

Q. What are the running costs?

A filter differs from a pump or UV in that it does not require mains electricity to operate. In fact, there are no running costs associated with a filter as it relies on bacteria to naturally colonise the filter media – a free process, courtesy of Mother Nature.

Q. What about maintenance?

Filters must be treated like a living entity. If they are not provided with oxygen, water and food, they will deteriorate and die. For this reason, a bio-filter must be run continuously, ensuring that the bacteria are provided with the materials for life.

There are times, as with any filter, that it must be cleaned and maintained. In the summer especially, waste will build up rapidly within foams, and these should be cleaned out before they clog or restrict the

filter. This can be done without disturbing the more sensitive bio-filter.

In a box filter, where the foam layers may act as both mechanical and biological media, care must be taken when rinsing out the foams.

Bacteria are very sensitive to changes in their environment and any adverse action

could set the filter's maturity and efficiency back months. For this reason, when rinsing out the foams or cleaning any biological media, buckets of pond water should be used. If raw tap water is used, then chlorine and other variations in the water quality can have a detrimental effect on the bacteria. ■



UVcs need cleaning and maintaining as do filters

Koi world



Bernice Brewster

When your koi have a problem don't panic and assume the worst. Test your water and check the oxygen content

With the onset of warmer weather, I find that my telephone starts to ring more frequently with koi keepers contacting me to say they have a problem with one or more of their koi. Whilst I am generally sympathetic, most are quite surprised when I ask them if they have tested the pond water before calling me and I have had some quite interesting replies. Recently, I was contacted by a worried koi keeper and on asking the routine question about the water quality, was given an honest answer that the water had not been tested prior to ringing me. I suggested a visit to the nearest aquatic retailer to buy a series of test kits, where upon, I was rather taken aback when told the koi keeper had one of the 'deluxe, includes everything' test kits but had never used it. My next suggestion was to test the water and ring me back if all the tests were clear. I didn't get a second phone call. On one occasion, when asking the same question about water quality, the person on the other end very patronisingly told me that he was a member of a local koi club. I pointed out that I am a member of a car breakdown club but I still have to check the oil, water and tyre pressures! I think that as soon as we notice a koi which looks slightly off colour or behaving just a bit differently that all logic evaporates



An airpump suitable for a koi pond. Photo from *How to Keep Koi* with thanks to Interpet Publishing



Before you jump to conclusions check your water parameters and oxygen levels

PHOTO BY
DAVE BEVAN

and we immediately assume that there is a serious disease about to befall the koi.

Time to test

In the event of any koi behaving differently, or appearing to be unwell, the first and most important thing to do is to coin a phrase immortalised by Corporal Jones from *Dad's Army*, 'Don't panic'. This is the time when we really need to think logically and clearly. First, get out the test kits and measure every water parameter and in particular the dissolved oxygen concentration. While koi will do their best to adapt to water conditions which are deteriorating through ammonia or nitrite pollution, in the absence of that life-giving

gas, oxygen, they will die! It is a great misconception that koi will be seen gasping at the water surface when the oxygen level is a bit low in the pond. If the koi are gasping at the water surface, they are within minutes of dying from lack of oxygen. The first sign that the oxygen concentration in the water is too low is the koi become lethargic and cease feeding at water temperatures when they should be buzzing around the pond and feeding heavily. There really is no excuse for not testing the dissolved oxygen concentration.

Even if you discover the dissolved oxygen concentration is above the required 6mg per litre, if your koi are not right, then increase the aeration in the pond. Adding more air will make the environment more comfortable for your koi and if the water is polluted by ammonia or nitrite, it will help to gas off some of the pollutant. In summer, there is no such thing as too much aeration. Indeed, on the couple of occasions I have been to visit koi breeders in Japan, the one thing that was immediately apparent was just how much aeration is used in the koi ponds and the filtration systems. A lesson we could very usefully learn.

Plan of action

Having tested every water quality parameter and found there is no ammonia or nitrite, the pH and dissolved oxygen concentrations are satisfactory but there is still something wrong with one or more of the koi, the question is what to do next? What not to do, is remove the sick koi and put it in a bucket. Firstly, as soon as you have noticed one or more of the koi behaving differently, if it is caused by an infectious disease, by the time you have seen the fish, the infection is already amongst the rest of the pond population. Secondly, putting a sick fish in a bucket will only hasten its demise as the water becomes de-oxygenated and polluted with the ammonia waste it is producing. What you should do is add more aeration and seek professional help; it may not be a serious problem with the koi but one which is simple to control. ■

Ponderings



From planting a water lily to fixing your leaking pond – it's time to get busy in your water garden

Doctor fish

Sometimes called the Doctor fish, the Green tench is covered with a heavy coating of mucus which may act as a mild antiseptic. There is an old belief that a wounded fish will seek out the tench and rub its wound against the tench's body. Apparently the voracious pike does not eat the tench out of respect for its healing abilities. According to ancient folk medicine if a tench is applied to the palms of the hands or the soles of the feet it will absorb the heat from a fevered patient. Hung round the neck it would cure sore eyes.



Plant some water iris

The clump-forming water iris add a variety of colours to the pond margin both in and out of the water. There are many named cultivars and amongst the most stunning are the Japanese hybrids with their huge multicoloured blooms.

For the wildlife pond our native iris, the yellow flag, is the main contender, growing well in shallow water it should be kept in planters to prevent it taking over the pond.

Iris laevigata in its pure form has blue flowers and is also known as the Japanese water iris whilst *Iris versicolor*, the American water iris, has dark blue flowers with a yellow beard on the fall petal.

As they grow from rhizomes they are easy to propagate. Every third year remove the plant and split the rhizomes, replanting the off shoots into aquatic soil.

PERCH FACTFILE

SPECIES:	Perch (<i>Perca fluviatilis</i>)
OTHER NAMES:	None
OTHER FORMS:	None
SIZE:	up to 60cm normally 30-50cm
WEIGHT:	up to 5kg normally 1-2kg
AVAILABILITY:	Net usually available from aquatic outlets but eggs may be introduced to garden ponds with water plants.
HABITAT:	Avoids fast currents lying amongst tree roots or vegetation near the bank. Can live in large ponds.
IDENTIFICATION:	Easily identified by the broad black stripes on sides and the bright orange fins beneath the body. The large dorsal fin has about 14 strong sharp spines.
HABITS:	Young fish form small shoals but larger fish are territorial and tend to lurk amongst the vegetation. They spawn in April or May and the long strings of eggs are wound round water plants.

