

Today's Fishkeeper



JULY 2003 £2.95

FROM BEGINNER TO ADVANCED

VITAL INSTINCT

A fish eye view
on survival

EQUIPMENT

Making
the most
of fountains

TROPICAL

Angels as
community
fish

CONVERTING
FROM FRESHWATER
TO MARINE?

We show you
how pg 34

PLANTS

Using
floating
plants
as filters





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TRMG Magazines Ltd
Winchester Court,
1 Forum Place Hatfield
Herts AL10 0RN
Tel: 01707 273599
Fax: 01707 276595

Editor

DEREK LAMBERT
(01673 885352)

Design

PAUL SAVAGE

Group Av. Director

JOHN SLOANE ext. 223

Production Manager

SIMON LATTER ext. 243

Advertising Production

JANET O'SHEA ext. 234

Advertisement Repro Manager

BARRY JONES ext. 233

Advertisement Repro Assistant

ANNE FALLON ext. 233

Advertisement Manager

KAYLEY LONG ext. 226

Classified Sales Executive

MIKE WALKLEY ext. 228

Classified Sales Manager

CHRIS LAWRENCE ext. 272

Publishing Production Manager

PAULA SKINNEH ext. 284

Publisher

KRIS HOLLUND ext. 279

Advertisement Director

CHARLIE WISE

Director

ANDREW STEVENS

Commercial Director

JONATHAN FELLOWS

SUBSCRIPTIONS

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Colour Repro

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Welcome

EDITORIAL CONTACT INFORMATION

Tel: 01673 885352

E-mail: derek@trmg.co.uk

Fishkeeping answers:

fishkeepinganswers@trmg.co.uk

Summer is certainly here now and I have already written a Post It note to buy an air conditioning unit, not for me, but for my fish room. I do this every year and never quite get round to buying one. For most of my tropicals, the warmer temperatures are not a problem but for some it can be a major problem. Many Goodelds can be sterilised if kept in high temperatures, likewise if the female is already gravid some of the babies may be born deformed. For marines temperature is even more of a problem. A chiller may seem like an expensive piece of kit, but to keep your charges alive during the hot summer months it makes good sense to me.

Something for everyone

As usual the magazine is jam packed with articles covering all aspects of the hobby. If you are off on your holidays soon be sure to check out Pat's column (pg 6) this month for a few pointers on what to do to make sure your fish survive the experience. For those of you who love Angelfish but have found out they are not so angelic, Mary Sweeney has put together a community where they will be happy and so will the other fish (pg 10).

Since sitting by the pond and sipping the odd glass of something cold is a great pastime at this time of year, Peter May (pg 14) has some suggestions to make the most of your pond. Fountains add life to any pond and they can fit in with almost any theme.

For marinists who care about the impact their hobby is having on the natural environment, Alf Nilsen has interviewed Paul Holthus, the Director of the Marine Aquarium Council, about its work and the ethics behind marine aquarium keeping (pg 66). This turns out to be very apt since we have been aware of the import of CITIES listed corals without the correct paperwork for some time. Finally customs have acted and things are moving in a positive direction to block this trade. We will publish more on this at a later date, but for now you will have to be patient and be satisfied with that snippet of information.

In Points of view (pg 76) Dick Mills is in the chair for your opinions. The question of whether fish feel pain or not has certainly made an impact, especially now another scientist says that they can feel pain. The impact that may have on the sport of fishing is going to be interesting. Don't forget to have your say. Dick will fit in as many views on this and as many other subjects as he can over the coming months.

Enjoy!

Derek Lambert.



JULY

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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
	CARBONATE		TEMP
	INMATE		10cm
	RESERVE		SIZE
	SURFACE		NOT SUITABLE FOR KEEPING IN CAPTIVITY



Starting Point...

Pat Lambert has some handy holiday tips, introduces a very interesting lovely fish and tells how she handles water changes.



Silver sharks are a much better choice for a community aquarium than Red-tailed black sharks which can be aggressive.

A peaceful shark

If you'd like to keep a peaceful shark in your community tank, I have just the right one for you. Unlike its relative the Red tailed black shark, the Silver shark (*Balantiocheilus melanopterus*) is not territorial and enjoys community life in the larger home aquarium (20cm long is ideal). Several fish are given the common name of Silver shark so the scientific name is given here to

make identification easier. This species is, however, the one most widely available and is also known as the Bala shark.

These lovely fish, their silvery bodies glistening in reflected light, their fins well spread and edged in deepest black, make a magnificent sight when kept in a small shoal. They grow to 35cm in the wild, but rarely exceed half that size in the aquarium. Be

warned though, these fish can jump and unless the aquarium is tightly covered, jump they will, right out of the tank.

These are not cheap fish to buy, for it is best to purchase reasonably sized ones where the true potential can be clearly seen. They are easy fish to keep but do require some green stuff in the diet or they could find their needs supplied by your plants!

Holiday time is here again and time to worry about what will happen to the fish while you're away. Don't worry, nothing will happen to them, for they can be safely left without food for up to two weeks, and when you return they will look better than before! The tanks will sparkle and the fish will be ready for their first meal on your return.

The results of having someone who is not a fishkeeper to look after the fish while you're away can sometimes be disastrous. A healthy fish should always be on the look out for a tasty titbit and an unsuspecting kindly neighbour may think the poor things are hungry (what's a pinch of food? Well! it could be a little or a lot). Before you know it the tank is polluted and you're not there to sort it out. Fish, unlike other pets, are very accommodating when it comes to holiday time.

Today's top tip

Buy yourself a commercial siphon set. There are many on the market and most have a pump system to help start the flow.

Four-eyed livebearers have many predators above the water surface so good vision topside is very important to their survival. Down below, however, a tasty meal lurks hiding. So good vision below the water surface is vital if they are to eat well.



Pat's practical holiday tips

1. Lower the temperature by about a couple of degrees and adjust it in the run up to your holiday. Fish need less food at lower temperatures as their metabolic rate slows down.
2. Get someone to keep an eye on the electrical equipment to see that all is well.
3. Keep a spare heater-stick at the side of the aquarium in case of breakdown.
4. Several days before you go away carry out a full maintenance programme and don't leave it till the last minute. It's not a good idea to have a tank too squanky clean when you go.
5. Leave the telephone number of a knowledgeable aquarist or a good aquarium shop who would be willing to help in case of trouble. Stick this on the front of the tank just to make sure it doesn't get lost.

N.B Do not start on a breeding programme in the run up to holidays. Young fry need small regular feeds daily. Their small bodies cannot store the reserves needed to ride them over more than a couple of days.

LOST FOR WORDS

Anablepidae These are commonly known as Four-eyed fish. This is a small family of livebearing fish with bulbous eyes which are divided into upper and lower lobes so they virtually have four eyes enabling the fish to see above and below the water line at the same time.

Conditioning If you want your fish to breed they need to be in breeding condition. Some species need very little encouragement to breed, others may need a change in temperature, different water conditions such as higher or lower pH, harder or softer water and often more live food in the diet. Adjusting water parameters to suit the fish is called conditioning and is a necessary prelude to the successful breeding of many species.

Guanine A light reflective substance that lies just under the scales and also at a lower depth, this white material collects in clusters of crystals and gives the fish its iridescent sheen.

Standard Length The standard length of a fish is the measurement from the tip of the snout to the caudal peduncle where the tail joins the body, the tail is not included in this measurement. Snout to end of tail is the total length. Standard length is the measurement used by judges at fish shows.

Nuclear family Many Cichlids care for their broods with both parents sharing the responsibility for the free swimming young. It's one of the joys of fish keeping to see the parents herding and protecting their young as they swim around the tank in a family group.

Synonyms A fish is named by the first scientist to describe it. Name changes occur as scientists make further discoveries about the fish. When this happens all other names by which the fish has been known become synonyms.

Terry clips These are roughly circular spring clips, open at one end, attached to the surface at the other, used to hold circular objects in place such as fluorescent tubes, hoses and cables.

A breath of fresh air

My fish really enjoy a water change, they become more lively and display lovely colour when the fresh water enters the tank. It's comparable to when we humans open a window and let some fresh air into a stuffy room. A gravel cleaner will remove excess detritus but my main aid is my super little Maxi jet water pump - the best fishkeeping aid I have ever bought. To many people water changes are a laborious chore but I can do water changes on all 80 of our tanks in just a one week period using my pump which pumps water from the tank to the sink. Water is pumped out efficiently at a moderate pace through the connected hose. The pump inlet is capped so even the small fish cannot be sucked in. I don't have to carry buckets of water and can do other work in the fishroom while this is happening. You could even read a snippet from Today's Fishkeeper while changing the water, as long as you don't become too absorbed.

The temperature adjusted replacement water should be treated with a water conditioner, this does not need to be added to the water before it enters the tank but can be added at the same time.

Before doing all this I use another valuable aid to tank maintenance which is my scraper and planter stick. This is a long

plastic stick at one end of which is a plastic scraper for scraping any algae from the front of the tank. Only the front needs to be scraped as a little algae round the sides is a palatable dish for your algae loving fish. The other end of the stick is a planting fork for bedding down new plants into the gravel or replanting any that have been dislodged.



Fascinatingly tempting, remarkably different, but not for the unwary

I've frequently looked at the South American leaf fish in amazement, for this fish is one of the most deceptive predators you could encounter. Look at the photo! How more leaf-like could a fish be? Can you see the fins? Where is the mouth waiting to capture its next meal? It feeds almost exclusively on live fish and other small animals and has the most stealthy way of capture devised by nature. This 'leaf' floats innocently towards its unsuspecting victim and as the victim approaches sucks it in with its flexible mouth. Its coloration can change as it adapts to the surrounding

environment and the real leaves among which it hides.

This species of leaf fish grows to 10cm and can be kept with other fish larger than itself because, despite its feeding habits, it is not an aggressive fish, in fact, the reverse is true as it's rather shy and retiring. It is, however, a fish with special needs which should be read up about before any purchase is made. Fascinating as this fish may be, if you are unable to provide it with all the right conditions, don't make the purchase but just look in wonder at nature's real master of disguise.



Which is which? Leaf fish really are one of the great mimics of the fish world.

The ten golden rules of fishkeeping

Read all about it

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

- Manufacturers often provide free booklets about fish care.
- Inexpensive books provide information on setting up.
- Today's *Fishkeeper* experts are on hand with help & advice and sections of the magazine are devoted to beginners.

THE WATER

- Testing:** Before introducing any fish to your new tank test the water for Ammonia, Nitrite and Nitrate. Safe water ready to receive fish should have zero readings of Ammonia & Nitrite and almost Zero nitrate. Test the pH, pH7 is neutral, above this is more alkaline and below 7 is more acidic. Read up on pH requirements for any fish you intend to purchase.
- Temperature norms:**
 Freshwater tropicals 21-27°C
 Marines 26°C
 Coldwater 13.5-21°C
 Some delicate species have very specific requirements, read up on them before you purchase.
- Filtration** cleans the water in your tank. Choose the filtration most suitable for the fish you intend to keep. Some species do not appreciate being blown around the tank, others that come from fast flowing waters like more turbulence. Large tropicals, coldwater and marines require larger filtration systems.

THE FISH

- Stocking levels:** For freshwater tropical we recommend 12cm³ of surface area per 1cm of fish.
Marines: For a fish only setup we recommend 2.5cm of fish for 2l of water and for Reef only setups we recommend 2.5cm of fish per 27l of water.

For your free beginners guide please call 0645 677 6770 or visit our website: www.aquarian.com

AQUARIAN

Feeds to a maximum of 250cm of fish per 4500l of water. Measurements should be based on the optimum adult size of the species not the size at the time of purchase. **NEVER OVERSTOCK**

- Knowledge:** Find out as much as you can about any fish you hope to buy before purchase.
- Introducing fish:** Fish should be added a few at a time over a period of several weeks to new setups. This allows the filter system to mature.
- Quarantine:** All new purchases should be quarantined for established tanks for at least two weeks.

THE ROUTINES

- Feeding:** Twice daily feeds are the norm for most adult fish. Try to feed at the same time each day as this establishes a routine. Only offer as much as the fish can eat in a few minutes.
- Water changes:** Freshwater tropicals 10-20% weekly
Marines no more than 20% every two weeks.
Plant fish also appreciate an occasional water change. Keep an eye on ammonia, nitrite and nitrate levels. They should be zero in a mature pond.
- Cleaning filters:** These should be cleaned once a week. If they work by biological filtration (bacteria break down the waste) and have a sponge in them, this must be cleaned in old aquarium water that is then discarded. Never use any household detergent or soap on aquarium equipment or tanks.

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



We're No Angels

Mary Sweeney creates a community around the not so angelic Angelfish.



HOW THE ANGELFISH CAME BY ITS NAME IS a mystery to me. Yes, I guess I could see where their distinctive dorsal and anal fins could suggest wings and indeed they are lovely to look at, but angelic? You must be joking. The so-called "Angelfish," (*Pterophyllum scalare*), is a cichlid, and thus a thug no matter how you dice it. Angelfish are pretty much the most well-known of the tropical aquarium fishes, about neck and neck with the ubiquitous guppy. Even outsiders (non-hobbyists) can accurately name three fish: the Goldfish, the Angelfish, and the Guppy— with an honorary fourth that everyone loves, fish and chips. Yes, the Angelfish has been in the hobby a long time and enjoys great PR—who doesn't know about that Wanda fish?—but it doesn't always have a sterling reputation as a good tank mate. Angelfish can be kept in community arrangements, as is often demonstrated in print and on film, but there are considerations. Let's have a look at how we can get away with keeping the domineering Angelfish with those fish that are merely mortal.

Safety in numbers

One strategy when keeping testy species is to employ only one of the kind and surround the beast with schools of attractive but inoffensive ditherfish. The single life eliminates a lot of the territorial behaviour that can make life hard on the tank mates of courting cichlids. Some suitable schooling tank mates that come to mind are danios, Silver dollars, the larger tetras, like Serpaes and Silver tips, livebearers, corys, and plecos (though it's best to keep an eye on the pleco, at times they develop a taste for the body slime of flat-sided fish like Angels and Discus). Angelfish don't generally squabble with groups of active schoolers and this combined with the viewing pleasure one gets with a school of almost any fish makes the whole enterprise very appealing indeed.

Tetra



Safety in space

Another tactic is to keep a large number of Angelfish in an appropriately large aquarium. When you're looking for breeding pairs, this is the best method. Start with six or eight young fish and let them choose their own mates when they mature. Not everyone has the space or the interest in keeping so many fish when one is all that is really needed to enjoy the spirit of the angel.

Still another approach when keeping Angelfish and indeed many species that can get cantankerous is to use a larger aquarium than is strictly required just to maintain the fish. Lots of room makes it easier for everybody to stay out of everybody else's way. By the same token, bottom-dwellers like *Corydoras*, *Brochis*, and *Aspidoras* seldom run into trouble even with mated Angelfish pairs because they so rarely venture up into the Angelfish territory, the Angelfish being primarily interested in the middle and top levels of the tank. Still, the Angelfish will warn off any curiosity-seekers if it should happen to be feeling possessive of a specially cleaned corner and in the company of a willing member of the opposite sex.

Speaking of sex, when a mated pair of Angelfish is in spawning mode, all bets are off. It is wiser and kinder to keep pairs by themselves if spawning the fish is your goal, or rather their goal by virtue of proximity. It is an affliction to keep non-participants in an aquarium with fish that guard eggs and fry, and no one can ever say that Angelfish are not attentive to their eggs and fry, right up to the second that they eat the whole spawn in futility.

Safety by design

Many times the most successful aquariums have the fewest fish. The fish are secondary to the plants and the "look" of the thing, it's not always necessary that the fish be the primary attraction of the aquarium. When there are less fish than expected and more plants, driftwood, and other visual barriers, there is a tremendous reduction in amount of aggravation that gets spread about.

Angelfish, like so many other smart fish, like a place where they can get out of the public eye from time to time. This is nicely accomplished in the planted aquarium. When you're planning planting for Angelfish, carry on with that tall, slim theme and use something like Corkscrew *Vallisneria* for its

height with heavier planting on the sides and the back of the aquarium. Leave open space in the centre front so you can get a good look at the fish framed by the plants. The angels will generally manage to swim in between the plants without ever stirring a leaf. Use low grasses, like the Pygmy chain sword (*Echinodorus tenellus*) in the front and centre of the tank for a very pleasing contrast. This may be the aquarium you want to place so it receives a little natural sunlight every day. Good plant growth requires good lighting and time. Add a nice piece of driftwood and you'll have a tank that is as pleasing to the fish on the inside as it is to the viewers on the outside.

Substrates

The substrate should be at least 5cm in depth if you are going to have good results with the plants. Make sure the substrate is well cleaned before you add it to the tank. It is far easier to clean the dust out of the gravel before it is installed in the new aquarium than after. It is so annoying to try to remove the gravel dust from a tank in the living room when the whole process could have been handled with much less fuss in the tub or the back garden. Some aquatic plant enthusiasts use a layer of laterite below the gravel. This substance is a perfectly natural fertiliser and useful for the plants, but if you do use it, be careful not to stir the gravel to enthusiastically or you'll have a filter full of laterite, which kind of defeats the purpose of placing it under the gravel to benefit the plant roots. While CO₂ fertilisation nearly guarantees wonderful plant growth, many aquarists—including yours truly—have maintained and enjoyed perfectly lovely aquaria without deliberately adding CO₂ or much else other than fish food.

Water conditions

Angelfish come from an environment where the water is very soft and acid, however our domestic strains have adapted to a wide range of water types after having been bred in captivity for decades. There are very few tap water conditions that Angelfish will not thrive in (as long as those conditions do not include a total neglect.) Angelfish do quite well in mid-range temperatures. Since they are cold-blooded animals, they will live longer at temperatures in the lower range of the acceptable. One disadvantage, however, is that Angelfish are susceptible to White spot if they are chilled. The best solution to this is to increase the temperature and use a patent medicine designed to control the parasite.



Corydoras are hardly ever bothered by Angelfish because they live in a different area of the aquarium.

Tetra, PO Box 373, Eastleigh, Hampshire, SO53 3UX

CHRISTIAN OLSCHKA

Black angelfish have always been very popular in the hobby, but this colour form is considered a little more aggressive than most other colours.



Returning to the subject of tall and slim again: Angelfish are among the few fishes that are taller than they are long. This makes the height of the so-called "show tank" beneficial when keeping angelfish. The show varieties that have been bred for extended finnage will certainly develop maximal fin length in a tall tank, but any Angelfish is improved by being kept in a tall aquarium. One wouldn't realise this until given the opportunity to see siblings reared

under both conditions. There is a significant improvement in fin shape and length in the fish that have been reared in deeper water.

Choice foods

Angelfish are generally hearty eaters that will accept a wide variety of the usual aquarium foods. Live foods, of course, are favourites, and if you are thinking of breeding these fish, live foods are

recommended at the very least during the conditioning phase two or three months before maturity, which is usually in the fall of their first year. It is not unusual, however, for Angelfish to live out full and perfectly healthy lives on flake foods.

Which variety?

It's nearly impossible to name all the varieties of Angelfish on the market today. There are pearlscales, diamonds, kol, black lace, grey ghosts and just about any other descriptive term one can imagine. The wild-type Scalare angelfish is a silver fish with

Tetra



Today's top tip

The finnage of young Angelfish are permanently damaged if they are reared in water with high ammonia or nitrite. The dorsal fin looks like it was cut off at an angle with a pair of scissors when the fish has been kept in toxic water. This will not improve even when they continue to grow in your good water quality, so that's a little thing to look out for when shopping for Angelfish.

four black vertical stripes (seven in youth) on the body. A red eye is very desirable, but not so easy to find anymore. Especially attractive is a black veil-finned angelfish with a red eye... ah, so many fish, so little time. Some people think that the commercial Angelfish have been produced by crossing different species of wild Angelfish, and though this is certainly possible, there is no remedy needed nor available and we must simply accept and enjoy the fish that we have access to in the present-day hobby. For the "purists," there are still wild-type Angelfish available in the shops from time to time or by special request.



Angelfish come in a huge range of colours. This fish is sold as an Albino gold diamond angelfish. The diamond part of its name comes from the raised shape of the scales. These are also known as Pearlscale angelfish.

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
The Heart and Mind of Aquatic Life

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

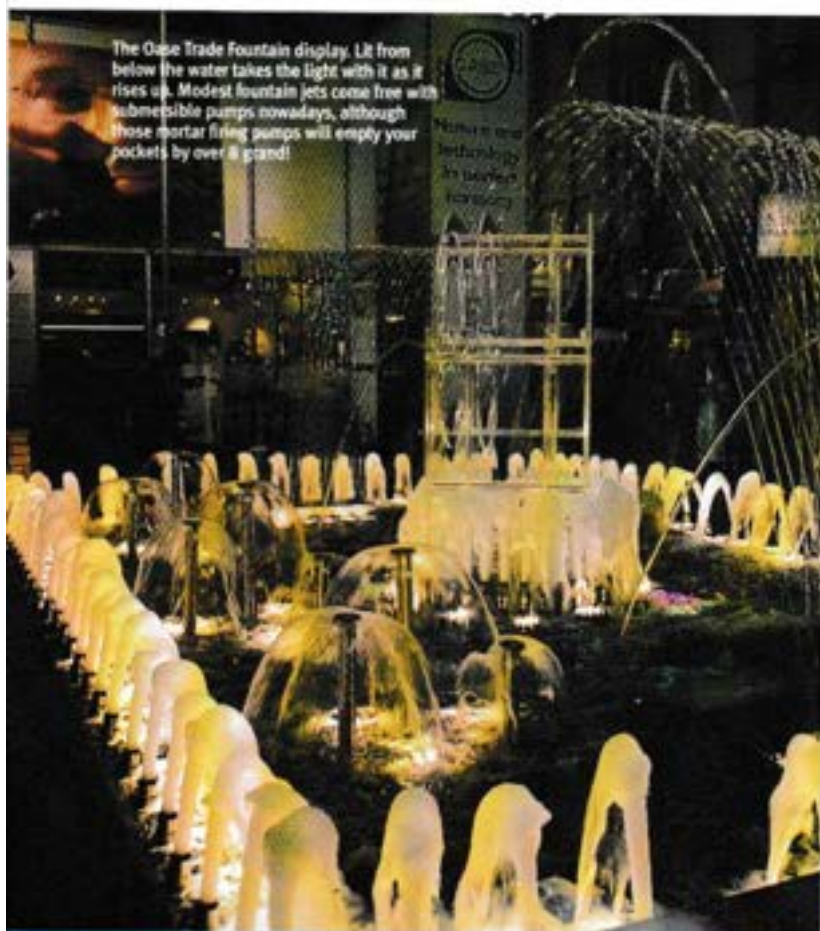
- 10 Quiet tranquil species can easily become distressed when in close proximity to lively boisterous tank-mates. Keep the temperaments of your community fish similar.

