Today's Fishkeeper

OCTOBER 2008 £2.75

FROM BEGINNER TO ADVANCED

LITTLE NIPPERS

An essential guide to keeping sharks

CREATE A COMMUNITY

around Rainbowfish

BEAUTIFUL BUTTERFLY

Profile of a spectacular marine fish

PONDS

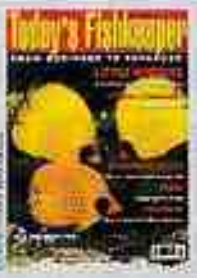
Preparing for winter

EQUIPMENT

How to select a Protein Skimmer

ALL THE NEW FISH:

Thai bettas, Peruvian tetras, Indian eels,
African puffers, Burmese danios, Chinese loaches



Designed & Published by

TRMG

TRMG Magazines Ltd
Winchester Court,
1 Forum Place Hatfield,
Herts AL10 0RR
Tel: 01707 275000
Fax: 01707 275050

Editor
DEREK LAMBERT
(01473 685852)

Group
STEVE MADDOX

Group Art Director
JON SLOANE ext.270

Production Manager
ALEX KEMPTON ext.275

Advertising Production
JANET D'SOUZA ext.224

Advertisement Sales Manager
BARRY JONES ext.231

Advertisement Sales Assistant
ANNE FALLON ext.232

Advertisement Manager
ALEX MACLEOD ext.201

Classified Executive
HELEN RICHARDSON ext.226

Advertising Production Manager
PAULA BRUNNER ext.230

Advertisement Director
CHARLIE WISE

Director
ANDREW STEVENS

Commercial Director
JONATHAN FELLOWS

SUBSCRIPTIONS
01858 438417

Colour Origination
DIGITAL CONCEPTS

Printed by
WILLIAM GIBBONS & SONS

Distribution
COMAG 01895 433601

Welcome

EDITORIAL CONTACT INFORMATION
Tel: 01473 685852
E-mail: derek@trmg.co.uk
Fishkeeping answers:
fishkeepinganswers@trmg.co.uk

I am a great sceptic when it comes to surveys and other such studies aimed at finding out what "social group" keep fish. Over the years I have heard so much twaddle about just who is the "average" fish keeper, so when I heard that a very well known company had commissioned an in-depth study into fish keepers I thought, "here we go again". The results are in and I have to say I am sorry for being such a sceptic. They match exactly what I have always thought - the only thing that connects all fish keepers is the fact that they are interested in fish! Having been to the roughest of council estates and the poshest of country mansions to look at beautiful fish tanks, I have always thought this was a hobby that transcends all social and economic barriers, and finally someone has spent a lot of money proving just that.

Free supplement

As our regular readers will know, the Tropical First time fishkeeper which is free with this issue of the magazine is a second edition. We took the decision to repeat this and the marine supplement (coming next month) because of the tremendous success these beginners guides have proven to be. Obviously they are not going to be useful for our long term readers, but new people are coming into the hobby all the time and need this basic information. It is a sad fact a significant number of people who start keeping fish fall in the first few months and drop out of the hobby. So anything which helps these new people be successful has to be a good thing - hence these guides.

If you are one of the long term fishkeepers who already have all this information at their fingertips, then please pass your copy of the beginners' guide on to a beginner. Where do you find beginners? Just about everywhere I have to say. I was on a plane flying back from holiday when the couple I was sitting next to were talking about how they were going to set up a marine aquarium when they got home. They had been diving on holiday and wanted to keep some of the fish they had been swimming with. Now in my own defence I have to say I didn't mean to take copies of the beginners' supplements with me on holiday, it was just that a couple had been left in my carry on luggage by accident. Anyway I gave them both the tropical and marine supplements so they could start off on the right foot.

The other place you will always find beginners is in your local aquarium shop. So you could drop your spare copy into them knowing it will find a good home.

Derek

Help is always at hand

Apart from the beginners' supplement, we also have a free e-mail and postal query service. These questions are answered by a range of experts in all areas of the hobby. In an emergency you are also welcome to phone the editorial office for help and advice. This number is always manned by an experienced fish keeper and most problems can be dealt with straight away.

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Just beginning in the hobby

Pat Lambert writes especially for you

This Apistogramma (A.cf. Pulchra) comes from very shallow water areas with a thick layer of leaf litter.

Are you thinking of setting up a new aquarium? Bio-tope tanks have been all the rage and quite a lot of nonsense has been talked about them and some ugly set-ups have been produced. If these were stage sets they would remind me of the witches' scene on the blasted heath in Macbeth! Take an Amazonian tank for example, would you really want to replicate the wild in your living room? Is this really what you want and can it really be done?

Themed tanks, however, where plants and animals all originate from the same river system can be set up to great effect but biotope tanks are definitely not for me. A group of the most beautifully coloured fish I ever collected were swimming in a sewage ditch and there was a dead rat on the river bank. I really don't think I'd want to replicate that.

Leaf litter and tree roots are home to many beautiful dwarf cichlids, what a mess of a tank you could create if you wanted to make these feel at home! Many of our tropicals have long been removed from their natural habitats being commercially bred in the Far East. So what's home to them?

At the end of the day a tank is not a natural home for fishes and what we create is an artificial environment. However with careful thought and planning, considering the needs of the species, taking into account its home waters as regards temperature, pH etc and the natural characteristics, such as size and disposition of the species we keep together, we can create a super themed tank in which plants and fish are in perfect harmony - well almost!