Perch (*Perca fluviatilis*)

PONDFISH VALUE: Perch are predators from the day they hatch starting with small crustaceans before moving on to tiny bream and carp. Although their size may be restricted in a small pond, their predatory habits make them unsuitable for the garden pond.



GREAT POND SNAIL

The great pond snail is probably the commonest of the freshwater snails and, with its pointed shell approaching 40mm in length, is one of the largest. Mainly herbivorous they can eat their way through large quantities of pond plants and in common with their land-based cousins they always seem to go for your prize plants first.

If there are large irregular chunks missing from the water plant leaves then it is usually snails which have caused the damage. During the spring and summer the snails lay eggs in batches of up to 80 in a clear jelly which is used to fix them to

the underside of the leaf. As soon as they hatch the tiny snails start feeding, firstly on the algae coating the plants and then the plants themselves.

Look for batches of eggs on the undersides of leaves particularly water lilies and scrape them off. Net the snails as they float on the water. Sometimes a lettuce or cabbage floating in the water will attract them allowing you to remove them from the pond. A concerted effort in autumn will pay dividends as next spring the plants will stand a better chance of growing away before snail numbers increase.

Fish deaths



Last month hundreds of brown trout at a local fish farm were found belly up in the holding ponds. What was the cause – lack of oxygen, high ammonia levels, chemical poisoning. Fed with crystal clear water from the adjacent stream the fish had been in the best of health, so what had happened?

The deaths all occurred in the 24 hours following a period of heavy rainfall and this allowed the normally clean pure water to carry a substance poisonous to the brown trout. That substance was aluminium, which is normally present in the water in suspension.

Whilst in suspension relatively high levels of heavy metals can be tolerated but if they are in solution then they become lethal at much lower levels. So why does the amount in solution suddenly increase? It is due to a change in pH and as the pH drops (the water becomes more acidic) so the levels of heavy metals in solution increase.

In this case the heavy rain not only washed more aluminium out of the surrounding soil but large volumes of this normally acidic water entered the holding ponds, upsetting the balance and allowed the pH to drop so that the aluminium remained in solution. This proved lethal for the brown trout, which have a low tolerance, but the rainbow trout and carp remained unaffected.

SORT THAT LEAKING POND!



A leaking pond is one of the worst problems faced by the pond keeper whatever the type of construction. Leaks can be difficult to locate and even more difficult to repair. However, if the problem is not addressed then you will be storing up a pond full of problems. Continual topping up with tap water adds additional nutrients to the system so expect an algal explosion with pea soup water or lots of stringy blanket weed.

As your fish settle down for winter the continual water level changes will be

stressful, which coupled with the effects of water additives like chlorine lowers the effectiveness of the fishes immune system leaving them open to disease. There is also the possibility that the leak will get worse and you could be faced with an empty pond one morning so at the very least get in there and determine the position and extent of the damage.

Fortunately, there is still time to sort the problem so that your fish are given the best conditions before autumn arrives.

BULLFROG

Have you seen a bullfrog? In the early 1990s many were imported as tadpoles from America and sold through garden centres as suitable for garden ponds. They grew apace and the tadpoles could reach a length of over 6in with appetites to match.

Most of our smaller native fauna stood little chance against these large predators which swallowed everything they could get into their mouths. Over the next few years they managed to establish themselves in some ponds and small lakes.



Planting a water lily – step-by-step

Whether it has been grown from a section of rhizome, purchased from the local garden centre or has simply started to outgrow its existing container, it makes good sense to ensure that the plant stands the best chance when it is placed in the pond.



STEP 1 – Select a good strong plant with several developing leaves.

STEP 2 – Take a new planting basket and line it with hessian – note an old hessian sack which has been rinsed in water will allow you to line several baskets for a few pence each.

STEP 3 – Carefully remove the lily from its pot. If the roots have grown through the bottom of the pot then cut them off or tease them out but try to keep the rootball intact.



BULLIES

Awakened to the fact that another alien could become established the import of these frogs was stopped and it is now illegal to offer them for sale. There are still colonies on the Kent/Sussex border which are being gradually reduced but if you see a bullfrog or bullfrog tadpole please report it to Froglife on 01986 873733.



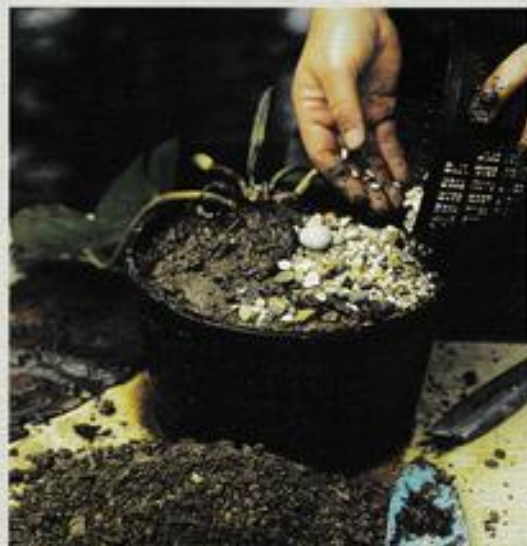
Holiday feeding

With the holiday season just round the corner it's time to make sure that the fish you have managed to bring through the difficult spring season continue to prosper. Any change of routine can have a bad effect on your fish and on balance too much food could be worse than not enough over a holiday break.

What you do depends to a large extent on individual circumstances. A well planted pond with few fish maybe best left to its own devices for up to a month as the fish will find enough natural food to get by.

The usual option is to ask the neighbours to feed the fish and left to their own devices these well meaning people usually tend to overfeed rather than underfeed the fish leaving you to sort out the resultant water quality problems. Pre-measuring the food into marked containers is one way of ensuring the fish are not over fed.

With the well-stocked pond feeding will be vital and one solution is to install an automatic feeder. These machines dispense measured amounts of food at pre-programmed times and only require topping up every few days.



STEP 4 – Half fill the basket with aquatic soil or compost and position the plant in the centre of the basket.

STEP 5 – Add more aquatic compost and firm down round the plant.

STEP 6 – Add about 20mm of pea shingle so that it completely covers the compost. This will help to keep the soil in the basket.

STEP 7 – Lower the container slowly into the water, watching the air come out of the container, and make sure it comes to rest on the bottom of the pond at a depth suitable for the variety of lily. If you want to place the lily in the centre of the pond then use a ladder to bridge the pond and gently lower the basket on a piece of rope.





High tech or low tech?