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

Tetra, PO Box 373, Eastleigh, Hampshire, SO53 3UX

Throwing water around

Want to impress the neighbours or drown them out? Peter May explains how you can use fountains to best effect.



The Open Trade fountain display. Lit from below the water takes the light with it as it rises up. Modest fountain jets come free with submersible pumps nowadays, although those mortar firing pumps will empty your pockets by over a grand!

THERE'S NOTHING LIKE A FOUNTAIN TO impress the neighbours, however, there are also innumerable practical reasons for having a fountain. Fountains create a focal point and animate a dull area of the garden. The sound of a big fountain can drown out most ambient noise, like traffic and other people talking, so they are great in city gardens and private spaces. They are also great aerators of water, helping sustain any animals or fish that inhabit the water below, especially useful on dull sultry days in the heat of the summer when even the best oxygenating plants do little to invigorate the water. Fountains also have style that although it smacks of formality with straight lines, squares and balance, they do in fact come laden with deeply symbolic significance and they are there to impress, entertain and invigorate the senses.

Fountains through the ages

From the time of the Renaissance in Italy in the 1500s through to the flamboyant extremes of the French style up to early 1700s, moving water was essential in any garden. After all, the minimal range of plants coiffured in balanced repetitious patterns did little to demand much attention. Moving water, flowing down hill, and if there was no hill, spurting up out of the surface of some great pool was a transfixing entertainment. So much so that people of wealth and influence would travel a long way out of their way on their 'Grand tours' of Europe to get a view of a good display. A good garden with associated water features was thus a definite statement of your own wealth, power and influence. This is a fact that Nicholas Fouquet, the finance minister for Louis XIV, should have borne in mind before he embarked upon the fantastic formal water gardens of Vaux-le-Vicomte designed to impress his King but instead enraged him with a jealousy that spelt Fouquet's immediate downfall. This was in 1661. Once Fouquet was incarcerated and out of the way, Louis, using the same garden designer, Le Notre, who went on to create the most fantastic fountain phantasmagoria ever created. He chose the site of his father's hunting lodge at Versailles for his palace and garden. Eventually there were 14,000 fountains there, too many to work at one time from the maximum supply of 5,000 cubic metres of water supplied from the vast waterwheels down on the Seine.

Even for the most modest fountain, in those days of very little machinery, it would have seemed nothing less than magic for water to spurt upwards against the normal pull of the earth. In fact a great deal of effort would have been involved with even the simplest fountain, by creating water pressure from reservoirs hidden high up out of sight filled by water wheels, or from hill water conducted from far away and piped underground to an outlet nozzle. But I think



A fountain in Hyde Park in London, the water brings life to the statues.

size of pump. But if the ornament has something like cascading bowls, and is meant to have fierce jets that launch spectacularly into space, then you will find the pump performance required leaps correspondingly. It is all to do with getting more water through a restricting tube. There is a limiting curve of possibility. In order to get the most out of the pump the tubing needs to be the maximum bore to the very last possible point.

If you were thinking in terms of these beautifully engineered tubes of steel and brass that seem to make water dance all but the 'Sugar Plum Fairy', then save up your pennies. Fairly simple devices start in the hundreds of pounds and as for the stunning machines that launch mortar rounds of pieces of water (see May Issue - 'How Far Can You Go?'), around £8,000.

Fountain features that have no visible water reservoir or pool in which they sit need to be sterilised in some way with a strong algicide that may be chlorine based or may contain potassium permanganate or copper sulphate. Certainly not anything that could be described as fish friendly. With water running over the ornament surface, or landing on surrounding surfaces, algae and moss soon become established to give an aged or rustic look out of kilter with the clean shiny looks of minimalism.

Fountains are fish friendly and fountains

INNATE APPRECIATION

I believe there is something fixed in the human psyche, linked to days when we roamed in loose bands of hunter/gatherers, when the sight of pure water emerging from a hole in the ground was treated like a gift from the gods of the natural world. Here was sustenance for life emerging straight from the ground and the knowledge of its whereabouts was essential for your existence. Over time, this appreciation becomes adapted, and what we saw as essential to our survival becomes a foundation stone or initial building block in our appreciation of beauty.

real appreciation of fountains lies deeper in the innate knowledge of the human mind.

Practicalities

Well if your heart's desire is some sort of fountain for your pool then you need think no further than the submersible pump. Most new pumps come with all the fittings to create a fountain straight from the pump and /or to supply a waterfall or fountain ornament. Many fountain ornaments if they are just spurting a jet of water will create a fairly impressive effect with quite a modest



For the most suitable fountain for a fish pool we need look no further than the Chaumont Garden Festival in 1999, from Christophe Mallouche 'The Scum of the Fish'. A fish pool with an obvious difference, the fountain is a fish!



Richard Taylor is the genius with copper that apart from this giant dragon monster makes tiny animated fountains.

Make 'em laugh

My favourite fountains are ones with an element of humour to them. Since possibly before Roman times, fountains have often been used in the past to play tricks on passers by or the audience by giving them a good soak like the Willow Tree at Chatsworth in Derbyshire. Other times the dance of the water was used giving the effect that the statue or scene was itself alive. David Goode has started doing this with his strangely 'realistic' gnomes. The next step of course is to use the power of the water to actually animate the ornament itself into doing things. In Renaissance times these could be quite complex theatrical enactment of scenes from mythology, or they could create sound as well with animated birds whistling in trees. There is the occasional revival of this ingeniousness from the likes of the sculptor Angela Connors with the Revelation fountain at Chatsworth again.

In pools with fish in them need to be easy to maintain. So make sure you have a method of reaching them from the side of the pool because they will regularly clog with lime from the water or detritus pumped up from the pump. A quick soak in some vinegar or lemon juice puts paid to the lime.

The gushing style or foaming jet is a useful aerator that is less liable to be windblown. The really effective versions of these are quite expensive, because they are engineered to suck in air as they rise up. What is more, they need a good powerful pump to be effective. If you have a pump, it can be a fairly effective compromise to have just the fountain nozzle, minus jet, spurting up full bore from just below the water surface. This seems to create aerating bubbles without too much spray. The spray is a pain for lilies too. Any moving or agitated water upsets them and prevents them from flowering.

Today's top tip

If fountains are too light and they are in an exposed position, the spray can easily be blown out of the pool. Ensure there is at least the height of the fountain spray times two from the fountain jet to the pool side.

Fountain society

If you are fascinated with fountains you will be keen to learn that there is a society of similarly smitten souls. They organise trips and tours, have newsletters and annual conferences in Cambridge. In 2001 they went to St. Petersburg to see how the Russians do it. They restore, conserve old fountains and advise on siting and construction of new ones. Membership is £30 p.a. or £250 for life, £12.50 for under 18s. For more information they have a web site at: www.fountainoc.org.uk, or you can join by contacting the Honourable Treasurer at 65 Hazlewell Road, London, SW15 6UT.



Geoff Brown from Waterstones Fountains in Somerset also produces humorous subjects with his 'comic fountains'.

ONE-SPOT BETTA

Betta unimaculata



12cm

23°C
-21°C



PHOTO: M.P. & C. PIEDNOIR

TODAY'S FISHKEEPER

Q&A

Tropical


BROUGHT TO YOU BY NUTRAFIN & FLUVAL



Some *Pimelodus pictus* do not seem to have spawned in captivity.

Star Letter 

Are my catfish breeding?

 My *Pimelodus pictus* catfish are starting to behave differently. I have one that is approx. 3 years old and one that is approx. 1 year. Can they pair up and breed? I have read that it is not known for them to breed in captivity. They come together and wriggle and nudge each other then go in their separate hides. Sometimes they are in the same hide. Are they courting or being unfriendly towards each other? They have never acted in this way until recently. The bigger one chases more fish away from his area than normal. I hope you can shed light on my question. I must admit that it is interesting to watch their behaviour.

Lynn Murphy via e-mail

 As far as I know there are no visual signs of sexual dimorphism in *P. pictus*, so it is difficult to determine what the activity you have been witnessing actually is. If they are two males and they were jockeying for supremacy, I think there would be signs of body damage. *P. pictus* have very sharp pectoral fin spines which can cause some serious damage to an opponent and if as you say they were coming together in a confined space, I am sure that some serious damage would have been caused if they were indeed fighting.

On the other hand if what you were observing was part of their courtship ritual, it would be an indication that the environment you have is the same or very similar to that of their natural habitat. I do not know of any recorded breeding successes with *P. pictus*, so I would advise you

to keep a close watch on them and make notes. Firstly, record the parameters of the water, temperature, pH etc. Secondly, make notes of the fishes themselves. Is the possible female getting plumper in the belly? Has the appearance of the possible male changed? In some male catfish the pectoral fin spines become thicker, or the fin rays become extended, even colour changes may occur. Behaviour between the two fishes may also change. Sometimes, after the perpetual courting by the male, the female will change roles and become the dominant partner. There are all sorts of small changes that happen when fish are about to breed and this is why I always advise people to make notes of what is happening. These can then be referred to at a later date.

Ian Fuller

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Which Malawi cichlids do I have?



There are so many different species of Mbuna that it can be very difficult to identify which is which from a picture. This is a male *Metriacilima zebra* from Isidi.

I have been interested in tropical fish since I was a little nipper and finally decided to take the plunge about two years ago and buy myself a 60 cm tank. This was a planted community tank containing Cardinals and the usual collection of fish. I then found out about cichlids, Malawis in particular. A 1m long tank was purchased and matured. It has coral sand as a substrate. As my tap water is just above neutral (7.4), I read that this would higher it to a more comfortable level for Malawis. My water parameters are spot on, nitrates never rising above 10. I have loads of holey ocean rock stacked up to make caves for

them to reside in. Everything is running smoothly. The only thing I do not know is the identity of the fish that I have. A friend was selling his equipment but the new buyer did not want the fish, so I had them. I would like to know what sort of fish they are (Latin & common names if possible), what sex they are, and also if they are all compatible with each other? I have attached photos of my set-up and also of the fish.

Phil Jones via e-mail



I think the fish on your first photo is *Metriacilima* "Golden Zebra" maybe from Maleri Island and Nkhudzi Headland on rock-sand interface. This is a common species in the trade. The other photo is probably a *Metriacilima zebra*,

blue-black (BB) morph. This is a widespread species found on rocks and again a common species in the trade. The set-up looks OK for a beginner, and I suggest you ask your friend who has kept the fish, what it is as there are so many Malawi cichlids, and there have been name changes, new forms have been found and so on, so this is not easy. I would suggest that you buy a good book about Malawi cichlids with lots of photos. The Malawi cichlids are very tolerant about the water, but keep good water quality and feed them with a good variety of food, not forgetting to include a lot of vegetables, peas etc.

All Stalsberg

Today's Answers Expert Panel

- All Stalsberg** Cichlids.
- Pete Liptrót** General questions on tropical fish and oddballs.
- Andrew Caine** General questions on Marines.
- Ben Helm** General questions on Coldwater plus equipment and technical advice.
- Lance Jepson** Health.
- Tony Sault** Discus.
- David Armitage** Anabantids.
- Derek Lambert** Livebearers, Rainbows and Breeding fish.
- Ian Fuller** Catfish.
- Andy Gabbutt** Killifish.
- Stephen Smith** Goldfish.
- Bernice Brewster** Koi and Ponds.
- Bob & 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*, TRMG Ltd., Winchester Court, 1 Forum Place, Hatfield, Hertfordshire, AL10 0RN.

Internet Service

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



Tropical

Setting up for plants

Being a relative newcomer to the fish keeping fraternity, I was very interested in the article ('From the bottom up') in your April issue. At the moment I've got a small, plant free community tank, but in the next few months I intend to start up a larger one (possibly using one of the larger Jewel aquaria). I'd like to fit cable heating with external thermostat, external filter incorporating reverse flow undergravel. I also intend to run a CO₂ system as I'd like a good show of plants. The questions that I'd like to put are:

1. What type of substrate(s) and to what depth I should be thinking of?
2. Should I use gravel ties between the different substrates, if more than one is recommended?
3. As I intend to use reverse flow, will I need to use more fertilisers or additives because of the lack of nutrients?
4. Could you recommend a lighting set-up?
5. Would the standard 23-25°C temperature range be suitable for this set-up?

As a novice, I hope these are valid questions as it would help me a great deal and perhaps save me a few problems when the set-up gets going.
Phil Watkins Newport, S.Wales

Any questions are valid if you need an answer! I hope these help:

1. If you plan to use a heating cable, it would be best to start with a very fine grade substrate such as silver sand to hold the cable in place and distribute heat evenly between the winding cable. This layer should be just deep enough to cover the cable, around 2-3 cm should be adequate. The rest of the substrate is flexible, but a good choice would be a 2-3 cm layer of fine grade (1-2 mm) inert substrate e.g. silica sand or lime-free quartz mixed in with a nutrient rich additive such as Dennerle deposit or Aquarium Pharmaceutical's pure laterite. Finally, for the top layer another 2-3cm can be made up from any inert substrate.

2. Gravel ties should not be necessary; the substrates do not have to be exact in depth and position. Mixing is not a major problem as the

smaller substrates are positioned towards the bottom and the plant roots will soon find preferred areas. A gravel tidy will also make planting (and replanting) difficult.

3. I would advise against using reverse flow, it would strip the substrate of obtainable nutrients, render the heating cable ineffective, and present a number of other problems concerning the use of fine substrate(s). An external filter with suitable media should provide sufficient filtration for a well planted aquarium.

4. Larger Jewel aquariums normally come with two or four light tubes. If yours has four then swap the ones provided for two full spectrum tubes and two tubes designed specifically for plants, and then add four reflectors. If it only has two, or you want a really nice display, it may be worth removing the hood and investing in a pair of halogen spot lamps. It will be difficult to add new tubes to a Jewel hood and removing the hood also allows the possibility of growing plants above the surface.

5. 23-25 °C would be fine, with good nutrient supply, CO₂ and lighting, the temperature can be increased or decreased to control plant growth.

As a further note, it may be worth keeping the Jewel filter supplied with the aquarium and adding a spray bar positioned well beneath the surface to minimise surface agitation. The good thing about Jewel filters is they take water from both the surface and the lower reaches so both bottom mulm and floating plant debris will be collected. The money saved can then be invested in a good CO₂ system and/or lighting.

I hope this is all useful information, good luck with your display!

Peter Hiscock

Character fish for a Biorb

I have a Biorb aquarium, 30 litres, set at 25°C with plastic plants for cover. When fully stocked I would

like it to contain approximately two shoaling species (about six individuals each) together with a slightly larger fish (say 6cm) which is happy either on its own or as a pair or in threes. I want a fish that will be something of an individual, doesn't disappear into the shoal, is a bit of a character and is reasonably attractive. I was thinking of a male Siamese fighter or a couple of Dwarf gouramis or Dwarf cichlids or maybe a Catfish. Is it really necessary to keep all shoaling species in groups of no less than six? For example, as an alternative could I keep a trio of Black widows or perhaps three Corydoras? Which of these options do you think is most suitable and can you suggest any other species that I could consider?

At the moment I only have two long-finned Zebra danios maturing the system. Given their slightly cool temperature requirements and their lively nature, are they suitable companions for the larger

fish that you can recommend? If not I could take them back to the shop once the Biorb has stabilised and replace them with more suitable shoalers such as Neons tetras and Black phantoms.

Philip Ballard via e-mail

You don't have to keep shoaling species in sixes. Four works well with most species, as does three with some. Some fish will also happily shoal with other species, so that gives you a little more choice. As far as character fish are concerned I would go for a male Dwarf gourami rather than a male Siamese fighter. They live longer and seem happier in a community tank.

A pair of Honey gouramis would also be suitable. The Zebra danios can be left where they are. They will be perfectly happy in your aquarium and the temperature falls well within their 'ideal' range.

Derek Lambert



Red or Sunset Dwarf gouramis would be a good option for a Biorb.

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Q&A

How many and which fish?

Star Letter

Q I have recently set up a 150 x 60 x 45 cm (425 litres) fish only set-up using a 95 litre sump under the tank. Filtration includes a Reef 500 Marine System, which is returned using an Eheim 1260 pump and circulated by two 804 powerheads in the main tank.

Tests (and my local retailer) indicate that the system is ready for the introduction of fish. I have an initial flexible plan to include the following fish: 2 x Percula clown anemones, 2 x Humbug damselfish, Yellow tang, Regal tang, Powder blue surgeon, Lipstick tang, Niger trigger, Cleaner wrasse, Long-nosed hawkfish, Long-horned cowfish, Flame angel and either a Queen or Emperor angel.

I would be most grateful for advice and recommendations on suitability and/or compatibility of such fish in my system, and in which order they should be introduced.

A. Milner, Liverpool

A My first concerns are with maintaining long term water quality, considering the number and type of proposed fish within the system. Sorry to be a bit negative but I can see some trouble around the corner.

There are quite a few fish on your list which would cause some waste and are messy feeders which scatter broken down food when eating. For this reason it would be a good idea to introduce Hermit crabs and Cleaner shrimps, however this would cause some problems with your stocking list. As it is your tank I can only advise. So I shall give you two selections and then the choice is yours. The bottom line is that your proposed stocking level, when the fish are adults, will be too high.

The adult sizes of your chosen fish are as follows: Niger Trigger 50cm, Regal tang 30cm, Lipstick tang 45cm, Powder blue 22cm, Yellow tang 20cm, Long nose hawk 13cm, Cowfish 46cm, Percular clowns 2 x 8cm, Flame angel 10cm, Emperor angel 38cm, Queen angel 45cm.

Take the Queen angel off your list because

Queen angels are aggressive fish which can stress Tangs to the point where they suffer from White spot regularly.



of its aggressive nature when mixed with Tangs and we have a final stocking level of 292cm. Your system has a capacity of 425litres when empty, disregarding the sump water which gives you a bit of a safety net. If we then consider a water displacement of 75litres by sand and rocks, we have a system total of 350litres. Stocking here should be no more than 2.5cm fish length per 9litres of water, giving you stocking limit of around 100cm of fish length excluding the tank. This is less than half of what you are proposing.

You really have two choices here. Either more species of the type which allow for the introduction of a cleaning crew, or fish you like so much that you will forgo the cleaners and reduce the number of species to enjoy

the larger fish. Whichever you choose you have a stunning fish only set-up.

Stocking possibility one is order of introduction:

1. Long nose hawkfish
2. Regal tang
3. Clownfish
4. Flame angel
5. Either Yellow tang or Powder blue
6. Emperor angel

Stocking possibility two:

1. Clownfish or Long nose hawk
2. Regal or Yellow tang
3. Flame angel
4. Niger trigger, Lipstick tang, Cowfish or Emperor angel

Andrew Coine

AQUA MEDIC

for all your marine keeping answers

New reef set-up

I am planning a new reef set-up and have never kept marines before. The total capacity will be 600litres after the estimated displacement. I have discussed my new system with various shops and each has given me a list of equipment which is different from the other. What causes me concern is not the makes but the difference in the power of each item. For instance, for the main circulation pump returning water back to the aquarium from the sump I have had 2500, 3000, and 3500litres per hour pumping rates quoted. Which one would be the best? The same for skimmers, lighting and more. I am worried as the lower rated equipment might be cheaper but are they good enough for the job? The other side of the coin is that maybe the more powerful items are too powerful for the system? I know this system is going to be very expensive and I do not want to make an expensive mistake. Could you help me by describing the equipment you would use if it was your system.

Peter Smith, via e-mail

I am glad you acknowledge that this will be an expensive system, but then you did say that I could design the system to my standards. Without looking in detail at the advice you have received, I cannot comment on it. The equipment they propose might well be up to the job but you have asked how I would set it up. Many people might disagree with my proposal but this system is very easy to

maintain and, for the beginner, it uses very little complicated technology and, above all else, it works very well.

The whole basis of the system is to biologically filter the water body at a rate of around 15 times per hour, this vastly reduces the time toxins are present in the system and thus the amount of time it can act on the animals within it. So what do we need?

One whole section of a sump must have an egg crate suspended on 4 cm legs, with a gravel tidy placed on it and a 10 cm bed of coarse coral gravel. Water must flow over the top of it and then be sucked down through the bed, exiting the sump via the return pumps. The skimmer feed pump must be placed before the biological gravel bed and skimmer returned over the top of the bed.

Your system has 600 litres, times this by 15 and we get 9000litres. Divide this by a pump rating of 3500litres per hour and we get 2.57, so we shall use three 3500litres per hour pumps, each returning in 28mm pipework. You will

have to have 3 x 40mm drains to cope with the flow. Your skimmer will have a through put rate of water of at least 2000litres per hour and a total rated capacity of at least 1200litres, more if the budget will let you. The best tip is to have needle or pin wheel impellers.

Let's address lighting next. Assuming we have a 60cm water depth I would utilise 250w metal halides and T5 actinic tubes, the Kelvin ratings of the halide lamps would be 10,000 for mainly hard corals or 13 - 14,000 for mainly soft corals.

This lot combined with good phosphate removal, monitoring water quality, and adding such items as calcium reactors at a later date if required, and you would have a very good system. Not one loaded with technology, but one which works well and will give you many years of pleasure. Yes it is simple in construction, but efficient in wallet emptying. Be warned!

Andrew Caine



For this system three Ocean Runner 3500 pumps could be used.

Star Letter Prize from

AQUA MEDIC

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ANTIPHOS

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SWIMBLADDER PROBLEMS



PHOTO: MAE DUMAS



I hope you can help me. I have 2 Fantails in a 9 litre tank, purchased at different times. The larger one of the 2 purchased first, has always had swimbladder problems and I have from time to time had to treat it for swimbladder disease. We regularly place Aquarium Salt in the water when doing a water change every 3 - 4 weeks.

I now seem to find that when I feed the larger one goes to the water surface and gulps air and bubbles from the airstone. It will then spend the rest of the day at the surface head down to the bottom of the tank. When I do not feed it, it will swim normally mid level in the tank. I have tried to vary the diet from flakes by giving Blood worms and also tried to feed them both under water by holding the food in my fingers but after eating the larger fish will again go to the surface and gulp.

It is now distressing me and the fish that I can not solve the problem, also the smaller one is now showing the same signs. I was going to try and fit a grill under the water surface so the fish could not reach surface

level to gulp but I did not know if this would cause more problems.

I would be grateful of any advice you could give me.

Jackie Rees, via e-mail



I would guess that one of two possible scenarios are occurring here.

1 - Goldfish are able to infuse their swimbladders directly by gulping in air from the surface and then forcing it through a small tube - the pneumatic duct - that connects the oesophagus with the swimbladder. If your goldfish is having swimbladder problems, it may be attempting to compensate by taking in more air.