SUBLIMELY SMALL

Exclamation Spot rasboras are so small many other fish would take them for a tasty morsel.

Rasboras large and small are really among my favourite community fish. They really glow out at you when given the right conditions and are generally good natured fish. If you like miniature fish then the Exclamation Spot rasbora *Boraras urophthalmoides* which only grows to 2.5cm would be a good addition to a tank of miniatures. The exclamation mark is seen as a dark band running down the flank from behind the gill cover to just in front of the caudal peduncle where there is a dark spot edged in gold. A reddish hue suffuses the body and the fins are marked with red and black. This tiny fish with its tiny mouth can only eat small foods and flake should be crushed. Despite its small size it schools well with a community of small fish. I've not had any of these recently but I might go off to the shops and find some!

I already have another beautiful miniature Rasbora, the Neon rasbora which was featured in [illegible] Today's Fishkeeper March 2012. I have had a group of these 2.5cm long fish for several years now and they have proved to be very hardy fish, shining out from a tank which has slightly acidic, soft water. They show even more brightly than Neon tetras. The water in my area is extremely hard but we created a tank specially for these little beauties. My Exclamation Spot rasboras can go in with them after quarantining of course.

RING THE CHANGES WITH FILAMENT BARBS.

This juvenile filament barb is just moving from its brilliant baby coloration into its semi-adult colourless phase.

At this three stages in life through which this fish passes you would think you were looking at three different species. Young, three month old Filament barbs are very attractive - and brilliantly coloured. They are silver underneath and on the sides, golden on top. Deep black bars cross the body and the fins are brick red. If you buy this three months old youngster you will be very disappointed with the semi-adult fish in which all the black barring is lost and only one large spot on the caudal peduncle is left.Fins become greenish yellow and the silvery body is olive on top. However a further change will come in adult males,these turn into quite handsome fish in which the dorsal fin rays are extended into long filaments which give this fish its name.Some of these filaments are deep violet. This streamlined, fast moving fish grows to 15cm and needs a large tank with larger community fish. Tank size should be at least 450ltrs, for this fish is a fast mover to catch it if you can. It can leap right out of the water and travel some distance before falling back,so keep a tight lid on it.

DON'T BE WITHOUT THEM

Useful inexpensive items of equipment that have proved useful and can be found in my box of fish equipment.

Scraper and planter stick

This is a long plastic stick with a plastic scraper at one end which is useful for scraping algae off the sides of the tank. At the other end is a planting fork for bedding down new plants into the gravel or replanting those that have been dislodged.

Nets

You need two to catch a fish out as this causes less stress than chasing it around with one net.It takes a bit of practice to catch fish but you'll soon get the hang of it.The most practical size is the 10cm, very small nets are not much use in most situations.

Siphon tube

You will need a piece of non-toxic plastic tubing for emptying water and siphoning the surface detritus of the gravel when carrying out your weekly water changes,1.25cm diameter is best. Siphon tubes are available with a starter that starts the suction action for you and are probably the best for the beginner.

Stick on temperature gauge

These come in circular or strip form and stick on an outside corner of your tank. I have found these very useful. They indicate the normal range for tropical tanks and show you the unsafe zones at a glance.

Ammonia reader

This is a small disc that fixes on the inside of the tank and warns you of the presence of ammonia in your tank. A very useful gadget that also comes in small figures as well.

Whitespot treatment

Whitespot is fairly common in new fish as any fish under stress is likely to succumb and a move can be quite stressful. Treat according to the manufacturer's instructions.

Spare heater/stat

These do break or malfunction and they always seem to do it when the shops are closed. A spare one is an essential piece of equipment.

Battery operated pump

These are very useful if you have a power cut when the normal source of power is cut off. A power cut is not such a problem at this time if your tank is not overstocked.

Airline and airstones

Airstone can be connected by tubing to an electrically driven air pump and breaks up the air flow into tiny bubbles. These help increase the oxygen content in the aquarium and many fish love to play in the bubbles. It's always useful to have these for you may need to rig up a quarantine or isolation tank. (You have got a quarantine tank haven't you?)

Gravel cleaner

This is a suction type cleaner which removes detritus and other debris from the aquarium gravel.It is safer than siphoning and easier for the beginner to use.

Test kit for ammonia, nitrite, nitrate and pH

Several manufacturers produce good quality test kits. You can test the water for many things but these four are the vitally important ones.

Aquarium salt

Salt is a very useful item to have in your medicine chest for fish. It has long been used by fish keepers as an aquarium antiseptic. It is useful to have as a prophylactic treatment against infection of wounds. Salt is also useful for detaching leeches from fish.Fish should be isolated for treatment though, as plants and other fish in the community may not be salt tolerant.

Aquarium silicon sealant.

This is aquarium sealant NOT bathroom sealant. Very useful for emergency repairs to equipment and minor leaks to silicone tanks.

LOST FOR WORDS

Bristol shubunkins are a variety of goldfish developed by breeders in the Bristol area of the UK.

Andropodium: - In guppies the anal fin is modified into a rod-like structure called a gonopodium and this is used for the transfer of sperm from male to female. In half-beaks the anal fin is also modified for the same purpose but is a much more complicated structure known as an andropodium.

Blackwater extract: - A commercial preparation added to the aquarium to soften and acidify the water to mimic the soft acidic waters such as that found in Amazonia.

Filter bed: - The medium, such as gravel, through which water flows as part of the filtration system.