Part 1



Sand and intense artificial light can look good but these plants will need a more natural environment if they are to stay fresh and healthy

TODAY'S FISHKEEPER JULY 2004

Technology has come on leaps and bounds when it comes to keeping planted aquaria. This month **Peter Hiscock** takes a look at the low-tech option and says, it can be done...

'Planted aquaria are expensive, complicated, and time consuming.' 'Planted aquaria are cheap, simple, and easier than normal aquaria.' Which one of these statements is correct? I would say both, or neither, confused? You will be! As with most aquarium systems there are different methods of obtaining a good result, and as with most debatable subjects, the answer is not black and white. One method may be suited to one person whilst another may be better suited to you. To create the conditions suitable for plant growth there are four main areas that need to be provided for, these are, substrate, lighting, carbon dioxide, and nutrients. The aim of this two-part feature will be to assess the pros and cons of the high and low-tech methods of providing these main requirements, starting with the low-tech,

Respect your elders

It is easy for the new or younger fishkeeper like myself to rely heavily on today's technologies but we could learn a thing or

two from the fishkeepers of 30 years ago (I must add here that some of the 'old school' fishkeepers could also learn a few things from us modern boys!) In the good old days (not that I lived them) there was little reading material and even less equipment. Fishkeepers were true hobbyists and trial and error was the order of the day. The experience gained by these hobbyists had pure value, and without them we would not enjoy the luxuries of the large industry we have today. Suffice to say that stunning planted displays have been around for a while, and if they could do it then without expensive equipment, then we should have no problems today with all their experience to draw upon.

What do plants like to grow in?

Plants will never do well in bare inert gravel as it simply does not provide good conditions for roots, will not hold nutrients, and adding fertilisers will just result in algal blooms. Soil has an immensely greater ability than any artificial substrate to attract and hold nutrients and is the natural growing medium for plants. If set up correctly the majority of aquatic plants will do far better in a soil-based substrate than a high tech laterite and heating cable based

WHERE DO PLANTS GET LIGHT?

Sunlight is far more intense than artificial light sources and is free so why not position the tank where it can receive lots of free healthy sunlight? Natural sunlight often gets the blame for algal problems and ill health caused by temperature fluctuations but as with most quick answers it is an easy target and usually not the cause of a problem. If you have the opportunity to situate a tank where it receives sunlight for part of the day you will probably find that your plants will thrive. In the right situation, natural sunlight will give better results than any modern light system. Getting the right situation is difficult and although I would love to say that sunlight is the perfect solution, for most fishkeepers it would be far easier and safer to succumb to technology and use fluorescent tubes. If you fancy being a bit daring and giving it a go, I give you my full encouragement and recommendation but no guarantee of success. Full sunlight all day will certainly cause problems so try to get direct light in the morning or evening, or diffused/shaded light all day. In new aquariums sunlight may cause algal problems so a quick solution would be to tape a temporary light shield to the tank or simply close the curtains for a few months. A little trial and error may be required but the results can be impressive. A single fluorescent tube will still be required, if only so the aquarium is visible in the evenings. For many fish, natural sunlight cycles, especially at dawn, can be a major encouragement to show full colours and initiate breeding behaviour.

substrate. Potentially though, if a soil substrate is set up incorrectly it can be a far bigger headache. Firstly, it is important to only mix soil with inert substrates and not add any fertilising additives. Soil has the ability to solubilise nutrients like iron very quickly, so adding an iron-rich laterite for

instance, could result in a very large and toxic release of iron.



Is it possible to create a display like this without expensive hardware? The only way is to try.

More demanding species such as this *Echinodorus osiris* (above) need the best continual source of nutrients which can only be provided with a very good nutrient holding substrate



Preventing cloudy water

Because soil can quickly cloud water and cause quite a mess, it should always be added before the aquarium is filled and covered with at least 2-3cm (1in) of fine inert gravel. When the aquarium is filled it will still cloud a little but this will clear. In some cases it may be helpful to only partially fill the aquarium, allow it to settle for a few days, then drain the clouded water and gently refill with new water. Even very fine soils will develop a bacterial film that will bind the particles together, preventing further clouding of water.

The hard way is best

Choosing the right soil is important, any soils with added fertilisers, such as topsoil, should be avoided. The best choice is a simple pure potting soil or garden soil. Potting soil is generally the best choice but must be used with care as it has the ability to quickly reduce pH and hardness in aquariums with softwater. Because plants generally do better in slightly hard water (today's majority opinion leans toward softwater but the reasons for this are complex) if your water source is soft it would be wise to add a mineral additive or buffer.

We could learn a thing or two from the fishkeepers of 30 years ago

A 3-5cm (1-2in) layer of soil covered by a few centimetres of fine inert substrate should provide the ideal base for plants to grow. In most cases soil presents few problems but it would still be wise to wait a little longer before adding fish to the aquarium. The plants can be added a day or two after the water is settled and to be safe I would tend to wait up to four weeks before the fish are added. During this period keep a close eye on hardness and pH levels to ensure the aquarium is properly stabilised.

And breathe out...

Because an aquarium contains a limited volume of water, carbon dioxide that is vital for plant growth is quickly used up and needs replenishing if your plants are to thrive. In most cases, carbon dioxide dosing

equipment is the only way but as we are going 'back to basics' we need to find a cheaper, simpler solution. Amazingly enough, we already have it through the soil and the fishes. A major benefit of using soil is that it has a vast amount of organic matter and micro-organisms in comparison to artificial and high tech substrates. Soil is a very biologically active medium so there are all kinds of life-forms continually decomposing and recycling materials within it. Whilst this is happening carbon dioxide is continually released through respiration and together with the contribution of fish respiring, there is ample carbon dioxide release for the plants.

A flaky solution

Much like carbon dioxide, soil and fish, or more accurately the fish food easily supplies the nutrient requirements of plants. A varied diet, made up of at least 50% flake or dried food will provide all the nutrient elements for the plants. Most of the nutrients in fish food will pass straight through the fish and end up held in the soil substrate in high concentration where plants can easily assimilate them. Because soil is so good at holding nutrients it may even be detrimental to add other sources of fertiliser, which could overload the aquarium.

Job done

Another benefit of a fully planted aquarium with a soil substrate is that the need for filtration is heavily reduced. Both the activity of soil based organisms, and the plants tendency to use up pollutants, will take care of most waste products. Of course you will still need filtration



Fish like this serpa tetra will be encouraged to spawn by an influx of natural morning daylight

but mainly just for water clarity rather than to reduce pollutants such as ammonia, nitrite and nitrate. The best choice would be a simple small internal filter or two to provide a little water movement.