2 - When fish feed, their metabolism increases in order to help them digest their food. This increased metabolism requires an increased oxygen uptake; if there is not enough dissolved oxygen in the water then the fish may "gulp" at the surface. When they do this they're not gulping for air as their gills are designed to extract oxygen from water, not air, but instead they're trying to draw the thin,

oxygen rich film of the uppermost surface layer of the water across their gills. Air may be accidentally taken into the gut whilst doing this. Air in the gut will affect the fish's buoyancy and its centre of gravity.

I am concerned that you have a small aquarium (9 litres); I'd be interested to know how big your Fantails are and whether there was any form of filtration - although an airstone is mentioned really there should be some filtration, especially with relatively infrequent water changes of 3 - 4 weeks; every one to two weeks would be better in my opinion. Air stones do not directly aerate the water - what they do is circulate it so that more water is exposed to the surface and able to take up more oxygen than would otherwise be the case.

In short, the problem may be due to a tank too small/overstocking situation so that dissolved oxygen is limited. A larger aquarium with improved filtration may be the answer.

Lance Jepson MA VetMB CBiol MBiol MRCVS

Crossed strains



Can a Celestial and a Black Moor be a breeding pair?



Yes, but the question you should be asking is if they should be allowed to breed together. The resultant offspring of such a cross would not look like an established variety and for goldfish fanciers would be worthless. Stick to mating like with like and trying to produce good quality goldfish of a known type. That is a difficult enough task as it is.

Breeding season



What times of the year do goldfish breed in an aquarium and how old are they when they first start to breed?



Just about year round if the tank is kept too warm. Ideally, your fish should have a cool period during the winter, when they can rest so that their eggs and milt will develop properly for the coming breeding season. Many breeders have an outside shed in which they keep their breeding stock. This will be heated during the winter, just enough to prevent ice from cracking the aquarium glass. Males can sometimes breed when only a year old, but in most cases they are two when they are fully mature. Females usually take an extra year to become sexually mature. So 1 - 2 years old for males and 2 - 3 years old for females. ■

tropical

marine

coldwater & ponds

plants

reptiles & amphibians

regulars

Botia identity parade

This month **Dr Peter Lewis** starts to take a close look at some of the species in the *Botia* genus.

DEFINING CHARACTERISTICS

Most *Botias* are attractive, either in color or in their distinctive markings. All are equipped with the formidable two pronged eye spines so common in many loaches, all have short barbels on the lips that assist them in their seemingly never ending search for food as they grub around the bottom of the aquarium. Two pairs are rostral barbels that come together at the tip of the fish's snout; the third pair is termed "maxillary" and is separated at each corner of the mouth of the loach. The body is oblong to elongate, moderately compressed laterally with an arched dorsal profile. The caudal fin is distinctly forked, showing two well defined lobes.

B. sidthimunki Klausewitz, 1959

The identity of this species is not in doubt, going under such common names as Dwarf loach, Pygmy loach, Monkey loach and Golden chain loach before being given its scientific name by Dr. Wolfgang Klausewitz, who imported the fish into Europe in 1959. The specific name was given to honor A. Sidthimunki, in recognition of the work he has done with fishes of this region.

This is the smallest of the *Botias*, rarely seen larger than 5cm standard length. Its natural habitat is small, muddy lakes, flooded fields and rivers through Southeast Asia, specifically Mae Il Nam Chao Praya basin in Thailand and the Mekong Basin (Cambodia, Laos and Vietnam). As a point of interest and also an explanation of why this fish is sometimes scarce in our hobby is the fact that the fish is a protected species in Thailand where it is considered threatened.

It is the opinion of Kamphol Udomritthiruj (bo@thai.com) that all *B. sidthimunki* specimens for sale within our hobby are from a commercial breeding venture where these loaches are being bred using artificial methods to induce breeding.

The original *B. sidthimunki* were collected from the Kwai river system, Kanchanaburi Province, Western Thailand. Dams on this system may have caused their extinction in this region. Aquarists should note that export of this loach from Thailand now requires a license, issued by the Government. Currently such licenses are only being issued to 'research' establishments.

Mature fish may show signs of sexual dimorphism in that a ripe female will appear stouter in the body than the male and will also display a considerably more convex belly. No details of captive breeding have, however, been made public within the hobby. The loaches' barbels are short and comprise two rostral pairs at the tip of the fishes nose that are united at their base

Golden chain loach are very active throughout daylight hours and are extremely gregarious, unlike their larger cousins; they certainly prefer the company of their own kind, more akin to the behavior of barbs or characins.





The Black-lined loach (*B. nigrolineata*) is a relatively recent introduction to the hobby.

together with a single pair of maxillary barbels, one at either side of the mouth. The body is gold/yellow colored and crossed by two distinct black stripes, one dorsal and one mid-lateral. The 8 to 10 dark vertical bars that join the dorsal stripe to the mid-lateral and which link to form a "chain" across the upper body of the fish are responsible for one of the common names of this Botia, that of Golden chain loach. Well-marked specimens will have distinctive golden markings across their sides, above their mid point, that fuse together to form a chain pattern, the brilliance of this gold coloration seems to intensify with age.

Definitely a community fish, *B. sidthimunki*, the smallest of all Botias, can be successfully kept in any community tank as long as at least six specimens are kept together and the other occupants are not too boisterous. In fact they are such good scavengers that they are often kept in small

tanks in preference to *Corydoras* catfish just for a change from the norm.

B. nigrolineata Kottelat & Chu, 1987

B. nigrolineata is also found throughout the Mekong Basin in clear, fast flowing rapids and small, sandy-bottomed creeks. Very similar in appearance to *B. sidthimunki* but growing slightly larger to 8cm and having 12 soft rays in its dorsal fin as opposed to 7-8 as found in *B. sidthimunki*. The body pattern of this Botia is also similar to that of the Golden Chain loach with the exception that the dorsal and lateral stripes are more intense and distinct. In larger, mature examples there are also vertical lines across the body connecting the horizontal bars. Again a gregarious species that does best in a well-planted, clean, well-aerated tank in the

company of its own kind. The specific name was given in reference to the distinct "black line" that extends from the caudal peduncle through the nose of this fish. In captivity these loaches require cooler temperatures (65-70°F) and clean, well-aerated water.

B. morleti Tirant 1885

This too is one of the smaller members of the genus, the largest aquarium specimens being 10cm standard length. In nature the fish is found in the Mae Klong and Mae Nam Chao Praya basins in Thailand, the Mekong basin and Malay Peninsular.

Occurring in both medium and large rivers this Botia inhabits both stagnant and flowing waterways. Any aquarist seeing this Botia for the first time will immediately recognise the fish as the Skunk loach since the fish has a distinctive black line that travels from its →

AQUARIUM CONDITIONS FOR *B. SIDTHIMUNKI*

A successful tank should be heavily planted and afford a multitude of hiding places and should be stocked with two dozen of these diminutive, shoaling Botias. As such the hobbyist will be treated to a rewarding display of these inquisitive little loaches as they grub across the bottom of the tank, investigating every nook and cranny and devouring any food overlooked by the other occupants of the tank. In the wild their food consists of aquatic invertebrates, insects, worms, crustaceans and plant matter.

In the wild Skunk loaches have a preference for live foods such as midge larvae and freshwater shrimp and the hobbyist will have to persevere in order to get captive fish feeding on any type of flake food.



Younger specimens of Zebra loaches (*Botia striata*) have a distinct red nose that sadly fades with age.



WHAT'S IN A NAME?

B. mordax is synonymous with *B. horae*, the older name, given by Tirant in 1885, has preference because of the rules of taxonomy. The patronymic name of *B. horae* was given by H. M. Smith in 1931 based upon a description of two small specimens collected from the Kwe Nol, west branch, of the Meklong River.

snout, right across its back to end as a vertical band encircling the caudal peduncle. Juveniles have three or four distinct black stripes or blotches on each side of their body but as they age these markings disappear giving rise to an overall cream or golden brown coloration with no distinctive markings. The dorsal and caudal fins are yellowish brown, the anal fin is pale brown and is crossed by a dark transverse stripe, all other fins are light brown.

The Skunk loach possesses two pairs of rostral barbels, fused together at their base, and one pair of maxillary barbels and has a long, pointed snout that slightly overhangs the mouth. A distinguishing feature is the dorsal fin that consists of only 8 soft rays and is located directly opposite the ventral fins.

Aquarium conditions

For its size this fish shows extreme aggression, particularly against members of its own genus and other bottom dwelling fish. A successful aquarium for these fish

AQUARIUM CONDITIONS FOR ZEBRA LOACHES

Growing to a maximum of 10cm this fish is most definitely not aggressive, a more apt description might be 'playful', since aquarium specimens always seem to be chasing each other through the tank in a never ending game of tag. In my experience this loach is one that is more active during daylight hours. A well-planted tank is important, with water maintained at 20–25°C and a hardness of 5 DH. Plenty of driftwood full of hiding holes gives this fish a sense of security.

should be heavily planted with Java moss and Dwarf Vallis and should be home to at least six specimens. The fish will then establish a pecking order amongst themselves and no one fish will be worried to exhaustion, the ample vegetation giving each one a chance to find refuge should the squabbles become too intense. The fish is a poor swimmer and is likely to spend its time perched on a rock or suitable vantage point in the aquarium from where it can defend its territory. Growth rate is extremely slow and it may take several years for its mature size to be reached. Soft, slightly acid water at pH

6.0 to 6.5 is best at a temperature ranging from 26–30°C

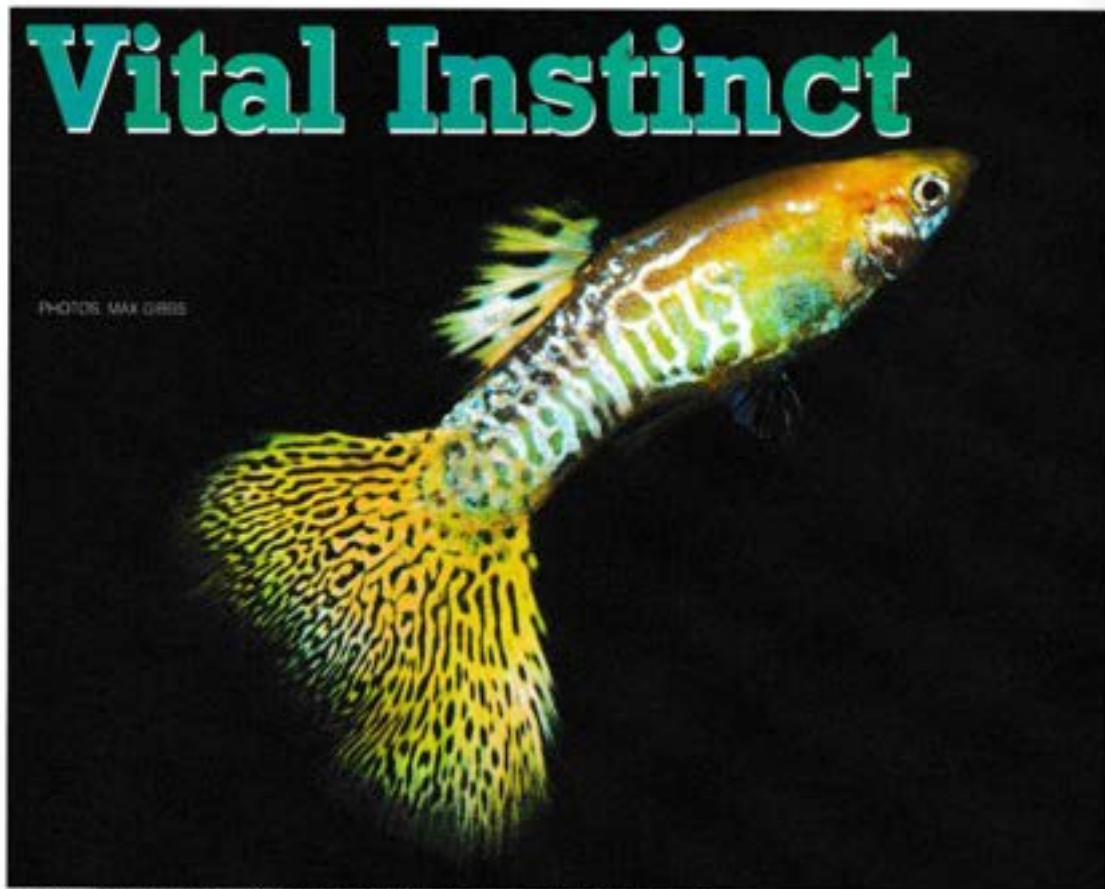
B. striata Narayan Rao 1920

This beautiful striped fish has the common name of Zebra loach and hails from Mysore (Thungai) in southern India. First introduced into the hobby in 1953, *B. striata* has many features that will ensure its survival as a firm favorite of aquarists for many years. Very early literature may feature photographs of this fish with the caption "*Botia hymenophysa*" since it was the opinion for several years that *B. striata* was merely a variety of *B. hymenophysa*. There were even reports that these two fish were found together in the wild while in fact we now know that *B. striata* is only found in southern India, whereas *B. hymenophysa* is not found in this locale but rather in Thailand, Malaya and the Greater Sunda Islands.

Again the fish has two pairs of rostral and one pair of maxillary barbels. Typically the body of this *Botia* has a striped pattern, each stripe is in fact a double stripe that is coloured cream to yellow and separated by a wider, single black band. The stripes run almost diagonally across the body of the fish and assume a more vertical position as they pass around the eye into the head. I have kept two *B. striata* in an aquarium for over ten years. Given the right tank and the company of non-aggressive fish, the Zebra loach will readily settle down to a life of captivity assuming the role of scavenger and housekeeper. ■

Vital Instinct

PHOTOS: MAX GRIBB



My father, beautiful he may be, but he turned on me the moment I was born and tried to eat me!

An autobiographical account of a Guppy as told to Roy Osmit

WHAT A REMARKABLE FACILITY INSTINCT IS. That inbuilt intuitive power that enables an instant response to a previously unencountered situation without the need for particular thought or reason. It has certainly proved to be my salvation on more than one occasion! From the very instant of birth instinct told me that my mother and father were unlikely to lavish upon me love, kindness and selfless parental protection. If I wanted to survive more than a few fleeting moments I should make a swift departure from the scene of confinement and go into immediate hiding.

A short life for many

My initial instinct proved correct. From my place of concealment at the roots of a thicket of Cabomba, I witnessed the cruel fate that befell many of my brothers and sisters as life was unceremoniously snatched from them almost as quickly as it had been given. My mother was ably assisted and abetted by numerous other interested parties (my father included) that



The moment of birth, but for many of my siblings a couple of seconds later their new life was snuffed out.

seemed to materialise from nowhere and possessed similarly insatiable appetites.

Why did this miracle instinct that served me so well and enabled me to save myself, fail them so miserably? They too must have sensed imminent danger and, like me, should have taken the appropriate action. Maybe they were just plain unlucky or not meant to survive. In any event I was one of only a very few that survived. I quickly came

to understand, however, that being alive was one thing, staying that way was another.

From the relative security of my Cabomba thicket I watched with dismay the mayhem taking place around me. One after another, others of my brood were systematically devoured in a frenzied ritual of cannibalistic gluttony. It was all over very quickly. Soon the swirling water became still and those that seconds before had feasted so enthusiastically were suddenly gone. Perhaps it was now time to venture out, to start to explore this uncertain new world to which I had been given such a violent introduction. But I had to be careful, for now I knew from experience as well as instinct that terrible dangers lurked at every turn, and that everything that moved must be regarded as a potential threat.

Time to explore

Eventually, when I felt the coast was clear, I cautiously emerged from my cover. Moving slowly at first, I avoided any sudden movements that might attract attention. I

kept close to the bottom where I judged I would be less conspicuous against the gravel substrate, and this tactic seemed to work well. Before long I came to an abrupt halt against what appeared to be an impassable transparent wall and although I explored along its base for quite a way, there was absolutely no way through. This was clearly the boundary of my world and there seemed little alternative but to return in the general direction from whence I had come.

Having come across no significant sign of trouble since setting out, I was beginning to feel much more at ease. Everything was new, there was so much to see, explore and learn, I was even starting to enjoy this exciting journey of discovery. Perhaps life was not so bad after all!

My ability to manoeuvre was also improving in leaps and bounds. Although I was able to swim instinctively from the instant of birth, I was now starting to operate my fins with ever increasing dexterity as well as learning and appreciating the subtlety of their various uses. My tail was clearly the powerhouse, the principal driving force for all forward movement. It was also a highly effective steering mechanism. The two sets of paired fins on the underside of my body (pectoral and pelvic) were invaluable for making fine directional adjustments and to facilitate braking. I was able to achieve absolute balance and slice through the water with consummate ease by virtue of my dorsal and anal fins in conjunction with all others.

I was also able to maintain perfect buoyancy by virtue of my gas filled swimbladder. The use of this remarkable faculty was made possible again by instinct, for at the moment of my birth I knew that I must first visit the surface and fill the bladder with atmospheric air to enable it to start functioning.

False sense of security

My developing swimming skills and growing confidence lulled me into a false sense of security, for I completely failed to notice a dark shape looming menacingly large above me. My first warning of trouble was a perception of sudden and violent disturbance in the water, and I became terrifyingly aware of mortal danger seconds before a huge creature, its mouth agape, descended upon me with quite incredible speed.

I instinctively realised that to make a dash for it in open water would mean certain death, there was no way that I could compete with this dazzling turn of speed, so there was but one chance.

I drove my body downwards between the pieces of gravel, wriggling and twisting in snake-like motion in a desperate effort to slither ever deeper between the stones. Fearfully I waited to be unearthed, I could feel the gravel pieces moving and resettling around me



A close encounter with a gravel cleaner nearly killed me.

as my now frustrated pursuer endeavoured to excavate the site and claim his meal. I don't know if my assailant simply gave up, or whether his attention was diverted to an easier to acquire yet equally tasty morsel elsewhere. However, to my great relief eventually everything became still.

The upheaval of the gravel had rendered me well and truly trapped and there was no way of knowing how deep I was now buried. I started to seriously wonder if a

swift end in the jaws of the predator might have been preferable to a lingering death incarcerated in the lonely darkness of this watery tomb. Time passed agonisingly slowly and although I tried to loosen the grip of the gravel moulded around my tiny body, all my efforts proved futile. The situation appeared impossible but instinct and the will to survive is remarkably strong and I never gave up trying or completely abandoned hope.



Two of my sisters who were lucky to escape the carnage right at the start of our lives.



The promised land of the happy community tank which was my final home.

Free at last

Then, without warning, I began to feel a strengthening current of water passing through the gravel until it reached an almost irresistible surge. The gravel pieces around me started to move and rotate violently releasing their vice like grip on my body. Out I hurtled engulfed in a huge swirling cloud of stones, dust and other detritus. Spinning, choking and totally disorientated, I desperately struggled in an effort to obtain equilibrium. In panic I instinctively darted downwards towards a clump of plants. Here I lay on the bottom completely exhausted, my mouth and gill covers furiously working in unison as I gulped in and expelled as much water as possible in order to maximise oxygen intake and carbon dioxide discharge.

I realised in horror that I was not alone. Other equally alarmed inhabitants with large staring eyes and, more worryingly, even larger pulsating mouths seemed everywhere. I could see and feel their menacing presence all around me. It was abundantly clear that the only reason I remained unmolested was that fear had temporarily dampened their appetites - a situation I felt sure would not persist for very long! I had to make my move - and make it soon before they made theirs! The disturbance in the immediate vicinity was showing signs of subsiding. The dust and debris started to slowly settle. Soon it would be too late!

Despite ever present fear I began to notice that the water all around had suddenly become fresher, crisper and altogether more invigorating, giving a general feeling of well being. I later came to learn that this water revitalisation was something that happened on a fairly regular basis and came to look forward to it for its exhilarating effect.

Off to a new home

I darted out fully anticipating being pursued, captured and devoured at any second. In fact, captured I was, but not by one of the expected predators. The gaping mouth through which I passed was that of a white mesh material. I was abruptly swept upwards, hurtling against the coarse substance as water rushed through in the opposite direction to that in which I was heading. I was lilted clear of the water. Dripping, squirming and fighting for breath, I thought that this must be the end. But no - suddenly, to my great relief, I was lowered back into my element and released from the grasp of the fabric. I instinctively dived, not stopping until I hit the bottom. I found myself resting on a surface that was completely smooth and devoid of gravel with no sign of any vegetation. This caused me great concern for it also meant no hiding place in the event of attack.

I need not have worried, the only other creatures here had mouths insufficiently large to pose a threat.

They came as if from nowhere, many of them. Eyeing and probing me inquisitively investigating this stranger. It soon became apparent that I was not so strange. In fact we were of the same kind, all youngsters together.

Exploring my new surroundings as one of a group was immensely satisfying and enjoyable. Though this environment seemed rather bland and uninteresting compared with my last, it was more than compensated for by the congenial company and apparent absence of danger. From now on life was good. Food was extremely plentiful. At least twice during daylight hours we would race to the surface to gather the food particles that were very tasty. Occasionally we would receive a real treat of minute organisms.

These were extremely good to eat and there was a strange excitement in the chase and capture.

We all grew rapidly on this nourishing and varied diet. Our appearance started to change. Fins gradually took on new form and structure and colour started to replace previously drab appearances.

The promised land

Then one day everything changed. Our contented lifestyle was interrupted by a sweep of the large white mesh material and many of us were swept upwards and out of the water, our bodies writhing together in a sodden heaving mass. Fortunately, almost immediately we were released back into our natural element. We dived as one for the bottom.

In this totally different element gravel covered the base with much flourishing vegetation rising from it. There were rocks and strange shaped pieces of wood everywhere, all lightly covered in a green coating upon which some odd looking creatures with whiskers were gently grazing.

All about me I could see brightly coloured fishes in a wide range of shapes and sizes, but apart from some initial curiosity they showed little interest in our presence. I noted that there were no mouths of sufficient size to pose a threat.

And so I arrived at what was to be my final home, and a good one it was too. There was plenty of open swimming space together with many interesting places to explore, no overcrowding or incompatible company, balanced healthy conditions with regularly refreshed oxygenated water and an adequate and varied supply of nutritious food. What more could you ask for.

Full circle

I began to experience all the natural urges to procreate my kind and was somewhat flattered to discover a number of willing suitors. It was not long before I knew that I was to become a parent of the next generation. I became uncomfortably bloated and heavy and eventually, with surprising ease the miniature replicas of myself were born. At first I felt only relief at discharging the weighty burden. But as I witnessed the tiny shapes darting away through the water one overriding and irresistible sensation became predominant - hunger and a compelling desire to give chase! No longer did I regard them as my own. I could see tiny bite sized morsels wriggling tantalisingly through the water. I darted after them experiencing all the thrill of the chase and capture. No longer did we exist as mother and young, but simply as predator and prey.