Free swimming: - This is a stage at which the fry have emerged from the egg and used up their yolke sac so that instead of hanging from surfaces they start to swim around the tank. They are not too steady at first until they get the hang of it. Livebearer fry are generally free-swimming at birth.

Lacustrine species: - These species live in lakes and are usually deeper bodied and larger than the same species which has lived in a stream habitat. One sometimes wonders if one is looking at the same species, but habitats have a great influence on the way a species develops.

Piscivore: - Many fish are predatory on fishes much smaller than themselves. Many livebearers are cannibalistic towards their own fry but piscivores are hunters who feed on other fishes who may not be that small.

Territorial species: - Some species claim an area of the tank as their own territory and guard it against all comers. These are frequently nesting sites but not always. Some territorial species are very aggressive even towards their own kind and may need to be housed separately, others only need a section of the tank that they can call their own and just chase off intruders. Some are only aggressive to their own kind when breeding.

Varieties: - These are fish that deviate from the norm and have been produced initially by accident or design and developed into strains from there. Hybridisation produces many varieties, however, these are no longer a true species.

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.

a) Manufacturers often provide free booklets about fish care.

b) Inexpensive books provide information on setting up.

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

THE WATER

1 **Testing:** Before introducing any fish to your new tank test the water for Ammonia, Nitrite and Nitrate. Tank water ready to receive fish should have zero readings of Ammonia & Nitrite and always 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.

2 **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.

3 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

4 **Stocking levels:** For freshwater tropical we recommend 10cm² of surface area per 1cm of fish.
Marines: for a fish only setup we recommend 2.5cm of fish for 9l of water and for Reef only setups we recommend 2.5cm of fish per 27l of water.
Ponds: to a maximum of 250cm of fish per 450l of water.
Measurements should be based on the optimum adult size of the species, not the size at the time of purchase. **NEVER OVERSTOCK.**

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

6 **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.

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

THE ROUTINES

8 **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.

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

10 **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, sulking or listlessness. See that the fish are eating well and that all are getting their share. If fish are in difficulties test the water.

The Rainbow Starts Here

Of the more recent species to be introduced *Melanotaenia praecox* is one of the most beautiful. At a maximum of only 5cm when fully grown this is the ideal fish for a community aquarium containing Guppies, Platies and other small to medium sized community fish.

Mary Sweeney creates a community around Rainbowfish

Rainbowfish are those wonderful natives of "down-under" that are such perfect community fish that it's easy to overlook them in the scramble for the rare and unusual. If ever there was a fish to make one smile, it would have to be a Rainbowfish. I don't think there's a fishkeeper going who would have a bad word to say about "bows". They are peacefully perky and easy going to the point where they make excellent diner fish, giving comfort and contagious courage to nervous tankmates. Rainbows are busy; they're seldom still, even eating on the run. All this, and I haven't even mentioned colour yet.

High-voltage colour

Yes, Rainbows are known for colour. When Rainbowfish are around, they are the red in red and they put the blue in blue. And then there's a small matter of iridescence. Photos will give you an idea of what a Rainbowfish looks like, the shape and the distribution of the colours, but that's where any similarity between the Rainbow and the photo stop. Put these fish in a tank that gets a bit of natural light and you'll know what I mean when I tell you I can't really describe their colours, I can only gossip about them. Well, enough bad ad copy, it's time for the facts.

Rainbowfish in nature

Rainbows are found in a wide variety of habitats throughout the aforementioned territories. The various species are found from rainforest bodies of water that would include streams, rivers, low and high

EARLY DAYS OF RAINBOWFISH

When Rainbows were first discovered, in the mid-1800s, the sole specimen delivered to the British Museum was thought simply to be a new barbyhead (silverside) and was called *Atherina nigrans*. You'll pardon me if I move quickly past the early history of the rainbows, simply because there isn't much else of importance to say.

It was Dr. Jerry Allen, while he was working at the Western Australian Museum, who discovered many new species of Rainbowfish and classified the Rainbowfish family, bringing order to their rankings. His seminal work, Rainbowfishes of Australia and New Guinea (T.F.H. Publications, 1987), showed the fish world that there was more to Rainbowfish than a few less-than-splendid Singapore-bred *Melanotaenia splendida*.

Happily, there are now over fifty known species of rainbow fishes in the hobby. There are six genera in the Rainbowfish family *Melanotaeniidae*, *Cairnsichthys*, *Chilatherina*, *Glossolepis*, *Iriatherina*, *Melanotaenia*, and *Rhadinocentrus* and there are 53 species. *Melanotaenia* is the largest genus with about half of the known species of rainbow fishes.

Rainbows were slow starters in the aquarium hobby — mostly due to lack of availability outside of Australia and New Guinea — they really didn't take off until the jodos. The range of rainbows is huge, encompassing northern and eastern Australia, New Guinea, and some of the outlying islands. Besides the geography, Australia is not well known for its open-door policy when it comes to exporting its wildlife, so it took a while for a captive breeding programme to catch on, but now healthy and beautiful rainbow fishes are easily acquired from any well-stocked fish shop.

altitude lakes, creeks, swamps, the blind end of a river that forms a stagnant pool (more colorfully known as a billabong in Oz), even brackish waters and mangrove swamps. Some like the pool at the bottom of the waterfall. Some are from still waters and there's even one that lives on an agricultural plain that sounds a bit like the Fens, except that it's in Indonesia.

Pseudomugil gertrudae is one of the smallest of the rainbows found in the hobby. It grows to only 3cm and is a bright and lively fish for a small fish community.