Conspiracy theory

So our low-tech solution requires as little equipment as a small filter, heater and single fluorescent tube. Does this mean that the wide range of high-tech and expensive products are simply a big con designed to empty our pockets? Not at all, the high-tech solution is a much more controlled and safer way of maintaining a planted aquarium. In many respects a good high tech combination is a better option for new fishkeepers and an easier way of ensuring success. To explore the high-tech options though, you will have to wait for next month's article.

For modern experienced fishkeepers like myself the low-tech solution goes against everything we have been taught and so presents us with a welcome (and cheap!) challenge. If you go for the low-tech solution, fellow modern fishkeepers and most probably your retailer will think you're bonkers, but why follow the crowd? ■

Above: A welcome side effect of the low-tech aquarium is the reduced need for large external filters. Plants like these *Cryptocoryne* sp. live in organically rich soils in nature so will naturally do better in aquariums with a soil based substrate.





Hillstream catfishes

Erwin Schraml asks if the hillstream catfishes of the genus *Glyptothorax* would make good aquarium fish

At the present time catfishes are attracting the interest of many aquarists who have not been particularly interested before, as during the last few years a multitude of species have been imported. But even so, there are still whole groups we know nothing about.

This is true of Asiatic hillstream catfishes of the family Sisoridae and in particular those of the genus *Glyptothorax*. If you base your knowledge in the hobby on the *Aquarium Atlas* Volumes 1-5 there are only four species recorded and attributed to this genus, two of which show photos of preserved specimens, the other two, with of in front of the species name, are of uncertain assignment.

Eschmeyer records no less than 90 in his database, 20 of the species included are synonyms or associated with another genus at the present time. However, that still leaves a goodly number of species.

In the *Aquarium Atlas* Vol 6 there are eight further illustrations of *Glyptothorax* species. Three of them are photos taken in the field by scientists and two of the others are representatives of the genus *Laguvia*.

Almost all *Glyptothorax* reach relatively moderate sizes. One wonders why they have not been introduced as aquarium fishes before. This is firstly because many of these species occur in areas where there is no commercial ornamental fishing. The distribution area of the genus extends from Turkey, Iraq, Iran, Afghanistan, Pakistan, Nepal and China up to more tropical regions like India, Bangladesh,

Myanmar, Laos, Vietnam and Indonesia.

Many of the species are adapted to rapid-flowing mountain streams, have a high oxygen requirement and are therefore not kept alive in the usual export situation. The few species which have made it into the European wholesalers despite these restraints, are mostly those species with a less extreme adaptability.

The across-the-board remarks in relevant aquarium literature, which are namely that they occur in mountain streams and can only be kept alive in lower temperatures (15-21°C), just do not fit these imports. Some species require much higher temperatures

(22-26°C). To house these catfishes correctly you need to know which species they are... and there's the problem because there's a lack of suitable identification books.

ID difficulties

At this point I would like to give you the following example. Recently Aquarium Glaser received a *Glyptothorax* species from India. In the trade this species, or a very similar one, is mostly found as *Glyptothorax trilineatus*. (*G. trilineatus* described originally from Tenasserim (Myanmar) has,



This species was introduced as *Glyptothorax sinensis* (probably wrongly determined)

according to FishBase, a gigantic distribution area from India, over Myanmar, Nepal, Thailand and Laos). The fish concerned were this time introduced as *Glyptothorax housei*, another described hillstream catfish species from Anamalai Hills in the Western Ghats of India. This matched, as the imported species were from South India. However, according to Talwar & Jhingran (1993) *G. housei* is reddish to fleshy coloured with a yellowy, smokey spotted dorsal fin and this did not match at all with these imports. I asked a well known ichthyologist and a specialist in Asiatic catfishes for his opinion. He told me that as the import was from southern India and had the lateral stripe which *G. housei* does not have perhaps the species could be *Glyptothorax madraspatanum*. According to the original description this species was