Wonderful thing this instinct!

Seeing the light!

Anthony Calfo explains how to convert from freshwater to marine aquarium keeping.

AFTER SOME MONTHS OR EVEN YEARS AS a freshwater aquarist, it is inevitable for many folks to ponder what it would take to convert their freshwater aquarium to a marine system. Visiting the local pet store, reading hobby books and browsing the Internet, we see images of extraordinary and colourful saltwater species that tempt us to consider bringing them into our aquariums. To the uninitiated, the transition can seem a bit daunting when looking at the prices of the more exotic species and unique hardware. Truth be told, the conversion of a complete and successful freshwater (FW) aquarium to a saltwater (SW) ready system can be remarkably inexpensive and easy.

What cost?

Any FW aquarium can be converted in an afternoon with most efforts costing less than £150, and many under £75. This claim may come as a shock to anyone that has priced some SW equipment and noticed single pieces commanding prices in excess of £150. To clarify the statement, there are many types and themes of SW aquaria; some are as simple to conduct as your FW aquarium, while others require additional hardware and expense. A new marine aquarist can avoid, and will likely want to, the latter scenario of complex and dear systems. Mind you, in taking the



Black cap basslets are just one of many beautiful marine fish you can keep in a simple marine aquarium.



A beautiful reef set-up like this requires specialist lighting and more efficient filtration, however, all the fish in this aquarium would be possible to keep in a much more simple system.

conservative route you are hardly restricted from enjoying numerous colourful and amazing species of fish and invertebrates! You will simply need to resist at first the pursuit of delicate species and most photosynthetic invertebrates (corals, anemones, and the like). An exciting array of hardy and fascinating fishes, shrimps, starfish, crabs and more awaits you instead.

The key to a smooth transition is having a complete and successful freshwater aquarium to start with. Modestly outfitted systems may require additional expense. Aquarists that have had experience with FW species like cichlids (Oscars, Africans, Discus, etc.) and goldfish may find the husbandry needed for a SW aquarium unremarkable. The aforementioned freshwater fishes are notorious for their pressing demands on water quality as messy feeders or simply large fish in a heavy bio-load. A regular and consistent address of aquarium husbandry is necessary to maintain good water quality

with both groups in kind. Small weekly water changes are better than large monthly ones. Monthly water changes are still quite acceptable with due diligence on other issues like careful feeding, understocking, etc. Using a basic water quality test kit is also advised for long-term success in any aquarium.

Essential changes

The three primary changes (additions) you will need to make to begin keeping marine species are: synthetic sea salt, a hydrometer to measure salt levels, and a new calcium-based (calcareous) substrate. The use of sea salt and a hydrometer is very easy and straightforward. There is no magic or mystery about making and maintaining safe salinities for marine organisms, but there are some very basic rules to follow.

Salt manufacturers give us a rough guide of measure (usually 1/2 cup of sea salt mix

Feather duster worms like this one are perfectly happy in an aquarium without special lighting and are a great choice for a beginner.



per gallon of freshwater) to make sea water. Because of slight variations with mixes and water temperatures, however, only trust an accurate reading from a hydrometer to make saltwater. Hydrometers can be found affordably in glass and plastic varieties. A glass hydrometer is a floating tube that does not look or read very different from a thermometer. Inside the tube there is a calibrated scale, and the level at which the instrument floats (the waterline) is the correct salinity. More accurately, it is known as the specific gravity (SG) of the water. The "weight" or gravity of water increases as

you add and dissolve salt, minerals, etcetera into it. Thus, when sea salt is added to the water being tested, the density of the water increases and the hydrometer is displaced (physically pushed higher out of the water, which translates into a higher reading).

Hydrometers

Glass hydrometers are fragile, but often more accurate to begin with and always more accurate over time than plastic hobby models. Plastic hydrometers are much more convenient and work with a simple levered arm that points to the correct SG with a scoop of sea water. Readings on plastic hydrometers can easily be corrupted though with air bubbles or a drop or sharp jarring of the instrument. All hydrometers can be affected over time if saltwater or hard tap water is allowed to repeatedly dry upon them causing mineral deposits. Care for your hydrometer requires a simple rinse with distilled water after each use. For the value of the investment you will have in your marine aquarium, it's a good idea to have one of each kind of hydrometer for inexpensive insurance and verification of this critical parameter (both can often be obtained for £15 or less total).

Before you can measure your new

saltwater with a hydrometer, the synthetic sea salt must be fully dissolved. Have a dedicated bucket set aside to mix and store new SW. Any food safe bucket will be fine. Most new plastic garbage cans are safe too. After adding sea salt, aerate and mix for several hours before testing and adjusting. An air pump with a coarse-bubble airstone, or a small powerhead with a venturi will do the job nicely. It is recommended that you run the mix overnight (12 or more hours) to be safe. Before using new sea water, your goal is to match your aquarium's temperature, SG and pH, primarily. Target a pH of 8.2-8.6, a temperature of around 25°C and a SG of 1.020-1.026. It is a helpful trick in aquaria with fish only to lean towards the lower end of the salinity range while staying towards the higher end when keeping invertebrates. Natural sea water is around 1.025 while pure water is the standard for comparison at 1.000.

When adjusting temperature in the new mix or in the aquarium, never add hot water from the tap! Hot water is low in dissolved O₂ and in rare cases can drive the oxygen out of your vessel to dangerously low levels. Heat new sea water slowly instead with a thermostatic heater. After 12 or more hours of heat and aeration, the water should be clear, the temperature adjusted, and the pH can be boosted if necessary with a small amount of baking soda or commercial sea

RULES FOR MIXING SEA SALT

1. Never mix sea salt in the aquarium with livestock present, as it is briefly caustic until it dissolves.
2. Always mix, aerate, and heat newly made sea water in a separate vessel for 12 or more hours in advance of use.
3. Test, know and adjust your new saltwater to match the temperature, salinity and pH of the aquarium in which it will be used.

buffer (co-ordinated with a test kit). Don't worry about the chalky carbonate residue that will coat the inside of your mix bucket... simply rinse it out between uses. At this point, your new mix is ready to use!

Sorting out the substrate

The third and last major change in the conversion of a FW aquarium is the use of a calcium-based substrate like aragonite sand or crushed coral. These are especially helpful to the beginner for supporting pH and alkalinity in the system. This can prove to be crucial for the novice as he becomes better acquainted with the feeding needs of new animals, and the need to maintain a high and stable pH in sea water. Calcareous media acts like a buffer in most systems.

Unlike many FW fishes, marine species require a high and consistent pH. With regular water changes, proper stocking and feeding, and occasional water tests, you will find that most marine species are no more demanding than freshwater species to keep. However, for busy or neglectful aquarists that cannot manage even monthly water changes, rarely test water quality and perhaps overfeed or overstock, FW fishes are more forgiving. This is largely based upon their natural tolerance for acidic, richly organic or aged waters like the many Amazon river fishes we commonly see in aquaria. With proper aquarium husbandry for all though, you will find that saltwater can be just as easy as freshwater!

Filtration

If you are currently using an undergravel (UG) filter, you will want to seek crushed coral or aragonite of a comparable grain size to replace the substrate (aragonite is preferable). As with freshwater, a 7 - 12 cm bed of media over the UG plates is recommended. UG filters are not the ideal biological filter for modern marine aquaria, but they can serve a beginner very well when maintained properly. It will allow you to keep many hardy fishes and motile invertebrates like serpent starfish, shrimp or crabs without delving into too great of an expense for the conversion. If you have alternate filtration for your freshwater aquarium like a large canister filter, fluidized bed or trickle filter, you will be even better situated for the transition to keeping marine fishes. In such cases, a thin covering of calcareous sand or gravel (less than 2.5 cm) instead will be most convenient. Be sure to clean, siphon or stir any substrate regularly as you would in freshwater. There are some fish that may be compatible with your featured specimens that will stir the sand for you as well.

After sand or gravel, your next consideration might be the "best" decorations and habitat for SW aquaria.

Much has been written elsewhere about live rock, and new aquarists will be sure to read more of it in the future. In short, live rock is calcareous in nature (overgrown coral and calcified deposits from other organisms) and is infused with living organisms on and in it. Most all of the life forms carried with it are beneficial, and it is a source of tremendous fascination and utility for the marine aquarium. Live rock is an incomparable living filter, provides natural food for display animals, grows entertaining and fascinating plants and creatures, and is the quintessential natural habitat for most reef tropicals to be found. You are encouraged to use mostly live rock for natural décor in the modern marine aquarium.

Lighting and maintenance

Once the primary elements of a conversion have been addressed, the same fundamental principals of good freshwater aquarium husbandry apply to saltwater systems. Water changes should be conducted regularly. Chemical filtration like activated carbon is strongly recommended. Feeding regimes should address your animal's specific needs and these are likely to require small frequent portions of nutritively dense foods; avoid feeding hollow foods like adult Brine shrimp as a large staple of the diet. You can put away any concerns you might have about the need for expensive light bulbs and lighting systems. Regular full spectrum lighting (6500-10K temps) in your standard light fixture will keep many or most of the desirable life forms on live rock, and illuminates your fishes just fine. In time, you can upgrade to "reef lighting" when your knowledge and experience match your



Cleaner shrimps are just one of the fascinating array of crustaceans which can be kept in a simple marine aquarium.

desire to keep some of the more demanding "flower animals" (corals and anemones).

Do consider investing in a good protein skimmer though as soon as it is affordable. Be mindful that many of the entry-level skimmers are rather difficult to use (if effective at all) and you may be better served to focus on good water quality in wait for a better but more expensive model. Protein skimmers are very effective tools for improving water quality and reducing nuisance algae growths. All of these topics and so much more are covered in a competent aquarium handbook. Please buy or borrow and read a good reference on marine aquarium keeping to reinforce these concepts and enlighten you with many other ideas on how to finesse a beautiful saltwater aquarium in your home. See the checklist below for book recommendations and reminders. And best of luck with your salty endeavours!

Checklist

Required

Quality synthetic sea salt
Hydrometer
Calcareous media: coral sand, aragonite, crushed coral, etc...
Test kits: ammonia, nitrite, nitrate, pH
A good book for reference like Robert Fenner's "Conscientious Marine Aquarist" or Mike Paletta's "New Marine Aquarium"
Clean plastic bucket or can, sea buffer/baking soda, air pump, and an extra heater for making new saltwater

Optional

Protein skimmer (highly recommended)
Second heater in display for redundancy and safety
Test kits: Calcium, Alkalinity, Phosphate

Additional recommendations

Live rock
Battery operated air-pump for power/pump failures
Refugium and sump

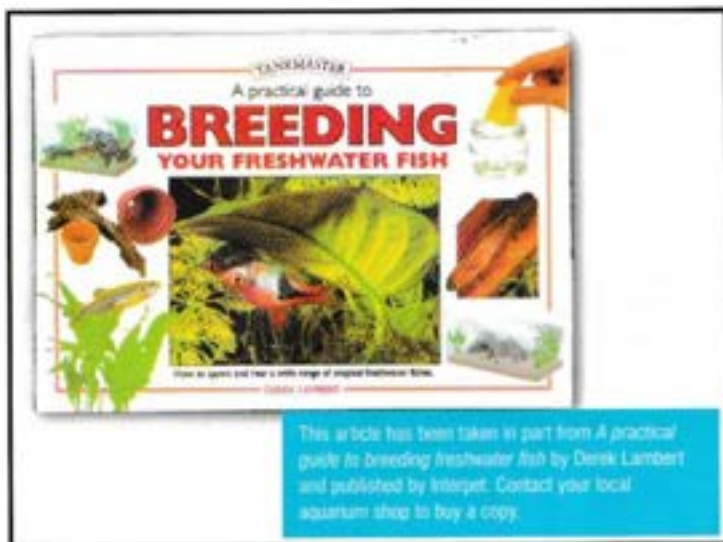
It's all in the hole

Derek Lambert was one of the first to breed Weitzman's sailfin characin, here he shares the secret of his success.



WEITZMAN'S SAILFIN CHARACIN (*Poeciliocharax weitzmani*) are little gems of the characin world. They only grow to 4cm in length but have a remarkably large mouth for the size of their body. This large mouth is filled with teeth and is used to gobble up any small insects and baby fish which come its way. They originate in the Amazon basin and have a couple of relatives (*Poeciliocharax bovallii* and *Crenuchus spilurus*) with similar habits. Like most new aquarium fish they have been difficult to persuade to spawn in captivity. It turns out that unlike most characins which scatter their eggs, these three species spawn more like a goby, hiding themselves away in small caves and protecting the eggs and young until they are free swimming.





Courtship & spawning

The male will usually take up residence in the pot as soon as he is settled in his new home. The female will find a comfortable area to call her own next to the Java moss. Most days the male will be seen courting his mate by extending his fins and flaring his black gills. A few days, or even a few weeks, later she will disappear into the male's pot with him. A batch of eggs (up to 300 from a large pair) are laid on the cave wall, after which the male guards the entrance while his mate looks after eggs and fry. The eggs

take 4 days to hatch and are free swimming after another few days. They move out of his cave and hide among the plants after this. It is wise to remove the adults as soon as the eggs have hatched to make sure they are not eaten.

Rearing the fry

The fry need infusoria as a first food although they can take Micro-worms almost as soon as they leave the nest. These foods are followed by Brine shrimp in a few days to a week's time. Once on this they grow quickly and are sexable at 2.5cm long.



BREEDING SET-UP

For a young pair use a 30 x 20 x 20cm aquarium filled with very soft (below 50ppm) water with a pH of less than 6.5. A larger aquarium can be used if the adults are fully grown but even then you will not need anything above a 50 x 30 x 30cm aquarium. Set the temperature at about 25 °C and spread a layer of peat over the water's surface. This will become water logged over a few days and sink to the bottom. Once it has all settled out you can add a clump of Java moss and a small terra-cotta pot (5cm across the base) with a hole about 3cm across knocked in its base. This is placed upside down towards the aquarium front. Having the correct sized hole is vital to success. It should be large enough to allow the adults easy entrance to the pot but small enough so the male can touch his dorsal on one side of the hole and his anal fin on the other when he takes up his customary position with his head poking out of the 'cave'. That makes him feel secure and makes this pot a suitable home for breeding in. Condition the adults well on lots of live foods before placing them in the tank.

Today's guide to selecting a pond filter



Blagdon's new Hydratech Cyclone 20000 filter is an example of a pressurised pond filter.

The type of filter you need for your pond is going to be determined by a number of factors. The size of your pond is one of the most important, but so are the stocking levels. Lots of fish mean better filtration will be required. A huge natural pond with not too many fish and plenty of growing plants may well mean you can get away with no filtration.

Assessing the need

With this in mind we need to look at what type and size of filter will be needed for your specific requirements. How big is or will the pond be? For most normal garden situations either a sheet type pond liner or a preformed fibreglass type pond will be purchased. These generally cover the small to medium sized ponds most people instal. Since stocking will almost always end up higher than the recommended guidelines for pond fish, a filter will be essential if you want the pond to be a healthy place for your fish.

For this type of pond there are many excellent filter designs available. At their most simple they will be a box which contains various different media through which water flows before passing back to the pond. Most of these box filters have to be placed above ground and can be difficult to hide away. They are usually cheaper than the more sophisticated designs and work perfectly adequately, although in heavy stocking situations they are prone to blocking quickly and are not as effective as some others.

The next step up are the pressurised filters. These are units which can be sealed up and run under pressure. The water is forced through the various media at a higher rate than in the simple box type

Thinking of installing a filter for your pond but are not sure which type is right for you? Here are a few tips to guide you in the right direction.

Inside a Hozelock Cyprio's Ecomax pressurised pond filter you can see how the water circulates through several different media as well as passing through a U.V. clarifier unit.



filters and they can deal with more waste. Another advantage with them is that they are usually smaller and have been designed to be buried in the ground so are easy to hide away. Many incorporate a UV clarifier as part of the unit which is a distinct plus.

Bigger ponds

If you are planning a more elaborate pond for Koi, then you will have to buy something more elaborate to filter it with. There are several options available. The original box filter has been enlarged and several different compartments added to its design. These gravity fed multi-chamber filters can be very large in size and with their various different media make very efficient filters. Since they are generally fed from a bottom drain in the main pond there is no risk of them overflowing and they can handle solid wastes very well. The down side is that they take up a lot of room and must be installed when the pond is built.

OASE's new FiltoClear 11000 has a unique system which allows you to rinse the sponges clean with the minimum of effort.



Pond filter suppliers

Cloverleaf	Tel 01277 366002
Evolution aqua	Tel 09942 219898
Hozelock Cyprio	Tel 01844 292002
Interpet/Blagdon	Tel 01306 743747
LAC	Tel 0208 981 9127
Nathuro	Tel 01952 883408
Oase UK	Tel 01264 333225
Petmate Pond	Tel 01932 700000
Hagen/Laguna	Tel 01977 556622
Tetra	Tel 02380 628863
Trident	Tel 02476 660012
World of Koi	Tel 0208 4629479
TMC	Tel 09923 284351

This large multi-chamber system is designed with Koi in mind



Top Gear

All the product news from around the trade

NEW FROM INTERPET

Filters for small aquariums

It is a sad fact that many fishkeepers leave the hobby after only a few months. Typically they have purchased a small aquarium or bowl, added some fishes and then watched as the fishes become lethargic and eventually die.

The main reason for this is that although they may have a small air pump and air stone, they do not understand the need for a filter. Adding an air filter to a small aquarium or bowl will make a dramatic difference to the water quality, and the well being of the fish. Traditionally air filters have been very basic pieces of equipment, with little or no options for providing chemical filtration (to remove chemical and organic toxins).

Interpet has addressed this issue with its new IAF50 internal air filter. This is ideal for aquariums and bowls up to 10 gallons, the filter is powered by a small air pump, such as the AirVOLUTION 1.

The filter contains foam segments that can be cleaned in turn, ensuring a constant presence of beneficial bacteria to break down the ammonia compounds in the aquarium. Additionally



The new internal air filter from Interpet is great for small breeding and quarantine tanks.

there is a carbon sachet supplied in a neat pillow format. This is easily replaced after a few weeks, to ensure that toxins and discoloration are not allowed to build up in the water.

The IAF50 is easy to install, easy to maintain and features modular filtration and a directional flow outlet. Aside from small display aquariums the IAF50 is also ideal for quarantine and breeding tanks.

The IAF50 has a retail price of only £5.99, and multiple foam and carbon replacements are available at £1.99.

FURTHER INFORMATION

Write to the Interpet Information Centre, Interpet, Vincent Lane, Dorking Surrey. RH4 3YX



This new biological CO₂ reactor from Dupla is a simple and effective method of supplying CO₂ to an aquarium.

Omega for Plants

**New
from Dupla**

Dupla has launched a new, controllable method of biological CO₂ injection with its CO₂ Omega. Using their experience and knowledge of the requirements of plants and fish in aquariums Dupla is able to offer an easy to use, inexpensive product that delivers great, safe results every time.

Designed for aquariums up to around 150 litres, the CO₂ Omega consists of a reactor with the necessary biological reagents to produce a steady supply of CO₂. The CO₂ produced is injected in to the aquarium via a venturi, pulled through by the pump supplied with the unit. The pump can be put on to a timer to coincide with the lights switching on and off, thus ensuring CO₂ is not injected at night when it is not required.

Dupla's CO₂ Omega is great value for money at a retail price of under £40. It lasts approximately 4-5 weeks in a 150 litre aquarium and the re-fills have a RRP of £5.95.

Aquarian introduce six new foods

For those of us who have been around for a while some of the new foods from Aquarian will have a familiar look to them. Some years ago Aquarian made the decision to reduce their product range and concentrate on the core foods. Now they have decided that was not such a good idea and have re-launched several of the old range and added to it with some new ones. As usual with Aquarian the products are all top class and are backed up by excellent research and development at the Waltham Aquacentre.

The new introductions are:

- Colour flake food formulated to enhance the colour of both tropical and coldwater fish.
- Cichlid pellet food ideal for most cichlids including Discus and Angels, however, the pellet size is too big for the smaller dwarf cichlids.
- Goldfish pellet food which has been formulated to float for longer and contains colour enhancers to bring out the colour of your fish.
- Growth flake food with smaller flakes and a higher protein content than the normal flake food. This is ideal for growing on juvenile fish and feeding to small carnivores like killifish and many livebearers.
- Herbivore flake food has added kelp and vegetable matter.
- Catfish tablet food which is suitable for all bottom dwellers and larger fish which would Hoover up normal flake by the bucket load.

The pellet foods come with a handy dispenser in a different shaped container than their usual packet. The top was rather difficult to get off on all of the pellet packets we have tried. This actually made them child proof and possibly many adults would have a problem opening them too. A minor criticism of what is a welcome expansion to a range of excellent foods.

Great Offer from Tetra

With immediate effect, Tetra, one of the UK's leading fish food and fish treatments suppliers is offering **50p off** all 100ml sized bottles of *AquaSafe*.

Building on its successful stable of aquarium products Tetra has placed extra focus on its aquarium water treatment, *AquaSafe*. *AquaSafe* neutralises the effect of chlorine and metal pollutants in tap water so helping to make it safe for your fish to live in. During the past year Tetra has seen sales of *AquaSafe* grow by over 30% , so as a big thank you to all its new customers the popular 100ml size will be available through shops at a reduction of 50p off the normal recommended sale price of only £3.95. This offer is only available while stocks last so it would be a good idea to nip down your local aquarium shop now to take advantage of this great offer.



Ember or Melon barb

Barbus fasciatus fasciatus

PHOTO: IAN SMITH



Today's Diary Dates

Copy for Today's Diary Dates

Copy for Today's Diary Dates should be sent to Today's Fishkeeper, Winchester Court, 1 Forum Place, Hatfield, Hertfordshire, AL10 0BN Telephone 01673 865352, fax 01707 276555 or email desk@today.co.uk copy deadline 8 weeks before publication date.

July's show, auction and club meeting dates.