Melanotaenia herbertaxelrodi grows to a maximum size of about 9cm and will be happy in a community with medium to larger fish. A group will act as dither fish for more timid species and help to bring them out of hiding.

This would make them the ideal aquarium fish, right? You bet.

Rainbows in the aquarium

Even though there are some species that inhabit brackish environments in the wild, in the aquarium they would be your good, clean tap water kind of fish. To be fair, they do prefer mostly soft, slightly acidic water, but all things being equal, choose the best water for any of their many types of acceptable tankmates. It's my opinion, that the best kind of fish is the kind that does best in the water that comes from your own tap. Sure, remove chlorine and chloramine if you have it, but other than that, there should be no advanced water chemistry involved for the home hobbyist.

WHAT IS CHLORAMINE?

For those who haven't encountered chloramine yet, it's rather nasty in that it is a mixture of both chlorine and ammonia. The chlorine off-gasses as usual with aeration, a dechlorinator, or just simply time, but the ammonia requires the use of some zeolite or some other ammonia remover prior to introduction into the aquarium, especially if there are fry or other delicate fish in the aquarium to which the chloramine-treated tapwater is being added.

'If ever there was a fish to make one smile, it would have to be a Rainbowfish'

'they are the red in red and they put the blue in blue'

A beautiful male *Glassolepis incisus*. At 15cm this is one of the very biggest of all the Rainbowfish.

The minimum tank size that I would aim for rainbows would be 45 cm, longer is better. Avoid using a high tank at the expense of length. Rainbows are mid water swimmers and as I mentioned earlier, they're active swimmers. They really appreciate the room. As the maximum length of a rainbow is no more than 12 cm, you could safely keep a group of nine or two males and three females in the 45 cm aquarium.

Generally a dark substrate is advisable, as the colours are more pronounced over a dark bottom.

Do use plants with 'bond. They are peaceful with plants, so feel free to make this a heavily planted show tank. The choice of plants is varied, and really depends on what you can grow well. I've rarely been disappointed by Amazon sword plants, especially if the top of the aquarium is open, and there is room for the plant to grow up and out of the tank...down the wall, and across the floor...flowering all the way, which it will if it's happy. Light and fish in water seem to be its favourite things.

The filtration does not need to be sophisticated for these fish. Water changes are better than relying on an over-sized power filter. Harking back to the Amazon sword, if you just use a sponge filter and leave the top of the aquarium open for the plant to grow towards, you will be topping up the tank frequently, so don't forget to remove some water as well, actually doing a water change when adding water to the aquarium.

FAVOURITE FOODS FOR RAINBOWS

Rainbowfish are avid eaters. They will take every prepared and frozen fish food that they can get into their mouths. Their biggest problem is that their mouths are not so big. Keep this in mind and if you're going to condition them on earthworms (which is a great idea), chop up the worms. Or better, use bloodworms.

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Breeding Rainbowfish

Rainbowfish spawn freely. Given two mature fish of opposite gender, it is unlikely for them not to spawn. Well-conditioned rainbows will scatter eggs, a few a day, among the plants. When the rainbows are in spawning mode, you may want to add a clump of java moss to the tank, as this makes it easier to collect the eggs for hatching in a special tank. Some people make a "spawning mop" out of yarn. It is designed a bit like a mop head, and the eggs are easy to collect from the yarn fibres.

Rainbowfish usually spawn first thing in the morning. The males display with extended fins and high colours. The iridescence is especially intense on displaying male Rainbows. The females are duly impressed with this show and can bend into the plants where they release their eggs for the males to fertilise. Fortunately, rainbows generally are not avid egg-eaters.

An egg from Glossolepis incisus. This will take about 10 to 14 days to hatch.

Raising rainbow fry

The development of the egg into a rainbow fry takes about two weeks. This is a long wait for a hobbyist keeping for fishes, but it has done much for the expansion of the Rainbowfish hobby. Rainbowfish eggs are tough and do not degrade if handled with reasonable care. The length of time between the appearance of the egg and the hatching of the fry is ample for Rainbowfish hobbyists to mail the eggs to like-minded people even on the other side of the world.

A plastic shoe box filled with green water and a bit of java moss is a good hatching tank for these eggs. There will be food for the fry when they need it and the eggs will be safe and accounted for in the small container. Keep a culture of green water available to add to the shoe box if the water starts to clear. Very tiny amounts of fry food can be offered, but be careful about water quality.

When the fry are about a week old, you can start newly hatched brine shrimp and finely crushed flake foods. After this, raising the fry is a matter of keeping their bellies full, their water clean, and their aquariums large enough that they can spread out and grow to their maximum potential. ■

Q&A Tropical

BROUGHT TO YOU BY NUTRAFIN & FLUVAL

Star Letter

Murderous Firemouths

Firemouths are territorial cichlids and require roomy tanks if they are to thrive and spawn in an aquarium.

Can you please give me some information on Firemouth cichlids. They are a really attractive fish and I added 4 to my community aquarium. They appeared peaceful at the beginning but since then they have wiped out 3 Clown loaches, 2 Zebra loaches and 3 Pearl gouramis. Although the male cichlid has the occasional chase with my two large Angelfish they seem to be peaceful with the rest of my fish (5 Zebra danios, 3 Rosy barbs, 1 large Swordtail, 1 Pleco, 1 African whiskered catfish and 2 small Aspidoras). My tank is 3ft long and is well planted with plenty of hogwood and caves. Will I have any more problems with fish deaths or should I put my losses and take these beautiful fish back to my dealer?
Peter T Green, Dublin.