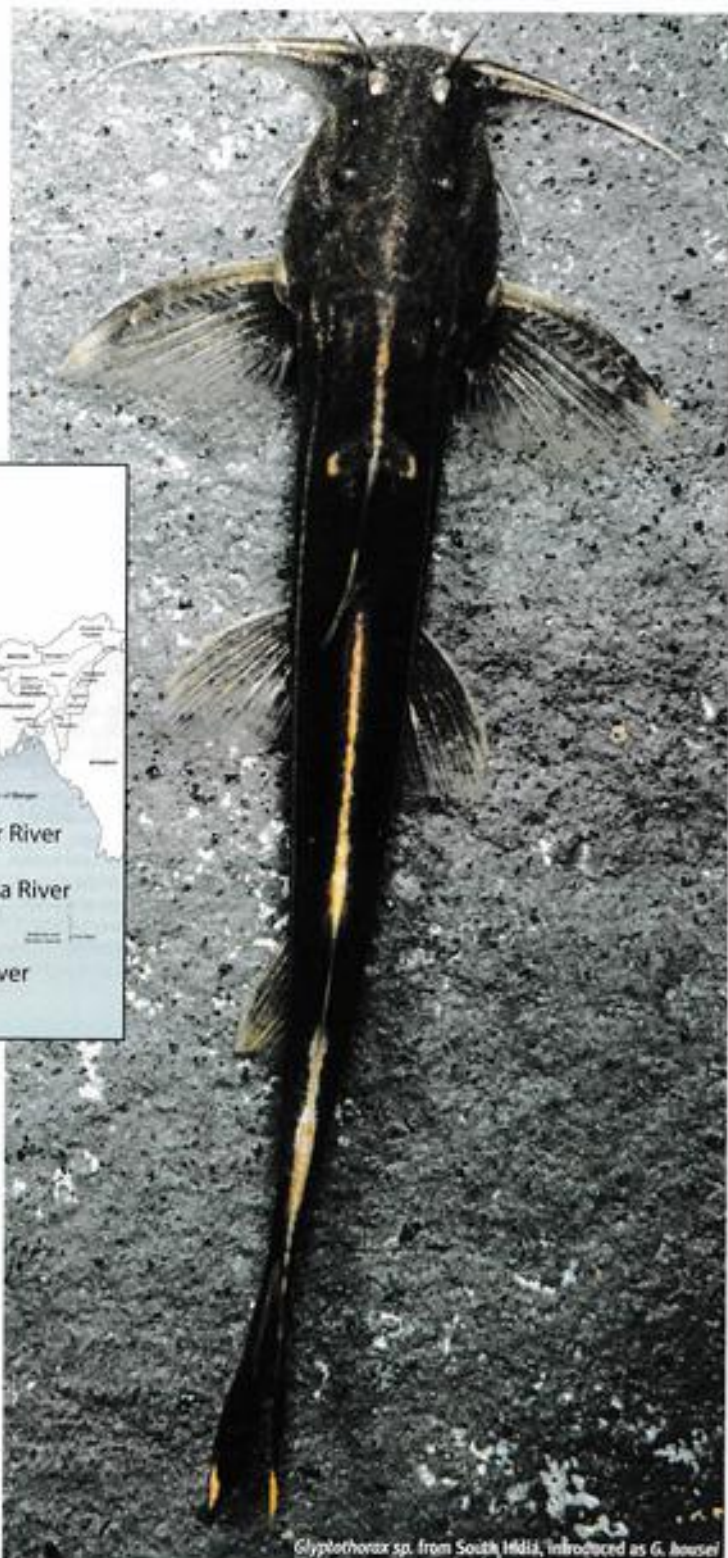


found in the Bowany River and has a distribution area of mountain streams in Anamalai and Nilgiri Hills as well as in the big Cauvery river. In FishBase another location is listed which is the Banjar river at Muki Balaghat, which is more than 10 latitudes further north.

It is highly improbable that *G. madraspatanum* can be found at this second location as indicated by FishBase and I assume that this species was wrongly identified. *G. madraspatanum* was described originally by Day (1873) as *Glyptosternum* but Burgess (1989) lists the species as *Glyptothorax*.

The fishes live in torrential mountain streams and rapids, therefore they require oxygen-enriched water with a temperature of 15-22°C.

In reports of Kharat et al. (2003) (their investigation is based on fish from Mula-Mutha river, north-western Ghats, Pune District another location in a far distant



Glyptothorax sp. from South India, introduced as *G. housei*



Glyptothorax sp. from South India, introduced as *G. housei*

place) they speak of *G. madraspotanum* as the *Glyptothorax* species found there (whatever species it may be).

Would one and the same species occur at locations so far apart? Therefore I consulted the book by Tanwar and Jhingran (1991). You can read there about the coloration of the *G. madraspotanum*, "in life, yellowish with dark bands, fins yellowish with black bands." As you can see by the photos this in no way corresponds with the introduced animals. Therefore, it can most definitely be said that this is not *Glyptothorax madraspotanum*.

Glyptothorax sp. introduced as *G. housei* most closely resembles the species referred to by Kottelat (e.g. *Aquarium Atlas Vol 3*) as *Glyptothorax trilineatus*. This is an exceptional species as it reaches about 30cm and should have the above outlined gigantic distribution area, which, however does not include southern India. As you can see the identification of this species fails

and this might be true for most other *Glyptothorax* because the situation is no different for them.

Aquarium reports about *Glyptothorax* species are very rare and normally deal only with their importation.

Aquarium friendly?

So, would the fishes make good aquarium inhabitants? Most species attain a moderate size *G. madraspotanum* should only reach about 11.5cm. The fish pictured measured only about half this length) and from this point of view they would be very suitable. Unfortunately, many other hillstream catfishes of the family Sisoridae have proven to be relatively frail and sickly in the aquarium. Only the Hara species and a few Gagata are the exceptions. It may be that fishes that have adapted to torrential stretches of water in their own biotope have

high susceptibility in captivity. They need an aquarium with very specific filtration (e.g. UV sterilisers) which keep the germs at bay. Investigations have found that normally clean aquaria have a much higher concentration of bacteria in the water than highly polluted natural stretches of water. Until the animals reach the European wholesaler, where they mostly find medical care for the first time during their journey, most are already at the end of their powers of endurance. Therefore, there is only a very slight chance of seeing, even once, fish from this group that have more extreme adaptations. Many catfish enthusiasts will find this regrettable but it may mobilise their own initiative. At present, unfortunately, the political situation in many of the countries of origin of the *Glyptothorax* species is against exploration of the biotopes for hobby purposes. But would we be aquarists if we weren't basically optimistic and believe in a better future?

BUYING NEW CATFISH

There are many fascinating catfish, some readily available and some more rare, but all of them should be considered carefully before you buy them. Aside from making sure you have enough room to house these sometimes huge beasts there are health issues to consider too.

From the outside most catfish do not display any symptoms of the many possible diseases they may be suffering from. Therefore, buying catfish can be a risky business and it's important that the catfish enthusiast finds a reputable specialist shop in his or her area.

If possible try to avoid buying recently imported catfish. Effects of the stress caused by transportation and any diseases only show after some time. Unfortunately, not many species of catfish have been bred in captivity yet and so they can only be bought as wild stock. In any case catfish should be held in a quarantine aquarium for at least two weeks.

Check the catfish for wounds and injured fins. The barbels and antennae must be whole and not show any sign of damage. It is definitely worth paying a bit more money to ensure your fish are fit and healthy.

The aptly named Cuckoo *Synodontis*, *Synodontis multipunctatus*, which spawns with mouthbrooding cichlids who take up their eggs with their own spawn



Catfish which constantly clamp their fins are either ill or have suffered severe stress. Great caution should be taken before buying the fish. Also check their breathing, which should be calm and regular. Fast breathing is a sign of illness or stress. Only when you are sooper cent sure that the catfish are completely healthy should they be introduced into a tank with other fish. ■ Copy with thanks to Dr Jurgen Schmidt. Taken from *Catfish* published by Interpet.

Typical view of zone E – 'the Back Reef Zone' with coral rock, stony coral colonies from the genus *Porites*, sea urchins, blue star fish, sea cucumbers and growth of green and red algae



ALL PICS BY BIOQUANTIC PHOTO: A.J. NILSEN

Alf Nilsen carried out a beach survey in the Cook Islands and here's what he found...

South Beach survey

Who hasn't dreamt about going to the South Pacific? When I was a kid – many years ago that is – we heard our grandfathers telling us stories about seafarers returning from the southern seas where there were coconut palms, white beaches and beautiful girls! This is indeed a story from the southern seas, but not a story about girls or palms, but about a rather special coral reef ecosystem.

Our tale begins in the Cook Islands in the beginning of August 1998 during extreme low tide. The Cook Islands are a paradise hidden deep in the exotic South Pacific. These islands, lying 700 miles west of Tahiti, have been blessed by nature. They offer pristine white sand beaches, palm-fringed lagoons and colourful coral reefs. The climate is warm and temperate and there are always cool shore breezes providing natural air-conditioning.