Tues 1st

Southern Leigh & D.A.S. Contact 01702 305740
Pabilly & District A.S. meeting. Contact
helen@pabilly.com
York & Dist. A.S. meeting. Contact 09704 414272
The Irish Tropical Fish Society meeting.
Contact 01 4561836
Hullian A.S. meeting. Contact 0151 2898190
North Bucks A.S. meeting. Contact 09908 377333
Oldham A.S. meeting. Contact 0161 281 3725
Preston A.S. meeting. Contact 01772 321145
Lang Toun Aquarists and Pondkeepers Group meeting.
Contact 01592 595825
Wyke A.S. meeting. Contact 01482 445543

Wed 2nd

Gerby & D.A.S. meeting. Contact 01536 790932
Oasis Fish Club (Sunderland) meeting.
Contact 0191 384433
Perth A.S. meeting.
Contact 01 738 621704 or 01506 510558
Clacton Fish Keeping Club meeting. Contact 01255 428665
Porthsmouth A.S. meeting. Contact 0173 885352
Bradwell A.S. meeting. Contact 0189 738874
Rydale A.S. meeting. Contact schur@bulldogzone.net

Thurs 3rd

Glencrobes meeting.
Contact D. Smart, 4 Lochy Ave.,
Kingsdale, Fife.
Fairly A.S. meeting.
Contact 01738 561291 or 01714 889507
Sandgrounders A.S. meeting. Contact 01704 541177

Friday 4th

North West Cichlid Group meeting.
Contact 019422 707593

Sat 5th

Southern Catfish Conservation And Rescue Society (SCARS)
Open Show Contact 0207 231 2317 or 01356 475751

Mon 7th

Kirkcaldy A.S. meeting.
Contact 01738 634689 or 01592 205565
Solway A.S. meeting. Contact 01387 750606
St Helens A.S. meeting. Contact 01942 671463
Ayrshire Fishkeepers Association meeting.
Contact 01294 605272
Beigate & Redhill A.S. Contact 01293 782182
Merseyside Aquarist Society meeting.
Contact 0151 260 3664
Warrington A.S. Contact 01925 483979
Ilford & A.P. Society meeting. Contact 020 85507329

Tues 8th

Darwin A.S. meeting. Contact 01254 701925
Northwich A.S. meeting. Contact 01606 882966
Carr Life A.S. meeting. Contact 019 5337464
Belford & D.A.S. meeting.
Contact 01952 409721 or 01952 656410

Lang Toun Aquarists and Pondkeepers Group meeting.
Contact 01592 595825

Northern Goldfish and Pondkeepers meeting.
Contact 0161 2704279

Greenock D.A.S. Meeting. Contact 01475 704279

Banger Aquarists & Breeders Society.
Contact 028 9187 3539

Clyde Aquarist Society meeting.
Contact john@farnham.greenock.co.uk

Hull A.S. meeting. Contact 01964 562387

Stroud & D.A.S. meeting. Contact 01634 221291

Dunstable & D.A.S. meeting. Contact 01582 707280

Livelihood Aquarist Society meeting.
Contact 01506 510558

Hullfax A.S. meeting. Contact 01274 889471

Tameside A.S. meeting. Contact 0161 339 6693

Bradford A.S. meeting.
Contact 01274 652542 or 01513 252 7709

Hounslow D.A.S. meeting. Contact 020 8890 6933

Mid Sussex A.S. meeting. Contact 01974 602407

Kings Lynn Fish Club meeting.
Contact 01553 799522 or 01553 763273

Fairly A.S. meeting.
Contact 01738 561291 or 01714 889507

Isle of Wight meeting. Contact 01983 721246

South East Marine Aquarist Society. Contact 01279 309544

Yorkshire Cichlid group meeting. Contact 01924 367086

Basingstoke A.S. meeting. Contact 0118 970 1461

West Cornwall Fishkeepers meeting. Contact 01209 614158

Club 2000 Open Show and Auction. Contact 0115 9531615

Washington Aquarists Society and Pondkeepers Auction.
Contact ABace66928@aol.com or Tel. 0191 4170768

Kirkcaldy A.S. meeting.
Contact 01738 634689 or 01592 205565

British Aquarist Society (Goldfish) meeting.
Contact 01792 207467

Glenisby & Cleethorpes meeting. Contact 01627 349178

St Helens A.S. meeting. Contact 01942 671463

Oldham A.S. meeting. Contact 01274 534418

Robb Hood A.S. meeting.
Contact mholton@corpnet.vic.gov.au

Southern Leigh & Dist A.S. Auction. Contact 01702 305740

Wed 16th

West Yorkshire Marine Aquarist Group meeting.
Contact 01924 420101
Clacton Fish Keeping Club meeting. Contact 01255 428665
Tongham Aquarists Society meeting. Contact 01252 256886
Porthsmouth A.S. meeting.
Contact GIB Lister 9, Jernemess Rd., Gosport, Hants.
Perth A.S. meeting. Contact 01 738 621704, or 01506 510558
Bradwell A.S. meeting. Contact 0189 738874
Wokingham A.S. meeting. Contact 01900 679953
Wokingham A.S. meeting. Contact 01900 679953

Thurs 17th

AUGUST 2003 TODAY'S FISHKEEPER ON SALE
Glencrobes meeting. Contact D. Smart, 4 Lochy Ave.,
Kingsdale, Fife.
British Tropical Fish Club meeting. Contact 0117 973 2145
Sandgrounders A.S. Contact 01704 541177
Fairly A.S. meeting. Contact 01738 561291 or 01714 889507

Fri 18th

Discus Ireland meeting. Contact 0161 338593

Sat 19th

North East Goldfish Society Open Show and Auction.
Contact ABace66928@aol.com or Tel. 0191 4170768

Sun 20th

Merseyside Aquarist Society Open Show and Auction.
Contact 0151 260 3664

Mon 21st

Kirkcaldy A.S. meeting.
Contact 01738 634689 or 01592 205565
Thorpe & D.A.S. meeting. Contact 01953 605394
Solway A.S. meeting. Contact 01387 750606

Tues 22nd

Northwich A.S. meeting. Contact 01606 882966
Lang Toun Aquarists and Pondkeepers Group meeting.
Contact 01592 595825

Wed 23rd

Hullfax A.S. meeting. Contact 01274 889471
Tameside A.S. meeting. Contact 0161 339 6693
Warrington A.S. Contact 01900 679953

Thurs 24th

Mid Sussex A.S. meeting. Contact 01273 602407

Fri 25th

West Cornwall Fishkeepers meeting. Contact 01209 614158
Eastbourne & District Pondkeeping. Contact 01323 7731369

Sat 26th

Solway Tri-specialist Tropical Fish Show and Auction.
Contact 01387 750606

Mon 28th

Kirkcaldy A.S. meeting. Contact 01738 634689 or 01592 205565

Tues 29th

Oldham A.S. meeting. Contact 0161 281 3725

Wed 30th

Lang Toun Aquarists and Pondkeepers Group meeting.
Contact 01592 595825

Thurs 31st

Warrington A.S. Contact 01925 483979
Ilford & A.P. Society meeting. Contact 020 85507329

Solway's

Out & About

Shop Visit

Today's Fishkeeper visits **Erdington Aquatics** in Birmingham.

Erdington Aquatics is a pleasant modern looking shop.



Shop details: Erdington Aquatic Centre, 97 Church Rd, Erdington, Birmingham. Tel 0121 373 1100
Shop opening hours: 9am - 6pm Monday - Saturday, 10am - 4pm Sunday.
Proprietor: Neil Owen
Manager: Tim Hayes
Staff: John Hayward, Malcolm Franklyn, Colin & Debi.
Number of tanks: Over 100
Display tanks and ponds: 3 Marine.
Specialities: Corals, Inverts, Marine Fish & Discus.
Additional services: Tank drilling, sump building & water testing.
Brands stocked: All major brands, including Aqua Medic and Deltac.
Which groups of fish do you sell?: Marines, tropicals and coldwater.

All the tanks were well maintained with a good choice of fish and inverts in them.



As you enter Erdington aquatics you pass through a well appointed dry goods section with a wide range of products reasonably priced.



Erdington Aquatics is owned by Neil Owen, who first became interested in fish keeping 25 years ago. After studying business, he decided to combine his passion for aquarium fish with his work and entered the aquatic industry just over 20 years ago. Over the years his interests have changed and currently his favourite fish are marines. As this side of his business has grown in recent years and, given the specialist knowledge needed to give good advice to customers on marines, Neil has now brought in another

marine fanatic, Tim Hayes, as manager. This way there will always be at least one person available to deal with even the most technical of questions. This wealth of knowledge on the marine side has certainly paid off, because Erdington aquatics is definitely a "MUST VISIT" place if you are into marines.

If you do make the effort to visit, then you will be able to see something almost unique in the marine world, fish breeding and lots of babies being reared by the hundred. Gold Chromis (the exact species is still

to be determined) were just in the middle of courting and preparing to spawn again. In another aquarium lots of their babies were growing up nicely. If you have access to the web you can check out some images on their website at www.erdingtonaquatics.com.

On the freshwater side there was a good range of "bread and butter" fish. For those who are interested in something a little more unusual there were some nice Discus and a few of the rarer species dotted about the shop.

Our verdict

A "must visit" shop if you are into marines but with something for freshwater keepers as well.

Neil's verdict

Which manufacturer has the best range of products in your opinion? *Interpet, Aquamedic & Deltac.*
 Which company gives your customers the best service? *Hiogen, Interpet & Huselock Cyprin.*

Cutting edge

Erwin Schraml introduces a new catfish that has not even been assigned an L or LDA number, a new Characin and a couple of great looking African Synodontis.

PHOTOS: ERWIN SCHRAML

It quite frequently happens that when a new L-number is assigned the fish which is given it looks just like another plated catfish which has received a number earlier. The only difference being it comes from another river. Then one never knows whether or not it is a different species hiding behind the similarity. This is especially the case with different *Hypostomus* species which often look very similar. This new catfish, however, is a completely different case. It has not yet received a L or LDA number and it looks quite unique. It does not draw attention with spectacular colouring but it differs nevertheless from most hypostomines by several unique features.

Because of the missing interopercular odontes, the fish clearly can be specified as a representative of the subfamily Hypostominae, probably it is even a representative of *Hypostomus*. Especially striking is the large adipose fin, which presents perhaps a kind of signal flag. The head has a very subtle dark pattern on a golden gleaming background, which becomes much less colourful towards the caudal peduncle. This species has many thin teeth which form a close toothed rake. Aquarium Glaser received a shipment of these animals from the Rio Iriri. The pictured fish might have been adolescent so the full adult size is unknown. Similar looking *Hypostomus*, however, become fair-sized individuals, with most reaching more than 20 cm length. It would be nice if this species could be seen more often in the future.



There is no question that this new *Hypostomus* is a new species.

Two Zambian Synodontis

Recently Aquarium Glaser received once again a shipment with mochokids from Zambia. Among them, not only were there some very interesting representatives from Lake Tanganyika, but also several species that were found in the Kafue river system, which had not been introduced before as aquarium fishes. One of the species might be *Synodontis macrostoma* Skelton & White, 1990. The distribution area of this species is limited to southern Africa, on the Kafue, upper Zambezi, Okavango and Cunene rivers. The animals



Very little information about *Synodontis macrostoma* has been available up to now.



Synodontis vanderwool was only described by science some 13 years ago and almost nothing is known of its aquarium care or breeding.

should reach about 9.2 cm long (without tail fin). Up to now information on this species is very limited. Besides the fact that the animals prefer to inhabit rocky biotops, hardly anything is found in the literature.

The second species might be *Synodontis vanderwool* Skelton & White, 1990. It was described scientifically together with *Synodontis macrostoma*. It should occur in the upper Zambesi too, and also in

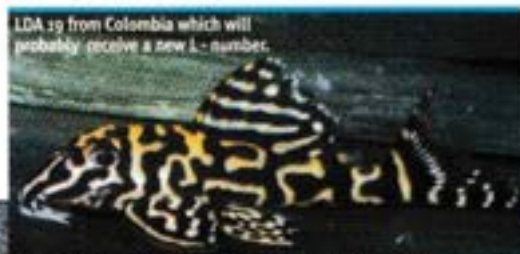
the Okavango river and in its delta as well as in the Cunene river. Because it was caught with *S. macrostoma*, the Kafue river is now known as a place of discovery. *S. vanderwool* should clearly get a bit larger (15.6 cm standard length) than the former species. There is also very little information available about this fish. Both species are very similarly coloured. Apart from the different size of the spots on the flanks, both species are barely distinguishable with the naked eye.

LDA 19

For quite some time now an internet page has existed, which is devoted to L-catfishes (L-Welse.com), and the very latest L-catfishes are displayed on this page. The newest one (cut off date: 6.05.2003) is a *Hypancistrus* (*sensu lato*), which should soon receive an L-number. The species originates from Colombia, however, it is not really an unknown species to the hobby. Rather it has long been known as LDA 19. Many people believed this was a single specimen, and that it belonged to L 129. Indeed LDA 19 has, up until now, been represented as an individual specimen because like most of the other *Hypancistrus* species with an undulatory pattern this species has hardly any identically coloured individuals. Nevertheless, it could still be that L 129 is a different species because all the specimens of LDA 19 which I was housing became a little larger than the L 129 which I had acquired at the same time.



The "real" LDA 19 from Venezuela



LDA 19 from Colombia which will probably receive a new L-number.



LDA 19 was originally imported from Venezuela, just like L 129. However at the present time both species are far more frequently imported from the Colombian part of the common border zone. The species is very hardy and my oldest specimen has already lived for more than eight years in one of my aquaria. They will take all kinds of thawed frozen food (e.g. Bloodworms or Artemia), however, they also take flake but do not eat algae.

Tropical : New introductions

Hemiodus, Hemiodopsis or *Bivibranchia cf. fowleri* (Steindachner, 1908)



What a lot of confusion exists around this group of Characids!

Recently Aquarium Glaser has received fish from Manaus, which are without doubt members of the South American family Hemiodontidae. I am able to identify them as being members of the genus *Hemiodopsis*. They can be roughly grouped as seen in drawings which were published in the Aquarium-Atlas (Vol. 2), and are ascribed to Böhlke (1955). Four different species are similar: *Hemiodopsis fowleri*, *H. gracilis*, *H. goeldii* and *H. semitoeniatus*. I believe I was able to identify *Hemiodopsis fowleri* with the key given in Gery (1977). According to the photo I counted something over 50 scales in the lateral line, and the origin from Manaus pointed to an Amazonian species. Originally *H. fowleri* was described by Steindachner in 1908 in the genus *Hemiodus*. The new combination of the name goes back to Ortega & Vari (1986), also Eschmeyer refers to it.

Once again, however, the two top internet addresses for nomenclature of fish names differ. According to FishBase this species belongs in the genus *Bivibranchia*. They refer to the Ph.D. thesis of Langeani (1996). This is strange because a Ph.D. thesis is not publicly accessible and therefore taxonomic changes made therein are simply not available. Likewise it is remarkable that the species *Bivibranchia protractilo*, again because of this paper, is treated as a synonym of *B. fowleri*. This is very strange, because *B. protractilo* is a species which is occasionally imported and has completely differing colour patterns. Therefore, once again some detective work was necessary, to look into these discrepancies.

Up to now there are no pictures available in aquarium literature which show the species *H. fowleri* and *H. semitoeniatus*. One photo of *H. goeldii* and one of *H. gracilis* appear in Gery (1977). According to this, the species would have even greater similarity to *H. gracilis*, because of the lateral stripe which begins behind the dorsal fin. In the three other species this stripe begins underneath the dorsal fin, as can be seen on the picture of *H. goeldii* in Gery. A clarification of these discrepancies could unfortunately not be found in Langeani's paper in 1999. In this paper the species *H. fowleri* was no longer recorded as *Hemiodus*, and other representatives which were formerly placed in *Hemiodopsis* are referred to as *Hemiodus*. This appears to go back to an earlier paper of Langeani (1998), which was not checked by me. My current enquiries produced no reasonable results, neither as to which species we are dealing with, nor in which genus it should be integrated. But I will keep on trying to solve this riddle!

References:

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Today's Postbag

Help with finding Siamese Flying Foxes.

Star Letter

'Wombwell Aquatics'
52/56 Park Street,
Wombwell, Barnsley,

S.Yorks can help Michael
Bennett in his quest for Siamese
flying foxes as I bought mine there as

babies. I know it's a long distance from where he lives but I know he won't be disappointed if he goes there. I would like to say a thank you to Alicia Wright and her assistant, Mark Wallace, who have provided both my young son and myself with their help, friendship, good service, excellent advice and, above all, wonderfully healthy fish. Alicia's shop is like our second home, and she cares fiercely for all her 'charges'. Her shop is a pleasure to visit and nothing is too much trouble.

Alicia and Mark helped us to carry on after I had been given some atrociously fatal advice from another shop, regarding a disaster that was due to the dreaded 'new

tank syndrome', inexperience, overstocking and an immature filter system. We were told by this shop to strip the tank down, rewash the gravel, plug in the heater and set it back up, and that by tea time I would be able to return the surviving fish to this tank (the survivors being housed in a little emergency tank that morning). You can guess what tragically happened to all the poor little souls.



Finding the real Siamese Flying Fox (*Crossocheilus siamensis*) can be a problem since several other fish are sometimes offered for sale under this name.

When I later discovered Wombwell Aquatics they were horrified at this ill given fatal advice, and with their help and support we were able to start again - slowly and safely maturing the filter, being careful about stocking levels, water checks etc. We now have two beautiful established tanks (one of which is a coldwater tank) and it's thanks to them.

Thank you for a great and informative magazine to which I have now subscribed so that I don't miss an exciting issue.

Julie Lodge, Barnsley, South Yorkshire

The editor replies

Wayne and Alicia Wright of Wombwell Aquatics are well known to me. Wayne is an amazing character with tales to tell of his travels around

the world in his search for fish and plants. I had a great time when I visited their shop, breeding section and gardens, as did some friends from Canada. This is an outlet of moderate size but visitors come from far afield to buy and even photograph his collection of water lilies (of which he has about 45 varieties). To avoid the problems encountered by Julie when starting, we have produced a 'First time Fishkeeper' guide which will help you through the start up period.
Derek.

Top of the Pops

Everyone has their own "Top of the Pops" in the fish world. John Connell, a reader from West Drayton, Middlesex gives his choice.

WHAT ARE YOUR "TOP OF THE POPS"?

Send in your own list of "Top of the Pops" fish to Today's Fishkeeper and say why they are your personal favourites. We will then create your very own "Top of the Pops" feature.

Send your list to:

"Top of the Pops", Today's Fishkeeper magazine, TRMG magazines Ltd., Winchester Court, 1 Forum Place, Hatfield, Herts. AL9 9RN, or email derek@trmg.co.uk

Siamese fighting fish



Fighters come in all shades and colours.

JOHN'S VERDICT

Just a truly stunning fish! The males are so beautiful and a lot of the females are lovely too.

A Top of the pops if ever there was one.

Scientific name:	<i>Betta splendens</i>
Aquarium type:	60 x 30 x 30cm
Distribution:	Thailand and Cambodia
Diet:	All types of commercial foods but also likes some live food in its diet.
Companion species:	Peaceful tranquil fish which will not nip its long flowing fins.

Rams



It is difficult to keep these fish in a Ram in good condition.

JOHN'S VERDICT

Beautiful and bold in the right conditions. A perfect Dwarf cichlid that should in my opinion be Top of the Pops.

Scientific name:	<i>Mikrogeophagus ramirezi</i>
Aquarium type:	60 x 30 x 30cm
Distribution:	Venezuela & Columbia
Diet:	All commercial foods, plus any live foods they can get hold of.
Companion species:	Other small to medium sized community fish

Lemon tetra



Lemon tetras are often overlooked but can rival all the more popular species for colour.

JOHN'S VERDICT

A lovely shoaling tetra that has perfect coloration when fed and looked after correctly.

Scientific name:	<i>Hyphessobrycon pulchripinnis</i>
Aquarium type:	60x30x30cm
Distribution:	Brazil
Diet:	All foods but likes some live or frozen food in its diet.
Companion species:	Other small to medium sized community fish.

Zebra danio



Zebra danios come in several colour forms and long finned versions as well.

JOHN'S VERDICT

A bread and butter fish for some, but for me a handsome, hardy, active top of the popper!!

Harlequin rasbora



When in good colour Harlequins are very beautiful fish.

JOHN'S VERDICT

An old favourite in the hobby, get 12-15 of these in a tank and you will have a glorious sight to behold.

Scientific name:	<i>Brachydanio rerio</i>
Aquarium type:	60 x 30 x 30cm
Distribution:	Western India
Diet:	Not fussy. Flake, pellet, frozen and live foods.
Companion species:	Well suited to a small or medium sized community aquarium with other peaceful fish.

Scientific name:	<i>Trigonostigma heteromorpha</i>
Aquarium type:	60 x 30 x 30cm
Distribution:	South east Asia
Diet:	Not fussy. Flake, pellet, frozen and live foods.
Companion species:	This species is the perfect community fish. Does well when combined with other small community fish.

Bristlenose catfish



Like this one every tank should have one.

JOHN'S VERDICT

Just perfect in every way. Interesting fish, a great algae eater and easy to breed - every tank should have one. Top of the pops in the Catfish world.

White cloud mountain minnow



Tolerant of cool water, White clouds can be kept in unheated aquaria.

JOHN'S VERDICT

This humble little fish is sometimes called the Poor man's neon. But in the right conditions this hardy little jewel can give any Neon a run for its money.

Scientific name:	<i>Ancistrus dolichopterus</i>
Aquarium type:	60 x 30 x 30cm
Distribution:	South America
Diet:	Primarily vegetable matter commercial foods as well.
Companion species:	Other small to medium sized peaceful fish.

Scientific name:	<i>Tanichthys albonubes</i>
Aquarium type:	60 x 30 x 30cm
Distribution:	Asia
Diet:	All foods small enough to fit in its mouth.
Companion species:	Small peaceful community fish.



Sea view

Andrew Caine has some expert advice on how to prevent coral diseases in your aquarium and introduces a cute little crab and a beautiful fish.



Lifting a Bubble coral straight out of the water without first encouraging it to deflate could seriously damage the polyps.

WHEN LOOKING AT CORAL DISEASES IN THE aquarium I feel it is important that we should first be looking at ways of preventing it. The saying "prevention is better than a cure" is very important in this area because there are no known cures for many diseases, only a myriad of remedies that seem to work for some and not for others. Unlike humans who are all alike and live in roughly the same environment so that pathogens can be isolated and eradicated, corals are very different from each other.

Too many variables

There are hard and soft corals; small and large polyped stony corals; low encrusting corals; and tall floppy ones and they all have different needs. Further problems arise as each coral, being in a different aquarium, is subject to different lighting and lighting periods, water quality and flow, different feeding strategies etc... Add all this up and try to find a common denominator to isolate a disease causing pathogen and quite frankly your head will explode. So we must firstly look at prevention, for we can all improve in this area and reduce the incidence of disease.

Firstly research your chosen species and make sure you have the water quality and hardware needed for its long term care. The sad fact is that most corals die simply because they are in the incorrect environment for them. A coral which requires high lighting or low water flow

requires exactly that. Unfortunately, it is just not good enough to buy a coral because you like the look of it and think it will be alright in your aquarium. Buy it and you could be signing that animal's death warrant, the sentence being carried out in three to four months after a period of ill health. If they require intense lighting then they need halides or T5s, no other. Low flow means exactly that, not medium flow because you cannot find a place for it with a low water flow.