I agree that the Firemouth cichlid is a very attractive fish. Indeed as are the rest of the Thorichthys genus. In general they are peaceful fish, but they are territorial cichlids as well, so when they want to make some of the tank their own, they will chase other fish out of their territory. Even if your tank is of good size, I think you had too many fish of different varieties. When you are setting up a tank, you have to ask yourself if these fish will live together. If I don't know the fish will live together I would not mix Africans with Central American or Asian fish. This makes it more like a fish shoot for, I do not think you should give these sensitive fish back to the dealer, better to get another aquarium to put these or the other fish in. If you can't do this, then I think you have to make a choice, the Firemouths or the other fish. The Rosy barbs and the Danios are not looked upon as dangerous to their territory and will not be harmed. Your tank seems to be very good, well planted with plenty of hogwood, this is perfect for the Firemouths.
Alf Stahlberg

What is this catfish?

I have two Synodontidae cats but I do not know what type they are. I have looked at every single species on www.fishbase.org and it does not match any of the pictures on that site. My local shops cannot tell me what they are either. They are a dull grey colour with largish black spots on them. I don't think they are fully grown yet but they are already 10 - 12cm long.
Phil via e-mail

Trying to identify your Synodontis is almost impossible from your description. There are a number that would fit the bill and the best I can reply offer is a fairly recent book in the Aqualog series called Photo Colletion No 1. It covers many of the African and Asian Catfish species, including a comprehensive coverage of Synodontis. I have looked through my copy and this is a list of possibilities: - S. congicus; S. decorsei; S. katangae; S. longirostris; S.nigriventris; S. notatus; S. nummifer and S. ocellifer. If you can send in more defined description, such as the approximate number and size of spots, whether they are uniform in size over the whole of the fish, does the fish have glass or flattened barbels? Best of all would be a picture. Sorry I cannot be more helpful.
Ian Fuller

Having problems? Then let our panel of experts solve them for you. *Today's Answers* is our free reader service. Just send your question by letter or e-mail and we will forward it to our panel of experts. Everyone receives a reply regardless of whether we publish them or not.

Are my Pearl gouramis killing my Guppies?

Q I have a 115 lt tank, with real plants, bogwood, three caves for my cave dwellers, clay and gravel substrate, one light tube and external filtering. It is stocked with various Tetras and Rasboras, a male Siamese fighter, a pair of male Pearl gouramis, various livebearers, a Redtail black shark, Khuli loaches and a Sucking loach. I have been concerned recently about a lot of Guppy deaths since I added the Pearls a few weeks ago. All the dead Guppies had very badly nipped caudal and dorsal fins. The male Fighter also has nipped fins. Before I return them to the store I wanted to make sure it was them as I have really grown fond of them as they have a real character and it would be a shame to lose them. Do you think it is them but I don't want to make the Guppies and Fighter suffer.
Jake O'Farrell

A There's a fair chance the culprits ARE the Pearls because of the coincidence of their arrival with the trouble and also because all Gouramis can be territorial and quite aggressive. But there are other candidates so a bit of detective work would be worthwhile to confirm your suspicions because I think the 'Shark' is also a likely candidate for eviction.

Often Bettas and Gouramis fall victim to the fin-nipping attentions of small fish like Tetras and Rasboras. Also, with two Pearls in the tank I might have expected them to confirm their aggression to each other. However they do like to establish their territories in the tank but normally they will nip at the flanks of other fish, rather than at the fins.

Always bear in mind that Gouramis are territorial and thus aggressive fish and not the 'peaceful inhabitants' that so many books suggest. But in this case a bit of careful observation should identify the homicidal inhabitant of your tank - after all we set up aquaria to observe the fish in the first place, don't we!

Strange behaviour

Q I was wondering if you could help me with a query. My *Geophagus brasiliensus* (about 7cm long) has taken to herding my selection of corys round my 1.2m tank. He (not necessarily but I just call it a he!) only does it when the larger fish come out of hiding, like my Pleco and large *Symphysodon aequifasciatus*! Do you have any idea why he is doing this?
Phil Mitchell Via e-mail

A With regard to your *Geophagus brasiliensis* herding Cory's around the tank is something that I have not come across. I could well believe it if you had said that the Corys were closely following the Geophagus, both cichlid and catfish search in the substrate for food. The fact that the cichlids can dig deeper and disturb more substrate would encourage the Cory's to closely follow them in the hope of some food without the hard work.
Ian Fuller

Today's Answers Expert Panel

Alf Stalsberg Cichlids.
Pete Liptrot General questions on tropical fish and oddballs.
Andrew Caine General questions on Marines.
Ben Helm General questions on Coldwater plus equipment and technical advice.
Lance Jepson Health.
Tony Sault Discus.
David Armitage Anabantids.
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 Aquakeeper*, TFH(E) 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 still have to base your messages on to them by snail mail (we will tell you when this happens) but otherwise you should receive a reply to your questions in a few days rather than weeks. Send your e-mails to: fishkeeping@interpublishing.co.uk

Should I have a little shoal of Tinfoils?

I've just bought 2 very nice Tinfoil Barbs (7cm). I have them in a tank with Angels, Clown loaches, Pearl gouramis, Platys, Rosy barbs and a few other small fish. I have these fish in a 1.2m tank. I was wondering if they would be OK as a pair or should I make a little shoal as I've heard that they can become aggressive if singles out.