The country consists of 15 islands in two groups. With a land area of only 935q m, it is smaller than many cities, but yet the islands are spread over an area one-fourth of the continental United States! This story takes place at the country's main island Rarotonga.

Rarotonga island

Rarotonga – the biggest of the Cook Islands, situated at 210 14' south, 1590 47' west – is

a volcanic island with a huge fringing reef. Compared to many other Pacific islands, Rarotonga is relatively unspoiled. The island is, like Tahiti and Hawaii, a 'high volcanic island' formed when an underwater volcano pushed its peak above sea level millions of years ago. The volcano has been dormant for a long time and is now partly eroded, leaving a series of ridges and mountain peaks behind.

Our story takes place in the shallow lagoon on the southern side of the island at a location known as 'South Beach', which is actually a protected shallow reef area, which is almost dried out during extreme low tide. The Cook Island government protects the reef, but as a visitor you are not denied access to the site as long as you are careful not damaging the habitat.

The reef off South Beach stretches several hundred metres from the beach to the reef edge. In contrast to most other reefs, this reef site represents an 'alga reef', where algae rather than corals are the dominant sessile organisms. This makes the location most interesting and well worth a closer study. It also demonstrates that algae as a group of organisms plays a very important role in the reef ecosystem and also have their place in the marine aquarium. Some scientists have even suggested that 'alga reefs' is a better name than 'coral reefs' for the tropical reef biotope.

In the rest of this column we will take a closer look at the zonation of the South Beach Reef biotope. I have chosen to divide the reef into eight different zones, each showing more or less distinct features (see table and drawing on page 72).

Biotope zones

Zone A composes the beach consisting of coral sand. Numerous Ghost crabs from the genus *Ocypode* live here digging burrows in the sand. With their large claws, eyes on stalks and rapid movements over the sand, they are easily recognised. Coconut palms stretch towards the sea and coconuts and other seeds that come floating from the sea gather numerous on the beach.

Zone B is a shallow sandy area gradually falling to a depth of about 0.3m. Here small waves constantly move the sand around and let no algae or animals settle. However, if you dig in the sand it becomes obvious that the bottom contains many specimens of Acorn worms from the genus *Phycolidoro* sp., belonging to the *Phylum Hemichordata*. I had no problem collecting lots of worms within a few square metres.

Off the beach the bottom falls to about 0.8m at low tide, and the current increases. This is **zone C**, which we can call 'the Beach Channel'. Here a lot of water passes along the beach and the current can be quite

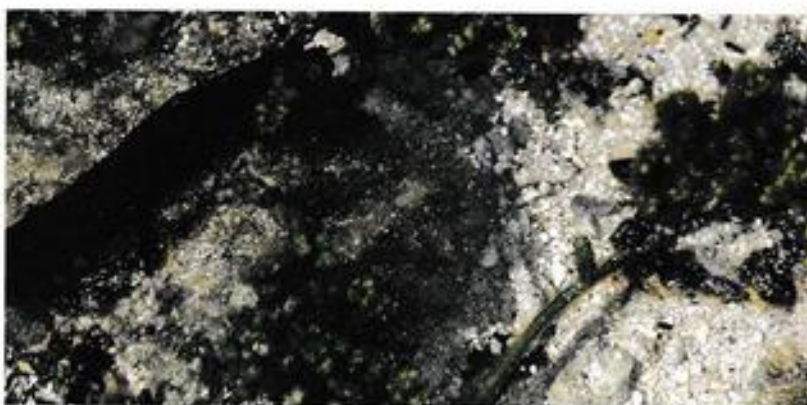


The outer part of zone G, approaching the reef edge (zone H). The brown algae from the genera *Turbinaria* and *Sargassum* dominate towards the reef edge.

strong even if the zone is located close to the beach and the water is shallow. A few big coral boulders were lying partly buried in the sand. The most obvious organisms here are the green algae *Caulerpa cupressoides* and the many sea cucumbers found in between the algae. The most common sea cucumber was *Holothuria edulis*. In between the *Caulerpa* were small patches of the brown *Lobophora* growing from tiny rocks. Turning a few boulders revealed other echinoderms such as brittle stars and some sea urchins as well as a variety of smaller invertebrates.

Some scientists have even suggested that 'algae reefs' is a better name than 'coral reefs' for the tropical reef biotope

As we pass the beach channel, the depth again decreases and the number of boulders grows, we reach **zone D** – 'the Boulder and Sand Zone'. The boulders are beautifully covered with algae, mostly *Caulerpa cupressoides* and *Halimeda*, but a few red algae also exist. Many algae grazing animals are present, especially the sea urchin *Echinometra mathaei*, which appears in two distinct colour variations. The number of sea cucumber is still high. In **zone D** there are many small corals, mostly from the



Green algae from the genus *Caulerpa cupressoides* and the sea cucumber *Holothuria edulis*, both common organisms in the 'Beach Channel' (zone C) and in the 'Boulder and Sand Zone' (zone D)

genus *Porites*, growing on the boulders, but no larger coral colonies and no staghorn corals from the genus *Acropora*.

In **zone E** the depth decreases further and the number of boulders increases. In this zone the water movement is relatively weak compared to that in the beach channel and the two outer zones. Much of the bottom is covered with coral rocks, including some big coral boulders. Again there are numerous small and stout corals like *Porites*, but no branching corals. The number of sea urchins and sea cucumbers – in particular *Holothuria edulis* – are very high and if you turn some boulders, several brittle stars appear. The blue starfish, *Linckia laevigata* is found numerous in this as well as in the next zone. Although *Caulerpa* is seen in the inner part of the zone, the growth of both *Caulerpa* and *Halimeda* now clearly decreases, while encrusting red, calcareous algae and the encrusting brown algae *Ralfsia expansa* inhabits the rocks. Although not very numerous, but indeed the most visible leafy algae is the soft and fragile red *Asparagopsis* sp. (probably *A. taxiformis*), which is found occasionally here and in the next zone.