Correct acclimation saves lives

Two forms of acclimation are very important in the transfer from the shop's bag to your aquarium. A slip up here and you could pay for it down the line. Floating your new acquisition in your water to heat it up is only the beginning. It needs to get used to your water chemistry as well. To do this it is best to set up a siphon drip into the bag, a drip rate of one per second should be considered the maximum. When you have trebled the original water content, then and only then, is it ready to taste its new environment. The other form of acclimation is one concerning light. If you take a new coral out of the dark carrier bag or box, you will instantly burn it under the full intensity of your lights. If you have high wattage halides you can easily kill a coral doing this. So do it in the shade of the sump,

shade the aquarium or reduce the lighting levels on introduction. If your new introduction is to be placed at the top, then start its new life at the bottom. Over the next week move it up in stages so it can adjust to your lighting levels.

Damage also occurs to coral tissue during handling and shipping which you could liken to someone taking a sharp knife and slicing you up a bit. Only touch the coral's tissue if you cannot move it any other way, always handle the rock or coral skeleton. In species which have large inflated tentacles or polyps, it is essential to hold the coral by the base and gently shake the coral while still under water. Slowly the coral will expel water and retract further into its base, only then remove it from the water. Just picking the coral out of the water will cause the inflated polyp to fall down over the base as gravity acts on the water in the animal, this weight will stretch the skin to bursting point and even cause a tear in the tissue.

Today's top tip

Rough handling kills. Treat all corals and fish as gently as possible.

Correct feeding essential

Long term damage also comes in the form of malnutrition. Light is not enough, corals need food and a wide variety at that. Billions of pounds are spent each year on food research for us humans which all tells us the same thing - a wide varied diet is the key to good health, it's the same for corals. A well fed coral has a better immune system than one which is starved, so feed the little beauties and feed them well!

So my fellow aquarists going back to basics. A little time and thought put into coral selection, acclimation, handling and nutrition will help us all to have greater success with our corals. Even the best husbandry, however, cannot eradicate all coral disease, some of these we will meet next month.

 AQUA MEDIC

AQUARIUM FILTRATION
- Bio-engineered

PHOTO: J. MARSHALL



A fish for you

The Harlequin sweetlips grows very large and will eat anything small enough to fit in its huge mouth.

HARLEQUIN SWEETLIPS (*PLECTORHINCHUS CHAETODONIDES*)

Oh what a beauty! Oh what trouble! Oh what traps are laid for the unsuspecting. Let's be honest, haven't we all at one time in our life fallen victim to profiteering traders and this fish must be one of the best examples. I remember it well, for many years ago I fell for it.

As a young naive marine keeper I was looking around in the local fish shop, and into view swam a small 5cm fish. Hook, line and sinker I was drawn in towards the ringing till and £20.00 lighter, the fish was bagged and home I went. Soon my new charge was doing fine. Six months later my 5cm fish was 12cm and doing well on a diet of all my smaller fish! It had to go, but where? Back to the same trader who sold it to me of course for which I received £5.00. The trader then sold it again making more money. I thought that little fish was so beautiful that I had to have it. Without researching it I became a victim of my own enthusiasm, and the wifdom of a trader who had a responsibility to guide a young inexperienced fishkeeper.

So what is this fantastic fish really like and what do you need to keep it successfully? First and foremost this is a

very large fish which will grow to 75cm and has a very big mouth. As a rule of thumb, anything that will fit into the mouth will go down it, so big fish must be its tank mates. Even though we are talking large, we are talking timid, it will be harassed to death by aggressive fish, so create a peaceful scene, not world war three.

Big fish means big food, which in turn means huge amounts of waste to deal with in an aquarium devoid of cleaning animals, for shrimps are considered as in between meal snack for this fish. Big biological filters are required, very good chemical filtration, an oversized protein skimmer, and extensive maintenance of the substrate is essential to maintain high water quality. This beast is not an expensive fish but the system requirements will be.

Good solid aquarium décor is required, ocean or live rock with a couple of very big caves are essential, at least two caves to stop tank mates fighting over territory. Copious amount of free swimming space is required as in all fish only systems. To really get the best display, feed at least 4 times per day, so times will really do the beast well.

PROFILE

Family:
Pomadasyidae

Name:
Plectorhinchus chaetodonides

Location:
Indo Pacific

Feeding:
Vitamin enriched large meaty foods

Reef Compatibility:
Fish only species

Tank mates:
Peaceful companions

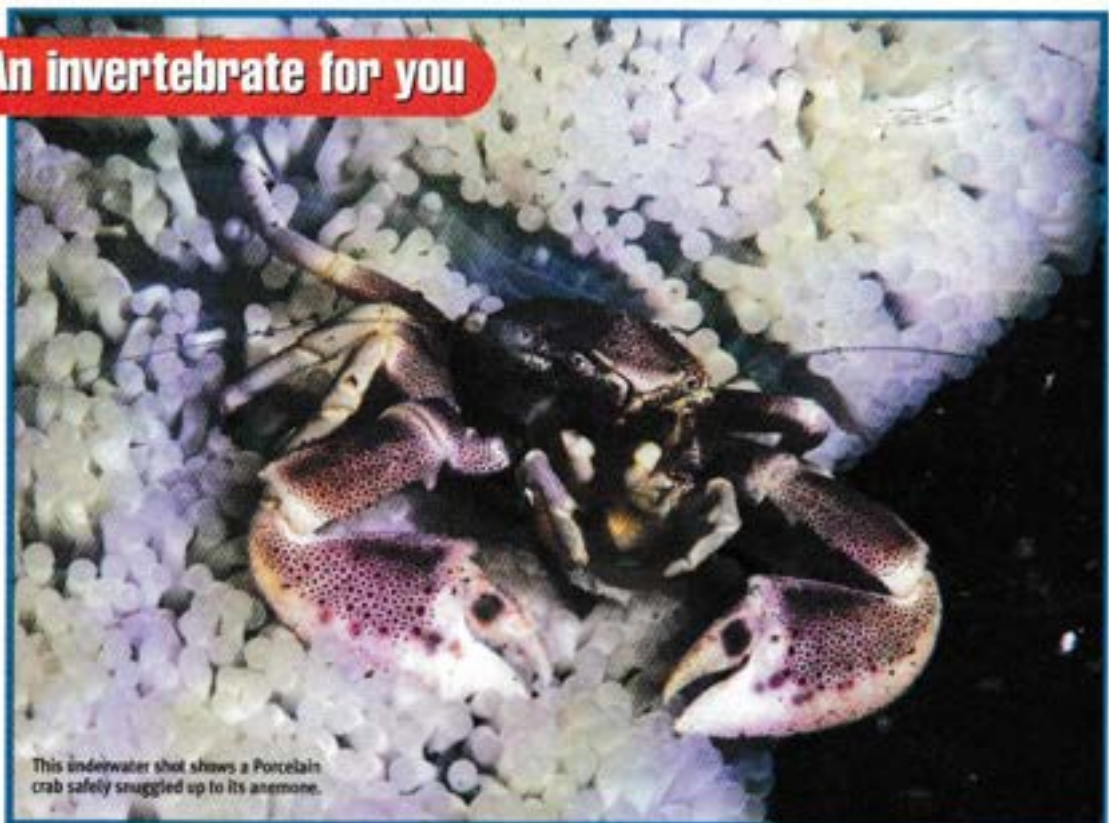
Size:
75 cm

Difficulty:
Hardy fish

AQUA MEDIC

AQUARIUM LIGHTING
— Consciously better

An invertebrate for you



This underwater shot shows a Porcelain crab safely snuggled up to its anemone.

PORCELAIN CRAB (*NEOPETROLISTHES MACULATUS*)

The great thing about reef keeping is the myriad of mini beasts that are available to purchase or those that 'hitch hike' on the back of host animals or in rocks. There are indeed nasties such as Flatworms and Glass anemones, which have the potential to cause a strip down in extreme cases. The other side of the coin are the bonuses that pop along occasionally such as baby urchins, crabs and Feather duster worms. The list is endless and it is the risk we all take. The way to reduce the risk is never to purchase livestock from a system that has Flatworms or Glass anemones in it, then you are 90% safe.

This mini beast belongs to a group of crabs going under the name of Porcelain crabs. They have a global distribution and are found in every conceivable habitat, but ours lives in a special safe place that makes it a wonderful addition to the reef aquarium. For its home is an anemone, and what a sight they make together. It is a truly wondrous sight to behold as little claws emerge from under an anemone's folds, then modified 3rd maxillipeds (legs) emerge to start feeding. These crabs are filter feeders and the leg has been changed

into a fan on each side of the mouth which beat the water and catch planktonic particles which are then passed to the mouth for ingestion.

As an evolutionary trade off they do not waste valuable energy in producing a hard calcium carapace or body shell, they do not need to. When a predatory fish appears they retreat into their host which confers protection. Some people will handle these crabs instead of using a net, not a good thing to do, as a little excess pressure, which would be OK with normal crabs, will crush our little beast.

You may think that you must have an anemone in your aquarium to house one of these beasts but this is not so. This animal will live for years without its host. However, you must remember that we are dealing with a soft bodied crustacean, so its protection is limited, any nip from an inquisitive fish will result in its death. To make sure it is safe an anemone is a really good idea both from the crab's and our visual points of view. With this in mind you must have a reef aquarium with the correct hardware and water quality to sustain such an animal.

PROFILE

Phylum :
Arthropoda

Name :
Neopetrolisthes maculatus

Location :
Widespread over the tropics.

Feeding :
Planktonic food, coral food

Size : 2 cm

Water flow :
Medium to high, this ensures food is presented to the crab.

Lighting :
No specific requirements for the crab, but intense light for the anemone.

Difficulty :
Easy if all its requirements are catered for. As always, very good water quality and plenty of food.

AQUA MEDIC

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Ponderings

PHOTOS: DAVE BEVAN

Dave Bevan takes a look at those essential summer jobs.

SUMMER IS THE TIME WHEN THE POND IS AT ITS BEST AND WE CAN SIT BACK AND ENJOY THE FRUITS of our labours, but there are still a few tasks which demand our attention if future disasters are to be avoided.

Essential summer jobs

1. Feed the fish daily - little and often is the best policy giving you the opportunity to spot any problems quickly.
2. Watch for fish fry and remove any you want to keep before they are eaten by the larger fish.
3. Weed the pond just like you would weed the garden by pulling out blanket weed, thinning rampant oxygenators and skimming off excess floaters.
4. Keep the pond topped up to allow for evaporation and check the water quality regularly.
5. Keep the bog garden free of weeds, stake and support the plants and remove flower heads as they die.



Antibes add colour to a pond in July



Despite living all their lives underwater, Water lice cannot swim.

Dipping deeper

The Water louse, also known as the Water salter or Hog louse, is a tiny crustacean common in stagnant or slow moving water. Looking rather like a Wood louse they have seven pairs of limbs, the first pair being modified for grasping and the remaining six pairs are used for walking.

The most common species is *Acellus aquaticus* which may be up to 15 mm long and is usually a greyish brown colour. These tiny creatures spend their life amongst the organic debris on the bottom of the pond where they feed upon decaying material.

They are a vital link in the pond ecosystem, helping to break down plant material, so that the bacteria can get to work. A healthy population of water lice is a sign of a healthy pond and they can often be found in their thousands living among the brushes and foams in the pond filter.



Beautifully simple
water gardening

KOI FACTFILE

SPECIES	Koi
OTHER NAMES	Nishikigoi
OTHER FORMS	Many forms and colours due to specialist breeding over the last 150 years.
SIZE	60cm although some varieties like Chagoi are much larger.
WEIGHT	Up to 20 kg
AVAILABILITY	Readily available from fish keeping outlets with many specialist outlets supplying top quality and very expensive fish.
HABITAT	In common with all carp they like slow moving deep water with plenty of weed and mud to grub around in. Quite happy in green soupy water.
IDENTIFICATION	Koi come in a large number of colours and colour combinations as well as different scale types and can be identified by the two pairs of barbells on the upper lip.
HABITS	Koi love grubbing about in the bottom of the pond and will also eat plant material so they will soon destroy water plants. In a large pond they spawn each year producing large numbers of fry. These must be removed to stop the larger fish eating them.
PONDFISH VALUE	Whilst Koi are beautiful and friendly fish, their potentially large size means they require a large deep pond with high quality filtration to cope with their waste. Ideal fish if you are prepared to invest in the equipment.

There are many different Koi varieties.

**Pond problem**

If your fish develop a downy, cotton wool like growth anywhere on their body then it is probably a fungal disease. The spores are present in the water most of the time waiting for a suitable host, and the attack is usually a secondary infection of a wound caused by rough handling or collision with a sharp object. Poor water quality or stress leading to a breakdown of the fishes protective mucous coat may also allow the spores to gain a foothold on the fish's body.

Provided they are caught in the early stages, fungal attacks are easily treated by adding one of the proprietary treatments to the pond water. Alternatively, the fish may be treated in a salt bath containing 5 grammes per litre of rock salt. Equally important is the identification and treatment of the primary cause of the fungal infection.



This poor Goldfish is suffering with fungus.

FASCINATING Fact

In a balanced pond the plants and animals complement each other because animals breathe in oxygen and breathe out carbon dioxide, whilst plants take in carbon dioxide during photosynthesis and give off oxygen. So all we have to do is keep the balance between plants and animals and everything will be fine.

Unfortunately it is not quite so simple because in order to have a visible display of fish in the pond we have to err on the side of over stocking which means that nature has difficulty in coping with the rapid fluctuations.

These are the problems

1. At night plants absorb oxygen and give off carbon dioxide – if you have too many plants the water becomes deoxygenated
2. Green algae are plants, so if you have a green pea soup for water it will be heavily deoxygenated each morning.
3. The solubility of oxygen is affected by temperature and the warmer the water the lower the solubility.
4. In the worst case scenario in a heavily planted, over stocked pond after a warm thundery night, fish may be left gasping for breath or dead on the surface. It is usually the biggest fish which succumb first.

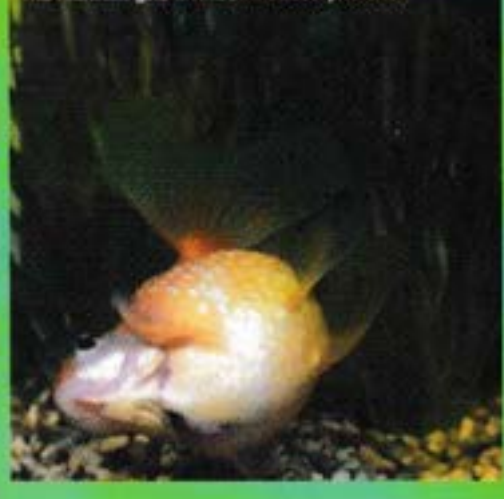
FISHY TAILS

To watch a fish struggling to swim properly can be distressing and it is often caused by a malfunction of the swim bladder. The swim bladder is the organ inside the fish which is responsible for balance, ensuring the fish remains correctly positioned in the water.

Malfunction can be brought about by injury, a sudden change in water temperature or an unsuitable food. In these cases the fish will usually recover once conditions return to normal.

In some fish however, particularly some of the fancy goldfish, like the Pearlscale it is the result of selective breeding and there is no cure. Fish with this condition can live fairly normally if confined in a coldwater aquarium, but the garden pond is tough for a healthy fancy goldfish let alone one which spends most of its time upside down.

This Pearlscale goldfish has swimbladder problems



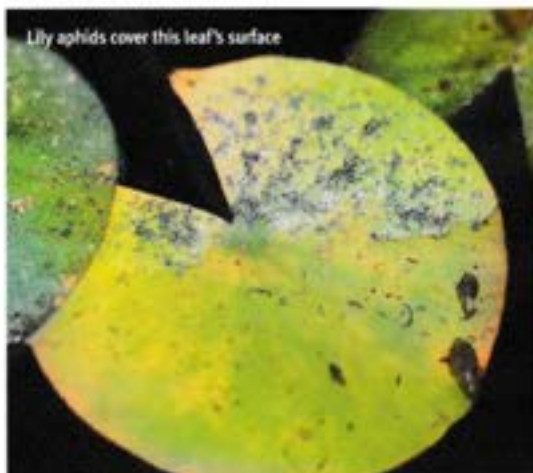
Water lily disease

Over the years the Water lily has become one of the most prolific, successful and beautiful plants in the pond. There are now hundreds of cultivars of nymphaea with flower colours from white right through the spectrum to one which is nearly black. However this success comes at a price and among water plants Water lilies are subjected to the ravages of more pests and diseases than any other water plant.

Aphids can cover flowers and foliage producing sticky honeydew which then attracts black mould growth. The Water lily beetle, a tiny dark brown beetle reproduces quickly, and its shiny black larva leave flowers and leaves in tatters. China mark moth caterpillars chew neat oval pieces out of the leaves whilst Caddis grubs will eat any water plant. Other leaf-eating pests include the False leaf-mining midge and the Pond snail.

Water lily diseases include the Water lily leaf spot which turns the leaves brown either forming brown spots or brown curled leaves. Water lily crown rot can reduce the crown and rhizome to a decomposing brown smelly mess.

Lily aphids cover this leaf's surface



Equipment Corner

How often does the word temperature come up in relation to pond management? Quite often. Feed wheat germ foods when the temperature is below a certain figure; don't feed when the temperature drops below X degrees, fish will not spawn until the temperature rises above Y degrees.

So what do we do when we need to know the water temperature? At worst put

your hand in the water and make a wildly inaccurate guess, or at best borrow the thermometer from the green house which is probably both inaccurate and unsuitable for the job in hand.

For a few pounds you can have a permanently available accurate temperature reading by investing in a floating pond thermometer which covers a range from 0°C to 50°C. Just pop it in the pond and anchor it to a nearby stone using the cord supplied.



Don't just guess at the water temperature - find out for sure with a thermometer

Laguna

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Are my Discus pairing off?

My shoal of Discus are all now over a year old and there seems to be more fighting than usual. Can they be pairing off and if so, can you tell me what to watch for in their behaviour?

T. Stevens, Sheffield

At a year old your Discus will certainly be arriving at sexual maturity and the fighting that you are witnessing may well be young males fighting for dominance as there may be mature females present. When observing your fish, watch for the following behaviour: Male to male are usually head on often locking mouths. Male to female cannot be mistaken as they display to each other particularly when swimming by they raise then bow their heads. The male often swims across the front of the female with body quivering and fins fully erect and spread to show his full size.



Tony Sault offers more help for the Discus keeper

DISCUS PROBLEM SOLVER

With or without plants?



Discus look at you as much as you look at them!

I am about to set up my first tank for Discus and I want to do the best possible for the fish but I am not sure whether to have a planted tank or a bare tank. In the past I have always had trouble keeping the plants alive but will the Discus be OK in a bare tank set-up?

P. Stevens, Bagshot

I think you have already decided which way to go, so I can assure you that the Discus will thrive in a bare tank, as long as the quality of the water is fine. You do not say how large the

tank will be, but to break up the bare expanse of the bottom you could compromise with a few well placed rocks or bogwood leaving clear areas between.

Little and often

I have a small shoal of young Discus that I am feeding on a varied diet. I understand from reading your articles that they need a good varied diet of high protein foods but how often should I feed them as I am afraid of overfeeding and fouling the water?

John Cummings, Birmingham

One of the oldest maxims applied to fish keeping is 'little and often' and this applies to all fish including Discus. Feed the amount of food that can be eaten in a few minutes, the correct amount will depend on the food and the size of the shoal of fish being fed. Young Discus, if fed in this way, will eat at hourly intervals but you must be aware that what goes in at one end ultimately comes out at the other causing more work for your filtration units. The trick is to strike a balance. In the past I have found that young Discus fed on average six times a day grow rapidly. This tapers off to twice daily when they are adults.

What are those worms?

Recently I have noticed when doing my tank maintenance that there are tiny worms like hairs that wriggle around in the water when I disturb the gravel. Are these dangerous to the fish and if so how can I get rid of them?

Mrs J. Martin, Durham

Usually, if you can see them with the naked eye they are not parasites and are very difficult to eradicate. Do not use a medication which will stress your fish. I've always favoured the natural way if possible. Can I suggest a small shoal of Clown loaches that are built for rooting around in the substrate and usually do a good job of eliminating unwanted fauna.

From Reef to Retail

Alf Nilsen interviews Paul Holthus, the Director of the Marine Aquarium Council, about its work and the ethics behind marine aquarium keeping.




Local fishermen collect ornamental fishes with nets at Orlango, close to Cebu in the Philippines. Traditionally a lot of fishes in this area were collected by the use of cyanide, which was equal to killing the fishes. Now MAC – and in this are also Thomas Heeger and the people that runs AquaEX, Inc. – try, with success, to teach the local fisherman that nets must be used!


PHOTO: ALF NILSEN

THE WAY FROM REEF TO RETAIL CAN cause losses among marine organisms caught in one way or another. Some shipments arrive in almost perfect condition with no deaths, while others show heavy losses. The reasons for this are many; delays at airports, poor packing, wrong temperature and many more. It is in the interest of all parties that quality is secured all the way "from reef to retail". An international organisation has been established in order to secure just this! The Marine Aquarium Council (MAC) carries out International Certification for the Quality and Sustainability of Marine Aquarium

Organisms from Reef to Retail.

In order to learn more about this important organisation and its work, let us hear what Paul Holthus, the Director of the Marine Aquarium Council, has to say:

 If you look back a couple of decades, how would you say the marine aquarium hobby has developed and in this perspective why and when was MAC formed?

 In the past few decades, the marine aquarium hobby made enormous headway in its ability to keep not

only aquarium fish in tanks but also to create mini-reef ecosystems. Along with this came more demand from hobbyists for live coral and live rock and an increasing variety of fish. Parallel with this development was increasing threats to reefs world-wide caused by a variety of manmade activities, ranging from coastal development, agricultural runoff, global warming, destructive fishing practices and over fishing, to name a few. In 1998, conservation organisations concerned about the coral reefs teamed up with the aquarium industry and hobby and public aquariums to establish the Marine Aquarium Council (MAC). The goal of MAC is



A large group of *Nemateleostis magnifica* in a holding aquarium at a wholesaler's facility in Manila, the Philippines. This is a very hardy aquarium fish that can live for a long time in captivity if given peaceful conditions and holes in the substrate where it can hide.

to help conserve coral reefs by setting standards and certification for the collection and trade in marine aquarium organisms. The concept behind MAC is that a responsible marine aquarium industry and informed hobbyists provide coastal communities with an economic incentive to manage their coral reefs.

In what ways will MAC benefit the marine hobbyists around the world?



A shipment of corals and other marine invertebrates from Tonga Island in the Pacific, arrives at the retailer's shop. Correct packing and transport are all part of raising the standards to the highest level possible.