Peter via e-mail from Dublin

Tinfoil barbs grow 30cm long so they're by no means a "little shoal". Tinfoils need a 2m tank to be happy so my advice is that your tank is too small. All the Tinfoils I keep were placid community fish which did not harm any of their tank mates. Just they were in a 2m long tank

Jamie Lambert

At 30cm when fully grown, there is no such thing as a "little" shoal of Tinfoils.

How can I get my pH down to 6.5?

I wonder if you could help. I have a planted Jewel Rio 180 mature set up with Discus, the pH is currently 8.0, nitrate 10ppm and nitrite 0 ammonia levels are 0. I would like to lower the pH level to 6.5 but I believe using phosphate buffers such as Proper pH would harm my plants which are nicely settled. What would you suggest using?

Thanks for your time and keep up the good work, your magazine got me back into the hobby after 20 years and conquered my fear of keeping Discus.

Andrew Hall

It sounds as though you have conditions in your aquarium just right for your fishes. Rather than use aquarium additives to try to control and reduce your water's pH, why not use CO_2? This will serve two purposes. Firstly, it will significantly improve the growth of your plants (I was a CO_2 sceptic until I actually installed it myself) and is very easy, safe and cost-effective to use. Naturally, the use of CO_2 will also have a downward pressure on the pH of your water. In fact, the dosing methodology takes into account your aquarium's volume and it's KH (buffering capacity) so by following simple guidelines you can control your pH very easily. Give it a go, you'll be amazed by how your plants respond.

Ben Helm

Firebelly toads changing colour

I have a 45 l vivarium with a fountain/waterfall system, an extra filter, bogwood, live plants, gravel and stones and about 10cm of water that is cleaned often. I feed them a diet of crickets, maal worms, earth worms and beetles. I have had the toads nearly two years and recently they have darkened from their usual bright green to a nearly black colour. They seem happy enough and have still got a good appetite and a bright belly. I am just slightly concerned in case they are suffering. I wouldn't like them to end a horrible death like two other of my toads that escaped through the cable openings.
Jake via e-mail

The colour of Firebelly toads can vary depending upon temperature and surroundings. Many will darken their colour if the substrate in their vivarium is quite dark, in this way they are camouflaged. When they are cooler they will also darken the colour of the skin. What is the ventral surface like? If this is still a bright red/orange and black then they are OK. Are you dusting their food especially the crickets? These are low in calcium and high in phosphorus. They should be dusted three times a week with a good multivitamin/calcium supplement - the best on the market is Nutrobal - a bit dearer than others but it is very fine so only a pinch is used. If the frogs are reasonably active then they will be OK.
Val Davies

Marine

Problems with an encrusting sponge

Q I have kept corals in my 1.2m reef tank for approx 2 years now, and have had my ups and downs like most reef keepers. I keep a Xenia within the tank and I believe just over 2 months ago had something growing on it. It looks like some species of sponge and is clear in colour. Firstly I thought that it was another coral growing on the same rock, but I believe this is a problem more than a bonus if you get my drift. I have enclosed a picture and would like you to identify it if possible. I have put the question to many reef keepers' forums but no one seems to be able to answer the question.

Paul Hallissey, Maidenhead.

A What you have is indeed a mix of bonus and problem, you have a sponge of the genus *Cribrospongia*, probably *C. zeno*. It is a fascinating animal, beautiful in its own right but one that should be given due respect. It is an encrusting sponge and toxic to corals and many animals. If you let it get out of hand then it has the capability of encrusting your whole aquarium. The worst case I have ever seen was a 2.5m aquarium covered in the stuff. You have two choices , kill off the sponge or contain it. I hope you choose the latter as it is an animal in its own right and one that will enhance your aquarium.

Firstly, to my knowledge there is no animal available in the aquarium trade that eats it, so natural control is not an option. If you rip it off the rock you will always leave small parts of the animal behind that will only grow back. The way we cleared out the aquarium here was to inject it with hydrochloric acid. This was done in sections at a time to minimise sponge toxin release, and avoid pH problems with the acid. Six months later a small piece was left and contained. You must employ chemical filtration (such as carbon or polyfilter) for 24 hours after each session when such procedures are initiated, and only one session per week. If you are going to use this acid then you must get professional advice in both use and the correct storage method, as many laws exist and you must adhere to these for your own and others safety. This is most important where children are in the household.

To contain the sponge simply cut off outer sections using a Stanley knife blade which is then thrown away responsibly after each use. This way you will enjoy a truly fascinating animal without problems. However the coral to which it is attached may or may not open up due to the toxins of the sponge. You must remove pieces of this coral and attach it to another rock in your aquarium with elastic bands or fishing line. Shortly it will attach and you will have a nice coral along with a bonus sponge. What a wonderful hobby this is! This is what marine keeping is about for you don't know what is waiting around the corner. Keep a positive attitude and a problem solved can be very enjoyable experience.

Star Letter

Coral beauty health problem

Q I have a Coral beauty dwarf angel in my fish only aquarium, a lovely fish which has been quite ill. At first his scales around the dorsal fin seemed to stick up. I diagnosed this as flukes and treated it with Cupramin. All that happened was that the scales still stuck up, but now there is a reddish inflammation around the base of the scales. All the other fish in my system look very healthy and the coloration is superb, which I think is a direct result of adding vitamins to their diet. Could you shed any light on what is happening to my angel which incidentally is feeding very well.