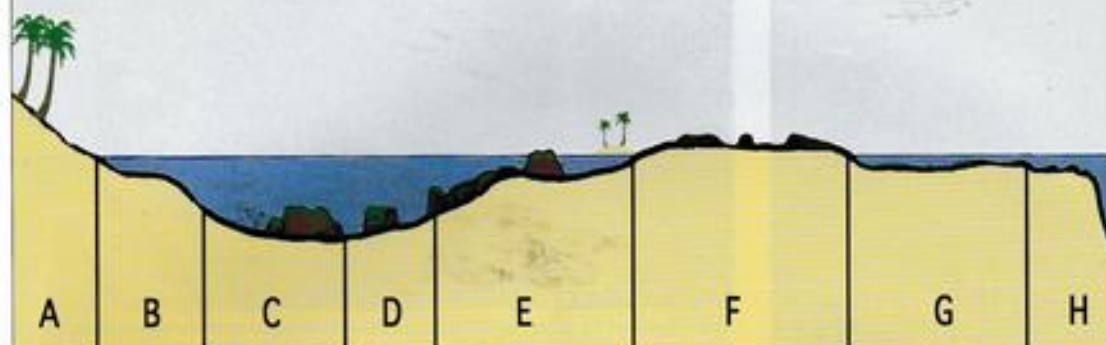
Zone F – 'the Shallow Boulder Zone' – is exposed to open air during extreme low tide and consist mostly of coral rocks and big coral boulders that have been thrown in from the reef edge during tropical storms. The biggest of the waves smashing on the reef edge pushes fresh seawater in over the zone. The conditions in zone F are rough! The number of brittle stars found under the rocks is very high and so is the number of sea cucumbers, which during low tide hide under the rocks or seek shelter in small tide pools. There are some encrusting algae on the rocks, but *Halimeda* and other branching algae are almost completely lacking in this zone.

The Shallow Boulder Zone gradually transforms into **zone G**, 'the Algae Flat'. Although the depth is very shallow and the zone is almost dried out, the amount of various species of fleshy algae that grow on the flat is astonishingly high and beautiful. This is indeed an algae reef! Actually the zone can be divided into two parts, an inner part where the green algae species dominate but grow mixed with the brown *Turbinaria* sp and *Chnoospora* sp, as well as with the red calcareous *Amphiroa* sp., and an outer half where brown algae takes over



Numerous Ghost crabs from the genus *Ocypode* live on the beach (zone D). Here a fiddle poses outside his burrow.

SOUTH BEACH REEF CROSS SECTION



ZONE	NAME	BOTTOM	DEPTH	EXPOSURE	KEY ANIMALS	KEY PLANTS	COMMENTS
A	Coral Beach	Coral sand	—	Wind and rain	Ghost crabs	Coconut palms and stranded seeds	Here you can enjoy the magic of the Southern Seas
B	Shallow Beach	Fine, clean coral sand	0.3m	Small waves	Many <i>Phycodera</i> sp. (Hemichordata) buried in the sand	None	The waves constantly move the sand around, no algae can settle
C	Beach Channel	Fine coral sand and coral boulders	0.8m	Moderate to strong current	Sea cucumbers; <i>Holothuria atra</i> , <i>H. edulis</i> and <i>Stichopus chloronotus</i> . Sea urchins; <i>Echinometra</i> sp.	GREEN: <i>Caulerpa cupressoides</i> and <i>Halimeda</i> sp. BROWN: Scattered growth of <i>Lobophora</i> sp.	A strong current moves the water through the channel. A lot of <i>Caulerpa</i>
D	Boulder and Sand Zone	Coral sand and a lot of boulders	0.5m	Moderate current	Sea cucumbers; <i>Holothuria atra</i> , <i>H. edulis</i> and <i>Stichopus chloronotus</i> . Many sea urchins; <i>Echinometra</i> sp. <i>Linckia laevigata</i> . Small corals, mostly <i>Porites</i> sp.	GREEN: <i>Caulerpa cupressoides</i> and <i>Halimeda</i> sp. RED: A few bushes of <i>Rhodomenia</i> and <i>Galaxaura</i>	More and more big coral boulders are partly buried in the sand and covered with algae
E	Back Reef Zone	Large boulders some solid coral rock	0.3m	Weak current, the most quiet zone	A lot of brittle stars under the boulders. Many sea cucumbers and sea urchins (like above), <i>Linckia laevigata</i> . Many small corals, mostly <i>Porites</i> sp.	GREEN: <i>Caulerpa cupressoides</i> , <i>Halimeda</i> sp. BROWN: <i>Ralfsia expansa</i> . RED: Encrusting calcareous species and branching <i>Asparagopsis</i> sp.	The rocks in this zone are big and many cannot be moved. The water gradually gets shallower. Some rocks are exposed to open air
F	Shallow Boulder Zone	Coral rocks with sand patches in between	0.2m	Wind and rain, some waves from outer reef flat	A lot of brittle stars under the boulders. Many sea cucumbers and sea urchins (like above), <i>Linckia laevigata</i> . Many small corals, mostly <i>Porites</i> sp.	GREEN: <i>Halimeda</i> sp. BROWN: <i>Ralfsia expansa</i> RED: Some encrusting calcareous algae (e.g. <i>Peysoneilla</i> sp.) but also <i>Laurencia</i> sp.	Large boulders are moved to this zone from zones G and H during stormy weather. Some Echinoderms and encrusting algae
G	Algae Flat	Solid coral rock with sandy patches	0-0.1m	A rhythmic and strong flow of water from the waves banging on the reef edge	Scattered small corals; <i>Acropora</i> sp., <i>Montipora</i> sp., <i>Favidae</i> , <i>Tridacna</i> sp., <i>Heteractis</i> sp. Many sea cucumbers; <i>Actinopyga</i> sp., <i>Holothuria atra</i> , <i>H. edulis</i> and <i>Stichopus chloronotus</i> , and plankton-feeding species buried in the sand, a lot of sea urchins and snails	A wide variety of fleshy green, brown and red algae. GREEN: <i>Caulerpa racemosa</i> , <i>C. sertularioides</i> , <i>Chlorodesmis fastigiata</i> , <i>Cladophora</i> . BROWN: <i>Chnoospora</i> , <i>Colpomenia</i> , <i>Dictyota</i> , <i>Sargassum</i> , <i>Turbinaria</i> . RED: <i>Amphiroa</i> , <i>Galaxaura</i> , <i>Lithophyllum</i>	All corals are small colonies that struggle against the prolific growth of fleshy algae. The waves push a lot of water into this zone. The algae are not dried out for a long time. A lot of algae-grazers are found here
H	Reef Edge	Coral rock	0-0.5m	Intense wave action	Some table-shaped and encrusting stony corals, including <i>Acropora</i> sp. The sea urchin <i>Heterocentrotus mammillatus</i>	GREEN: <i>Caulerpa racemosa</i> and <i>Chlorodesmis fastigiata</i> . BROWN: Some <i>Turbinaria</i> RED: Calcareous red algae; <i>Amphiroa</i> sp. and <i>Lithophyllum</i> sp.	The reef edge has a lot of clefts and red calcareous algae. The corals struggle against the heavy wave action in this zone