MAC provides marine aquarium hobbyists with a variety of benefits. MAC Certification ensures that hobbyists know the animals they buy are healthy and not caught with chemicals such as cyanide. MAC Certification means hobbyists can be assured that their fish and corals came from reefs that are managed, from fishermen that earn a fair amount and from wholesalers who have the facilities and procedures to keep and transport these animals in the best of health. MAC allows hobbyists to identify retailers with trained staff, appropriate facilities and quality operations - and healthy animals. MAC provides outreach to governments, media, interest groups and the public on the benefits of a responsible marine aquarium trade and hobby. MAC reduces the need and likelihood for regulatory legislation by government.

How far has MAC reached with respect to obtaining its primary goals?

The first three years were spent establishing the existing MAC Standards and certification system. The system was launched in November 2001, and within a few months over 70 companies in 17 countries publicly committed to becoming MAC Certified as soon as possible. In 2002 the implementation of MAC Certification began, with collectors groups and companies in several countries doing the work to get certified. By the end of 2002, the list of MAC Certified entities included two collection areas and collectors associations and four exporters in the Philippines and two importers and four retailers in North

America. Fieldwork to prepare more collection areas and collectors for certification is well underway in the Philippines, Fiji and other Pacific islands, coming on line in Indonesia and Hawaii and being planned in the Caribbean. Major exporters and retailers in North America, Europe and Australia are also moving along in their preparations to become MAC certified. The first importer in Europe to be certified will likely be in the UK.

How can the hobbyists know that they are dealing with a "MAC-certified" shop?

The only official list of MAC certified companies is posted on the MAC web site at www.aquariumcouncil.org. MAC certified shops will have a MAC certificate they can display. It is important to realize that there will be a mix of MAC certified and uncertified animals in most shops, especially in the early years of MAC. So, when shopping at a MAC Certified shop, hobbyists should look for the tanks with MAC Certified organisms. Tanks with the certified organisms will have the MAC Certified label. Marine aquarium hobbyists can help increase these numbers by letting their local stores know that they are seeking and prefer MAC certified organisms as a means to verify the health of the organisms they purchase and the health of the reefs from which these organisms are collected.

How widespread is MAC around the World?

MAC has offices in the United States, the Philippines, Indonesia, →

the Solomon Islands and Fiji We have Board Members and partners in many more countries, including the UK, Norway, Spain and The Netherlands. Companies in 17 countries have publicly committed to becoming MAC certified. The MAC network includes over 3,500 people in over 60 countries and territories.

Please tell us a little more on the MAC Certification programme and how this can ensure quality from reef to retailer.

MAC brings together the industry, hobbyists, conservation organisations, public aquariums and government agencies. We spent several years working with these groups world-wide to develop the MAC Standards, which cover the management of the reef and fishery of collection areas; the collection, fishing and holding practices of collectors; and the handling, husbandry and transport practices of exporters, importers, wholesalers and retailers. MAC accredits independent certification companies to assess how well companies comply with these standards. Those that are in compliance with the standards receive MAC Certified status. MAC Certification thus provides hobbyists the means to identify responsible businesses with quality facilities and operations and qualified staff. Additionally, MAC Certification provides hobbyists the means to identify quality marine aquarium organisms that come from managed fisheries, are caught using non-destructive methods (i.e., the use of cyanide and other chemicals is prohibited) and are handled, held and transported in ways to minimise stress and optimise health. MAC Certified marine aquarium organisms are harvested by MAC Certified collectors operating in MAC Certified collection areas and are handled by only MAC Certified exporters, importers, wholesalers and retailers.

Where and how can the hobbyists learn more about MAC?

Information for marine aquarium hobbyists can be found at the "Aquarium Keepers" section of the MAC web site at www.aquariumcouncil.org. While on the MAC web site, individual hobbyists can subscribe to the quarterly electronic MAC News. Marine aquarium societies are also invited to join the MAC network to receive the MAC News and register their contact information in the MAC database. If they would like an information packet for their marine aquarium hobbyist club, they can e-mail info@aquariumcouncil.org.

The marine aquarium hobby and the collecting of reef organisms for ornamental purposes have been badly criticised by some environmental organisations. How does MAC get along with environmental organisations and how do you in short see the future of the marine aquarium hobby from the environmental point of view?

Many environmental organisations now realise that conservation requires more than protecting individual species and their habitats if it is to be successful in the long term. Protected



areas cannot be separated from their social, economic and political contexts, and they cannot survive indefinitely in a sea of human need, which prevails in the majority of the developing countries where marine aquarium collection occurs. Conservation must therefore be linked with sustainable development and livelihoods. A responsible and sustainable marine aquarium trade gives value to the coral reefs and creates incentives for stewardship and sustainable use. With MAC certification the hobby can become a positive force for conservation. For example, MAC certification requires reef management plans to ensure the collection areas and stocks of aquarium animals are used responsibly. These plans are developed by the collectors and other stakeholders, such as government agencies, and involve the local community and often result in fish sanctuaries as part of the reef management, because the fishermen themselves know the value of having 'seed areas' to help maintain the fish populations. Through this, the marine ornamentals hobby and trade provide a means for conserving and managing reefs, protecting them not only from potential impacts of the marine aquarium trade but also by other potential human activities.

Many thanks to Paul Holthus – the Director of Marine Aquarium Council – for this interview!

How can the individual aquarium hobbyist secure quality?

The Marine Aquarium Council is, from my point of view, a most important and positive organisation that without doubt will play an important and vital role in the future of the marine aquarium hobby! It will play an important part in the battle against cyanide catching of fishes. The fact that an organisation now wants to improve the quality of all parts of the ornamental industry is most welcome! However, even the individual enthusiast – in other words you readers – have a great responsibility for increasing the quality of our hobby. You must read about the organisms, about the reef biology and about aquarium techniques, and learn how to make the best possible captive conditions for your animals. You must learn how to react when a problem occurs. You must learn which organisms can best be kept together and which cannot tolerate each other, and you must know which organisms belong to the "hopeless" ones – those that are very difficult to keep alive and healthy in captivity for a longer period of time. Quality must be there in every part of the chain from reef to retail and further along to the marine aquarium enthusiast himself!



A beautiful angel fish in a storing tank at Land Mark Trading Corporation, Manila. Note the label giving information on collecting site etc.

Today's Surgery

IN ASSOCIATION WITH
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Some diseases seem to be associated with certain groups or species of fish. This month **Lance Jepson**, our resident vet, continues with those diseases which are associated with cichlids.

Fungal Infections

Saprolegnia infections appear as characteristic fluffy cotton-wool growths on the skin, usually secondarily infecting wounds. Treat with proprietary anti-fungal preparations, salt baths or maintain in a salt solution of between 1 and 3 g per litre. Internal fungal infections such as *Ichthyophonus* have all been recorded in cichlids. Such fish often show accentuated colouring shortly before death.



Continuing on with viral diseases associated with cichlids we have **Chromide cichlid anaemia**. This is another iridovirus that was described following an outbreak of mortalities in Orange Chromides (*Etoplus maculatus*). Infected fish were thin and pale. The gills and internal organs were generally very pale due to the anaemia.

Cichlid rhabdovirus, also known as Rio Grande perch rhabdovirus. Originally discovered as a cause of lethargy and death in the Texas cichlid which is also known as the Rio grande perch, this infection also caused 80% losses in Convict cichlids (*Archocentrus nigrofasciatus*) and Tilapia zill.

Ramirez dwarf cichlid virus is, as its



Deep or Altum Angelfish (*Pterophyllum altum*) are susceptible to a herpesvirus which becomes active when the fish are stressed. This may account for why they have the reputation of being very difficult to keep in captivity.

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name suggests, a viral infection of the Ram cichlid (*Mikrogeophagus ramirezi*). It causes uncoordinated swimming and muscle spasms leading to temporary flexion of the spine. Other signs include respiratory distress, loss of appetite and eventual wasting. Haemorrhages in the skin and eye can occur. The infection will take around three to four weeks to run its course with 40 to 80% of infected fish dying.

Deep angelfish disease is a herpesviral disease which appears to infect only the Deep or Altum angelfish (*Pterophyllum altum*). Outbreaks are triggered by stress and affected fish show loss of balance, spiralling behaviour and death. In an outbreak described, affected Altum angels were kept with normal Angelfish. It was not determined whether the herpesvirus was specific for the Altum angels or whether it was transmitted from the other angelfish species, all of which remained healthy throughout the outbreak.

Bacterial Infections

As with other fish groups, the commonest bacteria that cause problems in cichlids are likely to be those present in the fishes' immediate environment such as *Aeromonas* and *Pseudomonas*, although in brackish water species *Vibrio* may become important. Infections of abrasions and wounds with *Vibrio vulnificus*, on the hands of fishermen after handling *Tilapia zillii*, are well recognized in Israel.

Streptococcal infections have been associated with darkening of colour, haemorrhage, ulceration and exophthalmus (pop-eye) in cichlids.

One particular type of bacteria-like organisms known as Piscirickettsia-like Organisms (PLO's), have caused problems in Tilapia. These outbreaks caused mortalities of over 75% in some cases. Infected fish were darkened in colour, emaciated and had abnormal swimming behaviour. In some cases there was thickening of the gill tissues (gill hyperplasia) and internal lesions as well. Of interest to us as ornamental cichlid keepers is that in one study these PLOs were transmitted to *Nandopsis* (*Cichlasoma*) *managuense* that cohabited the same water, although infections were unable to be triggered by injecting PLO-infected material into a variety of other cichlids including *Amphilophus citrinellus*, *Pterophyllum altum*, *P. scalare* and *Cyphotilapia frontosa*. PLOs can be treated

with a variety of antibiotics.

Cichlids also suffer from Fish TB infections, usually due to either mycobacteria or Nocardia. These can be present as ulcerative conditions as well as a more typical one of weight loss and spinal curvature. The pancreas can be affected, possibly contributing to the long-term emaciation. However, compared to many groups of fish cichlids appear to be relatively resistant to mycobacteria.

Worm (Helminth) parasites

Probably the most important of these infestations is with the nematode *Capillaria*. These worms can be a cause of significant disease in cichlids, especially Discus. I have also encountered it in a Flower Horn (*Amphilophus hybrid*). Typical signs include hiding behaviour, darkened coloration and white, stringy faeces. These faeces are usually hooching with typical capillarid worm eggs.

Other worms are occasionally encountered, I have seen *Comallanus* in young Discus where the typical "brush" of worms protruding from the anus was visible. Like all intestinal worms these compete with their host cichlid for its food. Another nematode – *Atractis vidali* – has been described in wild Vieja *intermedia* and *Cichlasoma pearsei*. Tilapia *Oreochromis leucostictus* with heavy infestations of the nematode *Controcaecum* were stunted and lacked fatty deposits around the caecum. Many intestinal worms can be described as 'cichlid specialists'. Would you believe that wild Quetzal cichlids (*Vieja synspilus*) are host to eighteen different types of worms!

Thornyheaded worms (*Acanthocephalons*) are occasionally encountered. The series of spines on their heads that help them to attach can also easily damage the lining of the bowel. These worms have an indirect life cycle and it is usually, but not always, a fish in which the adult is found - intermediate stages are commonly in invertebrates but can be in "prey" species of fish.

Treatment for all the above worms is levamisole at 50mg/L as a single dose added to the water or piperazine at 2.5mg/g of feed, added to the food although this may only kill adult worms. Fenbendazole at 50mg/kg body weight added to feed, or by stomach tube if the fish is large enough. Fish are quick to refuse medicated food, so it is best to starve for 24 – 48 hours prior to offering such feed.

External (Helminth) parasites

The main external helminth parasite is the gill fluke *Dactylogyrus*. This can be a particular problem in the Ram cichlid (*Mikrogeophagus ramirezi*), Angelfish and Discus. Discus with serious *Dactylogyrus* infestations will often breathe through just one operculum. The gill fluke life cycle involves an egg stage that is relatively resistant to chemical attack and so repeated treatments are necessary for its control. Also useful is the dog and cat tapewormer praziquantel (Droncit, Bayer) as a bath at 50mg/l for up to 3 hours. This will also deal with tapeworms.

Skin flukes (*Gyrodactylus*, *Enterogyrus* and *Cichlidogyrus* spp.) are occasionally encountered and require the same treatment as gill flukes, although because they are live-bearing one or two treatments will normally suffice.

Algal Infections

Algal dermatitis in farmed *Melipotilapia zebra* has been described associated with deep invasion and persistent skin infections with *Chlorochytrium* and *Scenedesmus* spp of algae. Apart from the discoloration seen in the skin, the fish themselves appeared well. This was fortunate as treatment proved unsuccessful.

The best way to prevent fish from becoming diseased is to provide a healthy environment for them in which to live. **Stress Zyme** contains 300 million live beneficial bacteria per teaspoonful to help develop and maintain the biological filter



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If you want a challenge why not try your hand at Chocolate gouramis?
Given the right conditions they are not impossible to keep.



Chocolate delights

There are lots of other Anabantoids than just the 'bread and butter' species we see in the shops all the time. **Peter Capon** has been looking at one of the more difficult groups to keep in aquaria – Chocolate gouramis.

THE CHOCOLATE GOURAMI, *SPHAERICHTHYS* *OSPHROMENOIDES*, is one of the fish that many of us would love to keep but are afraid to try. It is not that this fish is vicious, far from it, but it has somehow gained the reputation of being beautiful but almost impossible to keep.

The Chocolate gourami was first described for science by Canestrini in 1860 and inhabits Sumatra, the Southern Malay peninsular and southern Borneo. After its initial discovery I can find no further references until in 1934 when Dr Heurle

found just two specimens near Malacca. In 1938 Tweedie, who was curator of the Raffles Museum, Singapore, found a quantity in Johore and the find's identity was confirmed by Heurle and Myers. It would appear that the creature is not over abundant in its native habitat. Sterba records its first introduction to aquarists in Europe as 1933. They are found in shallow, still or slow flowing waters. The waters are overgrown with aquatic and floating plants but have a few open spaces. There are two sub species *S.os. osphromenoides* and

S.os. selatanensis recognised by some authorities.

Subtle but pleasing colours

S. osphromenoides grows to 6 cm, has a compressed body which is shorter and deeper than most of the commoner gouramis. The first ray of the ventral fins are extended. The body is a chocolate brown or

slightly reddish brown in colour, often with a faint green caste. There are several pale yellow to white vertical bars, these bars are variable and irregularly arranged. The fins are brown with darker spots and in some specimens the anal fin sometimes shows a narrow yellow edging, whilst the forked caudal is usually clear but in ideal conditions can take on a brown colour. Males have broader fins with a point to the dorsal fin. Young fish often show a distinct longitudinal band.

When frightened or stressed, the colour pattern takes on an all over dirty grey, and if the water conditions are not to their liking they are just as likely to lie on their sides or hang dejectedly at the surface of the water. Even if introduced into perfect water conditions, they will take several days to settle down. Their ideal water conditions are soft (2 to 6 dH) and acidic (pH 5.5 to 6.5). Food needs to be live as they rarely touch dry foods. They have small mouths so the live foods should be carefully selected.

Four to choose from

The Chocolate gourami (*Sphaerichthys osphrenoides osphrenoides*) is an attractive fish that prefers a well planted

aquarium to give it a feeling of security. It is best kept in a species tank as befits this nervous fish which needs soft, slightly acidic water. Unfortunately, most shops will keep them in local water, so some care is needed to re-acclimatise them to soft water.

To initiate breeding, use peat extract and a pH of 6.3. Reduce the water level and raise the water temperature gradually over two days by 2°C. Then add some cooler water to the tank to simulate heavy rains. When spawning, the female will hold the eggs in her mouth for at least 14 days, although the fry may not leave until the twentieth day, during which time she does not eat, therefore she must be in prime condition.

Sphaerichthys osphrenoides selatanensis

Although aquarists appear to have known that this fish was different to *S. os. osphrenoides* it was not until 1979 that it was recognised as a different fish from normal Chocolate gourami. Males have a white fringe where the anal fin joins the

body and some specimens also show a whitish broken horizontal line on the body which only reaches a length of 50 mm. The males of this subspecies mouth brood the eggs for about 14 days. Water parameters are: pH 5.0 to 6.5, dGH 2 to 40, and a temperature range of 25 to 30°C. Males can be aggressive towards each other. Some authorities regard this fish as a distinct species rather than a subspecies and refer to it as *Sphaerichthys selatanensis*.

Sphaerichthys acrostoma

This species is restricted to the island of Borneo and is slightly larger at 90mm than the normal Chocolate. It is reportedly slightly less shy than *S. os. osphrenoides*. Its habits are similar but it is reported to have been brought to Europe in 1978. The literature suggests that the male broods the white eggs. Generally the patterning on this species is less attractive than on *S. os. osphrenoides* generally it is light brown to the body with darker horizontal bars from the mouth through the eye to the gill cover. The mouth is small and pointed, →

When buying Chocolate gouramis *S. osphrenoides* look for fish which are in reasonable colour and have a good body shape.



tropical marine coldwater & ponds plants reptiles & amphibians regulars

hence the common name of 'Sharp nosed chocolate gourami'. This fish is found in water with the following parameters: dH 0, conductivity 20 m, pH 7.6, and 32 °C. This pH is totally different to that recorded for *S. os. osphrenemoides*.

Sphaerichthys vallianti

This gourami was given its scientific name in honour of M. Leon Valliant who first

discovered it in 1893 but considered it to be *Ctenops nobilis*. Its natural habitat is south western Borneo in a tributary of the Kapuas river. The body shape is similar to *S. acrostigma* with larger eyes and a thicker mouth and SL of 6cm. *S. vallianti* also comes from soft acid water with a conductivity of 20 m, pH 5.3, and 29.5 °C.

The Chocolate gourami (*Sphaerichthys osphrenemoides osphrenemoides*) is an attractive fish that prefers a well planted aquarium to give it a feeling of security. It is best kept in a species tank as benefits a

nervous fish and needs soft slightly acid water. The other *Sphaerichthys* species may be occasionally imported and probably give rise to the differing opinions about their being relatively easy to keep. For instance the totally differing pH in the habitats of *Sphaerichthys osphrenemoides osphrenemoides* and *Sphaerichthys acrostoma* could easily give rise to differing opinions as to the fish's water requirements!



Whilst not the brightest coloured gourami, Valliant's chocolate gourami has a quiet charm all of its own.

Spawning success

Breeding has taken place on rare occasions in the aquarium and finally the rumours as to mouth brooding have been confirmed.

Courtship begins with the pair circling one another with fin stretching displays. This circling can go on for days prior to the actual spawning. Eventually the female breaks off from the circling, inclines herself head down, and starts to rock gently to and fro. If the male is not receptive and swims away, she will follow him circling and rocking until he is finally

persuaded. There then follows a typical anabantoid embrace, but it often takes several tries before eggs are produced. The female retrieves the eggs from the bottom and holds them in her mouth, the male will often assist in the retrieval and spit the eggs to the female.

Usually no bubble nest is constructed, although occasionally aquarists have reported spawnings when the eggs have been placed in a small bubble nest. Presumably these fish have only recently become mouthbrooders and can revert to an earlier breeding method. This would explain the often heated exchanges between aquarists over whether they are

mouthbrooders or bubble nesters.

The young leave the mother's mouth after up to 20 days at which time they already show a brown coloration with a yellowish ring around the body. At this stage they are about 6.5 mm and are able to take newly hatched Brine shrimp. Care should be taken to ensure the shrimps are completely salt free or fry losses will invariably occur. Within a month with good feeding they can reach a length of 1.2 cm.

Chocolates are far less prolific than the other aquarium gouramis with the usual brood being around 40.

Koi world



In her regular monthly look at the world of Koi, Bernice Brewster deals with Biosecurity

IN ADDITION TO VARIOUS WORK undertaken in the ornamental industry, my interests also include coarse fisheries and fish farming. As a consequence an assortment of journals and magazines related to these areas of the aquatic industry regularly drop through my letter box. Whilst browsing through a recent copy of Fish Farming Today, I came across an article which is applicable to all of us who keep fish. Perhaps it's an age thing but I can't help noticing that everything seems to need to be re-marketed, often with intriguing new titles. Fish health has also fallen victim to this trend and the concept of limiting spread of infectious disease is now termed 'biosecurity'. Technically, there is nothing new in the concept of biosecurity, but it does no harm to remind ourselves of what we can do to manage our Koi ponds and hopefully limit the spread of any infectious diseases.

Four important aspects of fish (Koi) management

Isolation - One way of reducing the spread of disease is by controlling the contact between existing Koi and any new purchases. This means installing some form of isolation system, which must be big enough to comfortably hold the largest Koi which you intend buying. Ideally the filter should be capable of providing water of a suitable quality for the Koi in the system, that is free from either ammonia or nitrite. Dissolved oxygen is also extremely important and the isolation system should be extremely well aerated.

In recent years, there have been a number of outbreaks of Koi Herpes Virus (KHV), if a Koi infected with the virus is introduced to a pond of naive Koi the result can be large numbers of mortalities. The problem is that the symptoms of the virus may not be apparent until Koi have started dying. One way of reducing the risk of introducing the virus into the existing Koi pond is by isolating any new Koi in a separate system and gradually



It may be a fancy word for an old concept but 'biosecurity' will help protect your Koi from disease.

raising the temperature over a period of days to about 23°C and hold this for two or three weeks before allowing the water to cool to the pond temperature. The reason for the warm water? The Koi Herpes Virus is most active at between about 20-23°C.

Hygiene - There is no substitute for good hygiene. Keep all mechanical filtration squeaky clean and ensure all drains on filters and ponds are purged regularly to remove the rotting mass of fish waste, bacteria and other micro-organisms that lurk there. All that organic material is a further drain on vital oxygen levels in the pond and encourages parasites such as *Trichodina* sp. (skin and gill flukes) to thrive on the Koi.

Health Management - The best form of health management, so far as I am concerned, is observation. After all, the reason why we have Koi is because they are so beautiful, so do we need any other excuse for spending time just watching

them. Taking the time to observe them when we feed them can help us to identify the Koi which is feeding more reluctantly or not at all and allow time to take action.

If there seems to be a problem with one or more Koi, always test the water first and eliminate this as the cause. If the water is not the problem then it may require more investigation, such as bowling the Koi for a closer look and perhaps taking a small mucus sample for examination under the microscope.

Increase the ability of the Koi to resist disease - How do we do this? Maintain excellent water quality and reduce stress by netting or handling them only if it is absolutely necessary. Give the Koi a good quality feed, there are now varieties on the market which include immunostimulants and other beneficial additives which can be used continuously.

Biosecurity? Well it may be a new term for an old concept but it is something we can all strive to practice.

Our readers Write

Dick Mills is 'in the chair' for your opinions.