John via e-mail

This is how a Coral beauty should look in the peak of health

A It is extremely difficult to diagnose with accuracy any disease problem without photographs, but we can make an informed diagnosis and hopefully treat the poor fish successfully. What I think has happened here is that flukes were present and caused the scales to rise, and you killed them off with the treatment. However, as a result of the damage caused by the flukes, bacteria have invaded the fish causing a secondary infection, which needs to be treated. One of the best treatments for this has to be Metafix, which is a great all round bactericide and is based on tea tree extracts a well known bactericide, and can be used in reef aquariums. Turn off your skimmer when using this treatment or you will empty your aquarium on the floor as the skimmer goes berserk! The fish eating is a great sign that you will be successful in the treatment.

Wrong purchase

Are there any centres on what marine animals can be imported for the aquarium hobby? I purchased a brightly coloured Nudibranch which later died. Now I know it will only eat one type of food and was doomed to die from the moment I purchased it. Surely this sort of action should not be used in aquarium shops?
Jane Reid via e-mail

This leads me to an area that blights the hobby every day, the importation of animals that are unsuitable for the home aquarium and animals with a very poor survival record, along with those that have no chance of surviving at all. The animals we are talking about are fish which will attain a size of well over 15 cm which are too big for most home aquariums. Shrimp gobies, fire mantis shrimps, you name a blue cheek goby, Valenciennea strigata, all which 95% will die. Gonodactylus sp. and Odontodactylus sp. all corals, non photosynthetic Gorgonians, Feather stars, and many species of brightly coloured Nudibranch to name but a few. All are doomed.

Are there any laws to stop this from happening? No, is the answer to that. Endangered corals and other animals have protection from CITES, but nothing on poor survival animals. Many wholesalers and retailers are members of DATA and follow a code of practice which does not contain anything about poor survival. I really think this area should be looked at. In the mean time retailers and customers should research their potential purchases carefully. If they stopped buying them, then the importers would stop importing them and the animals concerned would stay on the reef where they belong until we have figured out how to keep them in captivity.

This beautiful creature is a nudibranch belonging to the genus *Chromodoris* but due to its specialised diet it is impossible to keep in captivity.

Star Letter Prize from AQUA MEDIC

Modern Coral Reef Aquarium books, written by Alf J Hilsen and Svein A Fosså are regarded as probably the most authoritative series of books for the marine hobbyist in years.

as Aqua Medic, the leaders in Marine Aquarium technology, is pleased to present whichever of the three volumes, normally £55.00 each – desired to this months star letter.

Adding new stock to a pond

I currently have a 6819 lt raised bricked pond. It is home to a 25cm Sterlet, a 22.5cm Goldfish and a 15cm Koi. Would it be a sensible idea to add a 12cm Grass carp and a 10cm Golden orfe? Which other species could the pond hold. Its measurements are 3m x 1.6m x 2m deep. The pond does not contain any vegetation although I am installing a vegetable filter over the next few days to keep the algae down
Scott Hodson.


Golden orfe are much happier when kept in a shoal.

I am presuming that your pond has a filter and pump to suit. If so, your pond has the space to hold far more fish. The wonderful thing about keeping ornamental pond fish is that they are all compatible, so if you like the look of a fish, then there will not be a problem with any aggression or antagonism from other fish. You sound quite cautious in that you do not want to make an incorrect selection of pond fish; fortunately, this is not possible. Grass carp would be fine, but you might find it difficult to find them as regulations have increased over their sale and stocking. Also, rather than considering a single Orfe, you should consider buying a shoal of small fish as these are quite gregarious fish and seem to prefer to be kept in numbers. You should also consider increasing the numbers of each of the varieties you already have. But take care when adding fish that you do not add too many fish at once, as your filter will have become accustomed to handling the relatively small amount of waste that your few fish are currently producing. Only increase your existing stocking levels by 20% each week to allow your filter to adjust. You will also find that as your stocking level increases, your fish will become bolder and faster at feeding time as the competition for food increases, making feeding time great fun.
Ben Holm.

Too many Goldfish?

My pond is being over run with baby goldfish. Loads survived from last year and now I have even more from this year's spawnings. I was going to net the small ones out and release them into a natural pond just down the road, but a friend (the person who gave me a copy of your magazine) said it was illegal to do this and might harm the wildlife. Is this true?
Andy via e-mail


It is possible for the numbers of goldfish in a well planted pond to build up to dangerous levels.

Your friend is quite right. It would be illegal to release them into a natural pond and they could harm our native wildlife. No fish kept in a garden pond should ever be released into a natural habitat. If you have too many goldfish ask your local aquatic outlets if they want them. Many shops will take them off your hands in exchange for some fish food etc..
Derek Lambert


TFSH 86
TFSH 86
ORANGE ANEMONEFISH
Amphiprion sandaracinos
26°C
14cm

Socolof's bleeding heart

The Bleeding heart is usually included in aquarium books and yet it is actually Socolof's bleeding heart which is seen for sale in aquarium shops.

Socolof's bleeding heart is far more commonly seen in aquarium shops than the true Bleeding Heart tetra (*Hyphessobrycon erythrostigma*). It makes an excellent community fish which can be combined with other peaceful fish such as small cichlids, corydoras, tetras, and small barbs.

Keep in a group

They prefer to live in groups so keep at least four together rather than just pairs or single fish and they like soft slightly acidic water but can cope with other water conditions if they are given enough time to adapt. For this reason it is important to only buy fully acclimatised fish from a local aquarium shop. If you do have to purchase some from a shop in a different water zone (there are thousands of these around the U.K.) make sure you monitor the shop's water conditions in your quarantine tank before you release them. Over the next two weeks you can gradually change them over to the water conditions in which they will be permanently living.