and grows prolifically mixed with many other green, brown and red algae species. The most obvious green algae is an unidentified species of *Cladophora*, forming bright green clusters. The inner half of the zone has an extreme number of *Echinometra mathai* that have drilled small channels in the rocks in which they live. This enables them not to be washed away by the intense waves that push a lot of water into the zone. The sea cucumbers are also numerous, especially the black *Stichopus chloronotus*, but some big and colourful *Actinopyga* sp. are also frequent. Small sand pouches are found in between the rocky bottom and in these pouches we discovered many plankton-feeding sea cucumbers of an unknown species. The tentacular crown was black while the body was blackish red. The outer half of the algae flat has the most diverse growth of algae. The brown *Sargassum* sp. and *Turbinaria* sp. are most obvious but there is a diverse growth of both green and red algae such as *Caulerpa racemosa*, *Chlorodesmis fastigiata*, *Galaxaura* sp. and *Amphiroa* sp. The outer reef flat is a gold mine for an algae enthusiast! Scattered between the algae are different stony corals, such as *Acropora* sp. and various brain corals, but none manage to build huge colonies. Soft corals seem to be almost lacking, though. There are also clown-fish sea anemones and tiny colonies of colonial anemones from the genus *Palythoa* as well as small giant clams. A detailed search in between the algae would without doubt have revealed a large number of invertebrate species from many phyla.

The Reef Edge – **zone H** – is split up in crevices and has an irregular shape. Big waves make the water movement here extremely tough and the flora and fauna



The beautiful red algae *Asporogopsis* sp. was found scattered in zone E

here clearly is adapted to these conditions. The waves also make it dangerous to be here even on a calm day! Algae that dominate are encrusting red, calcareous *Lithophyllum* sp. and the branching red, calcareous *Amphiroa* sp., and in between them some green algae, like *Caulerpa racemosa* and some brown *Turbinaria*, struggle to hold fast. Some relatively big colonies of *Acropora gemmifera* grow on the edge of the crevices, but the intense exposure to wave action gives them an unusual shape where the main branches are stout. I also spotted the big and colourful sea urchin *Heterocentrotus mammillatus* and other echinoderms in this zone.

What can we learn?

As an aquarist and biologist it is very interesting to notice that although we find ourselves in a coral reef habitat, it is the

algae and not the stony corals that dominate this shallow reef flat. Algae is a major and most important component of most shallow marine ecosystems, including the tropical coral reefs, but are often overlooked or neglected by aquarists.

Another interesting feature to observe on this reef is the impact of exposure from wave action. The huge waves banging on the reef edge (zone H) pushes water into the reef flat from zone G and backwards and during tropical storms boulders are altered and thrown onto zone F. The waves indirectly form the biology of the different zones. For instance... in zone G only those organisms that can hold fast in wave action exist here; algae and sea urchins and certain snails being the predominant ones.

One could walk for days here. Turning boulders, searching for interesting organisms and just sensing the many unknown and peculiar features such an ecosystem has to show you. Only the rising tide forces you to return to the beach... ■

The reef edge (zone H) with prolific growth of red calcareous algae



...End Point

Pat Lambert profiles the popular Bleeding heart platy



Male Bleeding heart platy



Female Bleeding heart platy

The Southern Platyfish (*Xiphophorus maculatus*) is one of the most popular species in the world and also one of the most diverse as regards colour patterns. There are thousands of different wild populations with all kinds of colour patterns. These have been used to create new cultivated varieties through hybridisation with each other and other *Xiphophorus* species.

Cultivated platies exist in a multitude of colour patterns and varieties and a great favourite with platy enthusiasts is the Bleeding heart platy. Cultivationists have to work very hard to fix a strain so that progeny breed true and even then a careful watch must be kept to ensure high quality stock true to pattern is maintained.

It all started in the late 1930s when Dr Myron Gordon (famous for his work with platies) found *Xiphophorus maculatus* (a wild platy) in the Rio Jamapa. This fish was crossed with a White ghost platy to produce and fix a strain of platy which he christened the Bleeding heart. It was given this name because the coloration was such that it seemed like blood from the heart ran down the body to collect in the chest area. It wasn't until 1948 that it was established in the hobby. At the time only males had this bleeding heart pattern but there are females today which also exhibit the pattern.

Unfortunately, the red pattern sometimes expands and the bleeding heart pattern disappears under a sea of red. This is something to watch out for as the true bleeding heart pattern can be lost. Normally the red coloration is limited to a few vertical red streaks along the flanks with a red chest area. The colour is traditionally displayed on a white body with clear finnage.

Often a few fine black spots will be seen on the body and in perfect specimens these should be very few or non-existent but these are very difficult to eliminate. True Bleeding hearts are not easy to obtain but they do come up in Livebearer auctions from time to

time. We have bred many in the past but I have at the present time one male and three females which I hope will produce for me.

They are easily maintained in the aquarium but should not be kept with any other *Xiphophorus* (Platies or Swords) as they are likely to cross with them and the Bleeding heart pattern will be lost. They will live in perfect harmony with other small community fish and make a colourful addition to the tank. Adaptable, friendly species which eats flake and other small live and frozen foods. Mine have a regular feed of brine shrimp which they love.

Breeding

Remove gravid female to a small tank with plant cover at the bottom. Babies are born after a four-week gestation period and hide in the plant at the bottom for the first few hours. They are quite small for livebearers at birth. Once the female has dropped fry she should be removed and the fry reared for a week or so in the small tank. They can then be moved on to larger tanks as they grow. As the young sex out the males should be removed to a separate tank so that the females remain virgins until the best male can be selected.

This fish is then used to father the next generations. In this way the quality of the strain will be maintained rather than decline. Deterioration of strain is usually caused by the earliest sexing out males (not the best) mating with the females.

PROFILE

Name:

Bleeding Heart Platy,
Xiphophorus hybrid

Size:

Males 4cm, females 5cm

Aquarium conditions:

Placid and easy going, adaptable to wide range of conditions with slightly alkaline water. Great community fish. Aquarium should not contain other *Xiphophorus* species if you wish to breed and maintain a strain.

Diet:

Flake, frozen and some live foods.

Temperature:

24°C