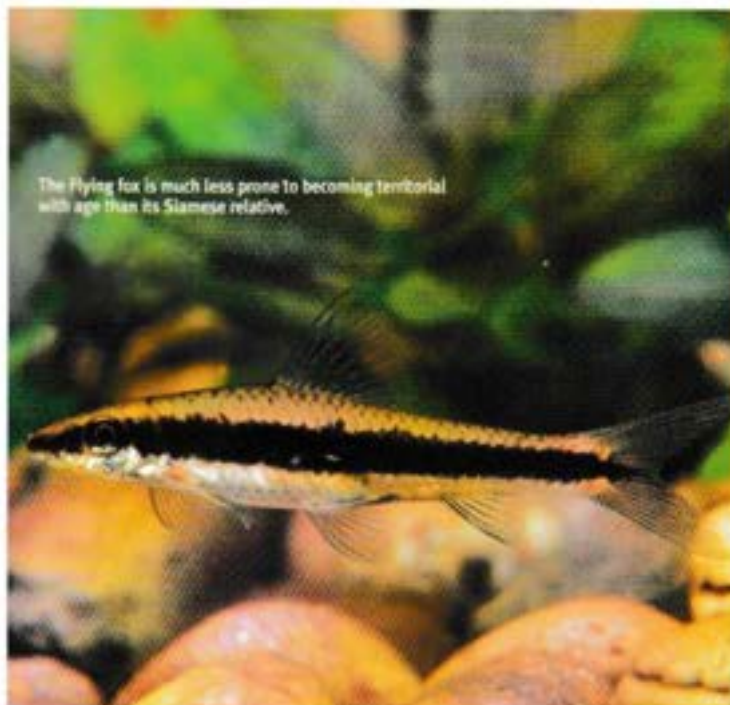
FISH DO FEEL PAIN.

Hardly had the ink dried on the first 'Points of view' (May issue, TFK) than a report appeared in the national press on the subject of fish feeling pain. You may recall that the scientist responsible for the earlier pain-denying report, James D. Rose, said that the confusion was between nociception and pain. He felt that fish felt no pain because nociceptors were not present. The latest report from the Roslin Institute in Edinburgh indicates that nociceptors are indeed present. Dr Lynne Sneddon said "What I set out to do was find pain receptors in fish like those in higher mammals and humans. If we, as humans, touch a hot iron we have a reflex to pull away immediately. This is down to things called nociceptors. For the first time, we have discovered that fish have them too. We also found that damaging stimuli lead to profound changes in their behaviour. This means they feel pain more like birds and mammals." Needless to say this has

reopened the battle lines between the Campaign for the Abolition of Angling and those in favour of the rod-and-line pastime. A humorous comment on the same subject was forthcoming in a letter to The Daily Mail which asked if anglers debating the issue were "making a rod for their own backs?"

ALGAE EATERS

Going a little further back in time (a month before this column began), Mrs Julie Lodge of Barnsley has written, "I read with interest about reader Michael Bennett's fruitless search for the Siamese Flying Fox (*Crossocheilus siamensis*), in the April 2003 issue. I too have a liking for these interesting fish. Indeed my Juwel Rio 180 tropical aquarium is home to three Siamese Flying Foxes and one of its closest relatives, the *Epalaeorhynchus kallopterus*. I have had my fish over a year and they are now 12.5 cm long, chunky and in very healthy condition.



The Flying fox is much less prone to becoming territorial with age than its Siamese relative.

FISHY TRAVELS

Having reminded readers that there are now much more advanced, convenient (and quicker!) ways to reply to views expressed in this column, I was delighted to get a swift contribution by e-mail from Ann Longford. She writes "Dear Dick, (the personal touch will get you everywhere, Ann!), in June Today's Fishkeeper you asked how far people would travel to buy fish? When on holiday I have looked around some big outlets and certainly the bigger the outlet, the larger the range of fish they have on show and if you are browsing, like I was, looking for that special fish, or seeing what's around at the moment this is fine.

If you are a beginner, like me, I find seeing too many fish confusing. I visit a retail outlet that is not enormous, not too far from home, where the owner has taken the time to talk to me about my new hobby. Later on, who knows, I may want to go further afield to make purchases but with all the things I need to learn about water quality etc. I feel safer buying fish from an aquarium shop that has water which is very similar to mine and I don't have far to travel to get the fish home."

Now there's a wise head talking. Building up a relationship with your local dealer has many advantages. He'll get to know what you're personal fish tastes are, advise on the suitability (or not) of any new purchases you may have in mind and, as Ann has already discovered, is keeping his fish under the same water conditions as yours. Hence, any stock that he has in store should (there's always a "should" around somewhere in fishkeeping) do equally well in your home aquarium.



The Two-spot mystus (*Mystus microcanthus*) is just one of many thousands of freshwater fish which make good aquarium inhabitants

They are a joy to watch as they spend many an hour chasing each other around the tank, but never fight, and they have the uncanny knack of avoiding bumping into the large artificial log (the tank's centre piece) without harm.

I am pleased to say that they live in harmony with the other tank inhabitants, having established their little territories. Favourite foods include flakes, catfish tablets, pellets, frozen bloodworm, algae (they are like little hoovers) and cucumber, which they adore. These fish are very comical to watch as they adopt many strange stances."

The Flying Fox, *E. kallopterus*, has been an aquarium favourite for many years and is often seen resting on a handy horizontal surface perched up on its pelvic fins. Some aquarists have found that the Siamese relatives can become rather territorial with increasing age, in a similar fashion to the

'Siamese sucking loach' *Gyrinocheilus aymonieri*. The quotation marks are used in the name, because it isn't a Loach but it does suck (rasp) off algae – two out of three for factual truth then which is an improvement on its earlier common name of Chinese sucking loach!

HOW MANY FISH ARE THERE?

Andrew Collins – another contribution by e-mail – poses another line of enquiry by asking "I would like to know how many freshwater tropical fish species are available in the hobby? I read somewhere recently that the figure was around 2,000 but I thought it would be substantially more than this."

Probably most fishkeepers would share Andrew's views on this too, but putting a definite figure to freshwater fish is difficult.

Taking one easy way out, I looked at the publicity 'blurbs' on a few books on my shelf for guidance. One said 20,000 genera/species whilst a heavyweight cichlid tome quoted 'around 1,500 species' – and these were just cichlid species or sub-species. Referring to the strictly technical sources, the fish population of the world – not just freshwater tropicals – comes out at anything between 25,000 and 40,000 and there are new species being added almost every day. Just ask our Editor, he's been doing his bit recently to discover more on his trip to Mexico.

Getting back to our Editor, he's unearthed another visual aquatic attraction – fish tattoos! As we like to think this is a 'family column' and we don't have a watershed (apart from at water change times!) we won't be accommodating any graphic details featuring Eels or globular-shaped fishes in any context connected with body parts! Just think, you'd have to be pretty broad in the shoulders (and thick-skinned) to have 'I love my *Pterygoplichthys duodecimalis*' proclaimed on your torso!

See you next month.

TV adverts

Do you tear yourselves away from watching fish to spend time in front of the TV? If so, then you can't have helped noticing the 'fish content' in those advertisements. First we had the Goldfish on a well-known credit card, then a 'drink like a fish' connotation is an expertly-made motoring advertisement (the thought of coming face to face with a Piranha on a roundabout hardly bears thinking about!). Add to these, various other 'spending/investing inducements featuring our finned friends and one wonders why more people aren't being surreptitiously 'brainwashed' into keeping fish! Have you spotted any different 'fish decorated' advertisements?

Contact Points of view

Have your say in the magazine! Send your letters to Dick Mills, Points of view, Today's Fishkeeper, TRMG Magazines Ltd., Winchester Court, 1 Forum Place, Hatfield, Herts. AL10 0RN, or e-mail derek@trmg.co.uk with Points of view in the subject line.

Floating Filters

Peter Hiscock looks at floating plants which can be functional as well as decorative.



Duckweed can get out of control in a pond but it is an excellent plant for mopping up pollutants.

To achieve a healthy aquarium through natural methods its inhabitants should be employed to provide a service. Corydoras can be used to continually stir the top layer of substrate and scavenge waste food, algae eaters and snail eaters have obvious uses, and shrimps can be used to keep plant leaves polished. The plants themselves can also be used to provide aquarium services, and no plants have a greater list of services than the floating plants.

Decorative & Functional

Floating plants are both decorative and functional and can be appreciated by both the fish and the fishkeeper. The presence of floating plants will provide hiding spots for surface dwelling fish that may otherwise become timid and stressed in bright open light. Trailing roots will provide hiding spots

for small fish and fry and may even be used by some fish species to build bubble nests.

Floating plants will also block out some light, which is sometimes beneficial for plants below such as many *Cryptocoryne* sp., *Anubias* sp., or *Microsorium* sp., which often do better in indirect or shaded light. Shaded areas are also perfect for many aquarium fish, which in nature may live amongst riverbanks or areas with overhead shade. These fish will show improved health and colour if they have plenty of hiding spots and areas of shade away from the bright artificial light of the aquarium.

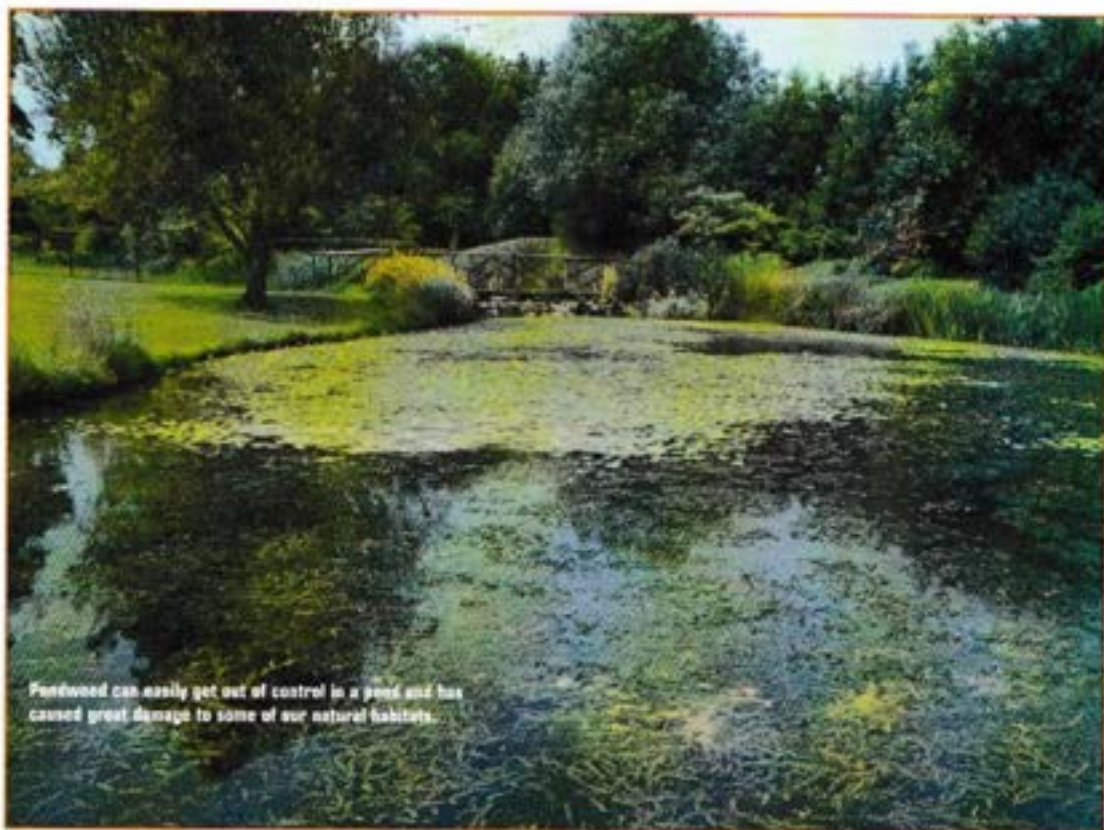
The other great benefit of floating plants is that they are well equipped to remove large amounts of substances from the aquarium water. Most worthy of note is the plants' ability to remove nitrates and heavy

Specimen plant

Star rotala (*Eusteralis stellata*) is an attractive plant which produces long thin leaves which form in a rotation around the central stem, when looked upon from above, the effect is vaguely star-like. The plant is demanding and requires medium-soft water, plenty of nutrients and CO₂, and strong lighting. Taking regular cuttings will create a more bushy plant and more side-shoots. As with a few aquarium plants, eventually this plant may simply stop growing through no fault of its environment.



Star rotala is a demanding plant but the extra effort is well worth the reward.



Fennelweed can easily get out of control in a pond and has caused great damage to some of our natural habitats.

metals, both of which are harmful to fish and, in large quantities, harmful to other plants. Floating plants ability to assimilate nutrients is so efficient that they are often used in industrial waste facilities and as filters in ponds. In the pond environment, floating plants are one of the best tools against the dreaded blanket weed. Although they are efficient nutrient removers, it is unlikely floating plants will starve other

plants of nutrients providing that the aquarium substrate is relatively nutrient rich. They will however starve algae of nutrients, which can be particularly useful in new aquariums. In a new aquarium, the other plants will not yet be established enough to compete with algae and the aquarium will be swamped with nutrients from an unmaturing and inefficient filter, nutrient rich substrate additives, and from

tap water, if used. Floating plants will take up the excess nutrients, and block bright light (which will be stronger than normal from brand new lights and clean cover slides), therefore preventing the all too common algal bloom in a new tank. Other plants will then have a better chance to become established.

There are a number of floating plants available, some of these are seasonal and

Problem control

Phosphate (PO_4) is a vital nutrient required by all plants, but as with many other nutrients, is only useful when present in small amounts. Natural waterways, or those unaffected by man, contain very low phosphate levels. These trace levels are just about enough for the native plants; any small excess is taken up by the plants and stored. The closed environment of the aquarium often experiences much higher phosphate levels and if left untreated, these levels will continually rise. When this occurs, plants will not be able to assimilate all the phosphates and the resultant rise will provide the perfect conditions for algae, particularly hair algae, to thrive.

Phosphate in the aquarium usually comes from at least one of three main sources, the original water supply, over fertilization, or most likely, waste organic matter. In my area (East Anglia) the tap water supply is very hard and contains high phosphate levels of up to 1-2ppm. To avoid algal blooms, phosphate levels need to be lower than 0.3ppm and ideally under 0.1ppm. As a result, I use pure reverse osmosis water with added minerals to provide the best source for plants.

However, even with a water source with zero phosphate, phosphate levels will quickly appear in an aquarium from the breakdown of fish food (digested or not) and plant matter. Vegetable matter such as shelled peas, lettuce and cucumber, which are often fed to algae eaters, are particular offenders for

phosphate release. In many cases, even a fully planted aquarium will not contain enough plants to assimilate all the phosphates from a well-fed fish population. The only solution is to use chemical media specifically designed to remove phosphates. General chemical medias such as activated carbon or those designed to reduce algae should be avoided as they may also remove useful plant nutrients. It is also worth noting that many phosphate removers are designed for long-term use and may not work immediately as a "quick fix". Phosphate removers are therefore best used as a preventative, if phosphates begin to appear then the media will have been used up, a sign that it has been working, and probably prevented an algal bloom.

Fancy that!

PHOTOS: BOB AND VAL DAVIES

Want to try your hand at keeping a Gecko? **Bob and Val Davies** suggest two species which anyone can keep.



Normal phase fat-tailed gecko.

LEOPARD AND FAT TAILED GECKOS ARE TWO popular species that are relatively easy to care for. Both are ground dwelling lizards which lack the adhesive lamellae which many other geckos possess for climbing smooth surfaces.

Several different colour forms

Leopard geckos (*Eublepharis macularius*) have been captive bred in considerable numbers since the 1960's. Selective breeding has produced hi-yellow, albino, lavender and tangerine forms. They are usually purchased as babies and become very tame, accepting food from forceps. Although the skin has raised spots called tubercles it has a velvety feel.

Specimens of the fat-tailed gecko (*Hemidactylus wallacei*) were until fairly recently mostly wild caught. Now, however, although some are still imported increasing numbers are being captive bred. As with many captive bred species various

morphs have been produced including albino, tangerine and leucistic. Occasionally a specimen may have a narrow, white stripe running down the dorsum. These are quite sought after. Imported adults may have a tendency to bite but babies and captive-bred specimens soon tame. Both species are clean reptiles in that they tend to defecate in one part of the vivarium so making daily spot cleaning easy. Leopards and Fat tails vibrate and wave the tail when stalking prey and prior to pouncing on it.

Breeding

Sexing is fairly easy. Males are larger, more heavily built with broader heads. Two

hemipenile swellings can be seen under the tail. Eggs of gravid females can be seen through the pale belly skin. A deposition site should be set up consisting of a small box and lid with a hole in the side and damp vermiculite inside. Although 2 eggs are usually laid, young and old females will sometimes lay only a single egg.

Incubation of Leopard gecko eggs has been studied for many years and it is known that the incubation temperature can determine the sex of the hatchlings. At a constant temperature of 26 - 27°C the majority of the hatchlings will be female. At a constant temperature of 32 - 33° the majority will be male. N.B. The key words are majority - it does not mean all.

Similar observations have been made for Fat-tailed geckos over a shorter period. Obviously at the higher temperatures hatching takes place sooner. Both species of babies possess an egg tooth on the snout to split the egg. The youngsters remain with nose or head out for several hours as they change to lung breathing. Do not hurry this procedure. Eventually the rest of the body is hauled out. Two

Today's top tip

In both species fat is stored in the tail so when buying either of these species, choose one with a plump tail.

CONDITIONS FOR KEEPING BOTH SPECIES

	LEOPARD GECKO	FAT TAILED GECKO
Distribution	Iran, Afghanistan, and Pakistan.	West Africa.
Adult size	20-25cm	20-25cm
Vivarium size	60 x 30 x 30cm for a pair, larger for trio.	As for Leopard gecko
Substrate	Dust free sand about 5-8cm deep.	Dust free sand 5-8cm deep with an area of more moisture retentive substrate topped with moss.
Décor	Rocks for climbing, cork bark shelters, Small water dish.	Rocks for climbing, cork bark shelters in both dry and more humid areas. Small water dish.
Temperature	Day 30°C hot spot, 20°C night Photoperiod 14 hours but see note below.	As for Leopard gecko
Humidity	Dry.	Provide a slightly humid area and give a light spray every morning. Ensure adequate ventilation.
Food	Crickets, locusts, occasional waxmoth larvae and morio all dusted with multivitamin/calcium supplement. Additional bits of calcium supplied in a shallow dish.	As for Leopard gecko.
Compatibility	Can be kept as a pair or a harem; 1 male to several females depending upon size of vivarium. 2 males will fight.	1 male to 1 or several females. However they seem to breed better as pairs.
Breeding	Reduce temperatures to 24°C day, 18°C night and photoperiod to 8-9 hours for 8 weeks.	Reduce temperature to 24°C day, 15-18°C night and reduce photoperiod to 8-9 hours for 8 weeks. Also withhold daily spray for this period.
Egg number	Up to 8 clutches of usually 2 eggs at 5-6 weekly intervals during the season.	Up to 6 clutches of usually 2 eggs at 6 weekly intervals.
Incubation	Vermiculite to water ratio 1:0.8. Temperature 26-33°C takes 55-65 days.	Vermiculite to water 1:1. Temperature 29-32°C takes about 70 days.

Note: Although both species of gecko are classed as crepuscular/nocturnal they will come out in the day and so the provision of a low percentage UVB fluorescent tube will be beneficial.

eggs laid at the same time do not always hatch at the same time, there can be as much as 48 hours difference. Upon hatching the most noticeable thing is the difference in colour and pattern compared with the adults. Normal baby Leopards have yellow with black and mauve bars; hatching Fat tails have a yellow-green ground colour with U-shaped patches of brown.

Hatchlings of both species can be kept slightly more humid than the adults for the first few weeks to avoid dehydration. Paper towel is a good substrate - it is easy to check food is being eaten, that droppings are produced and can be changed daily. A small water bowl will be needed and smallish live foods.



Hatchling 'normal' Leopard geckos look quite different from their parents.

...End Point

Kathy Jinkings sings the praises of a beautiful Rainbowfish.



Almost too good to be true, however, the coloration of Boeseman's rainbowfish owes nothing to man, it's nature at its best.

BOESEMAN'S RAINBOWFISH IS A FISH THAT looks as though it cannot possibly be natural. It seems unbelievable that nature should have produced a fish that has a front half that is bluish grey, and a back half that is bright orange, as though two different fish have been grafted together.

Nonetheless, this colour scheme is entirely natural. Only the males show this coloration; the females are simply blue-grey.

Aside from their striking colour, these Rainbowfish have many other characteristics to recommend them. At up to 12.5cms, they are not giants, and most people would have room for at least a trio. They are extremely active, especially in the upper reaches of the water, so these are fishes that can be relied on to produce an attractive display all the time. They are reasonably easy to spawn in captivity, which is fortunate for the survival of the fish; in the wild their extremely localised habitat has resulted in their being placed on the endangered list. From these few lakes (the largest of which is 7km long and 2km wide) the fish have been harvested heavily, mainly for the aquarium trade. It is estimated that up to a million wild fish a year have been exported, a heavy drain on such a small population reserve. The downside is that the young are very slow to grow, but

nonetheless anyone who takes the time to produce and grow on fry to be sold to aquarium shops will be reducing the pressure on wild-caught stocks.

These are easy to keep, thriving in neutral to hard water (in their natural waters the pH ranges between 7 and 8, with a dH of 9 to 19). Fishkeepers in hard water areas often have trouble keeping and breeding the many soft water fishes, so it is nice to find a beautiful, easy-to-keep, easy-to-spawn fish that will just love your water!

The aquarium should offer plenty of swimming space and not too strong a current. Fine leaved plants will catch the eggs that the fish spawn almost continuously, although to rear some you will need to move some of the eggs to a rearing tank. This is because the fry are tiny and slow growing. They will eat infusoria, of which you will need a good supply. In DATZ (8/1996) it was recommended that growth will be better if after the first four or five days the fry are fed liver ground through a brine shrimp net. Remember to pay special attention to tank hygiene if you use this method! The males will be fully coloured after about twelve months.

These fish have much to recommend them; beautiful and active, the fishes in our aquariums may well soon be the only

Boeseman's rainbowfish left. Try to buy tank-bred fish, as with such an easily bred fish there is no real excuse for continuing to deplete wild stocks.

FACT FILE

Name:	Boeseman's rainbowfish
Scientific name:	Melanotaenia boesemani
Size:	Up to 12.5cm
Aquarium type:	Community of active, peaceful fish or species tank.
Distribution:	Irian Jaya, Indonesia, in the Ajamaru Lakes region in Vogelkop Peninsula and the Altinjo Lake, 20 km southeast of Ajamaru Lakes.
Diet:	Live (or frozen) foods, flakes, freeze-dried foods.
Temperature:	24-26 °C