They eat all foods and will survive quite happily on a diet of flake with the addition of live Bloodworm or Daphnia once a week. The temperature should be in the 23 - 27°C range, with 25°C being ideal. Good water quality is important so regular partial water changes must be carried out. This beautiful tetra appears at first glance to be very similar to the normal Bleeding Heart tetra, although it grows to only 5cm and the male's dorsal fin is far less extended. The differences, however, don't stop there. They breed differently. Socolof's bleeding heart, as common with most tetras, is a prolific egg scatterer which has been commercially bred for years. The true bleeding heart tetra has defied all commercial breeders' efforts and those of talented amateurs have also met with failure. Why this should be remains a mystery as virtually all the other similar looking tetras from this part of the world have been successfully bred now.

For anyone wishing to try breeding bleeding heart tetras a useful piece of information is that they are usually collected in the Rio Negro, Peru, where the water usually has a pH 5.8. This is much lower than many other tetras require but might be the key to breeding them.

This pretty tetra was named after one of the real giants of the fish world.

WHAT'S IN A NAME?

Many fish have been named after people, but Socolof's bleeding heart tetra has been lucky enough to be named after one of the most interesting characters in the aquarium hobby. Ross Socolof first caught the fish bug about 70 years ago when his cousin Carl Kaplan came to live with his family in New York. Carl was already a dedicated fish fanatic and his passion soon rubbed off on six-year old Ross. The Brooklyn basement which became their fish room soon filled up with home-made, usually slightly leaking, aquariums (made from concrete with a glass front) and before long they were supplying surplus fish to all their local aquarium shops.

Carl was also a keen competitor and the house ended up full of trophies. In those days the Greater New York City Aquarium Society gave first, second and third place medallions at their shows. These were made out of REAL gold, silver and bronze. Needless to say few of these have survived to this day and Ross says he would happily trade his dog (or even a grandchild) for one!

Ross eventually became a commercial fish farmer in Florida and created the Gulf Fish Hatchery eventually selling up in 1965. By 1966 he was back in the business, this time as Ross Socolof Farms. In association with PETCO he built up a huge fish farm which supplied a national network of pet shops with high quality fish. Later mammals, reptiles and amphibians would be added to the range of animals this farm produced. Since new and rare fish species were always in demand, Ross explored many parts of the world searching for new fish to introduce to the aquarium hobby. His many exploits around the world are told in *Confessions of a Tropical Fish Addict* and despite his advancing years and supposed retirement he still treks off into the jungle whenever he can in search of something new. So next time you see a cichlid or tetra with *socolofi* as its species name you will know a little about the man who the fish is named after - a remarkable explorer and aquarist who for the past 70 years has been at the cutting edge of the aquarium hobby.

A Testing time

Marc Macrae puts testing kits under the microscope

Most test kits ultimately perform the same function - by using chemical reactions of one sort or another they colour a water sample to give a visual indication of the amount of the chemical that you want to identify. Obviously the quantities involved are very small and therefore accurate testing can be difficult. Also, although the manufacturers may state it is suitable for both, the chemical balance of seawater differs from that of freshwater, and so the test's accuracy in one type of water may be very different from that in another type.

Dry tablet tests have the chemicals held in what is a comparatively large volume of binder or filler that is used to form the tablet. To release the active ingredients the tablet must be shaken vigorously and if the results are to be consistent then each shaking must be identical. In professional laboratories where this type of test is used, it is generally on an "odd one out" basis where there are many samples and the scientist is looking for the sample that is not the same as the others. The nonconforming test is then removed for further analysis. This mass testing is undertaken using a laboratory shaker, which gives the same agitation for the same period of time every time it is used. Now compare this with normal folk who will shake with a vigour and for a time that is determined in no small measure by hobbyist's state of mind, health and possibly recent alcohol input!

The same accuracy problems are found with any form of dry material such as powder, whether loose or encapsulated, and can be compounded if quantitative measurement is required by the hobbyist such as adding small spoons of material. Liquid tests are often cheaper per test and by definition are more accurate as the problem of release of all the chemical from the binder does not occur but you must check the accuracy of the dispensing dropper. The best tests use pharmaceutical grade droppers, which give very precise measurement.

Once the accuracy of dosing the chemicals themselves is addressed then various other factors should be considered. The intricacies of chemistry. It may be that your test kit isn't actually testing what you think it is. Because of the intricacies of chemistry it is often easier to test for something completely different which, by adding another chemical as part of the test procedure, will give the result you need calibrated to the desired parameter. Alternatively, there are some chemicals in

Before using liquid tests always shake the bottle well.

some that exist in exact proportion to others and it may be easier to arrange a test for the second substance. Both of these methods are quite legitimate procedures and can be very accurate.

However, the chemist designing the test needs to know that he is dealing with a living, working aquaria and so, in some tests, whilst the test may well be accurate in laboratory conditions, testing pure materials, as soon as dissolved organic material is introduced (as in an aquarium!), the chemistry is completely thrown and the results become worthless. The standard of accuracy of any test is denoted by its "standard deviation". This is how closely it can measure the parameter it is indicating, so if the colour scale is shown in graduations of say 100ppm (parts per million), and the standard deviation of the test is 100ppm, then the scale is meaningless. Similarly, a result of say 150ppm with a standard deviation of 100ppm means you haven't a clue as to whether you have 50ppm, 250ppm or somewhere in between!

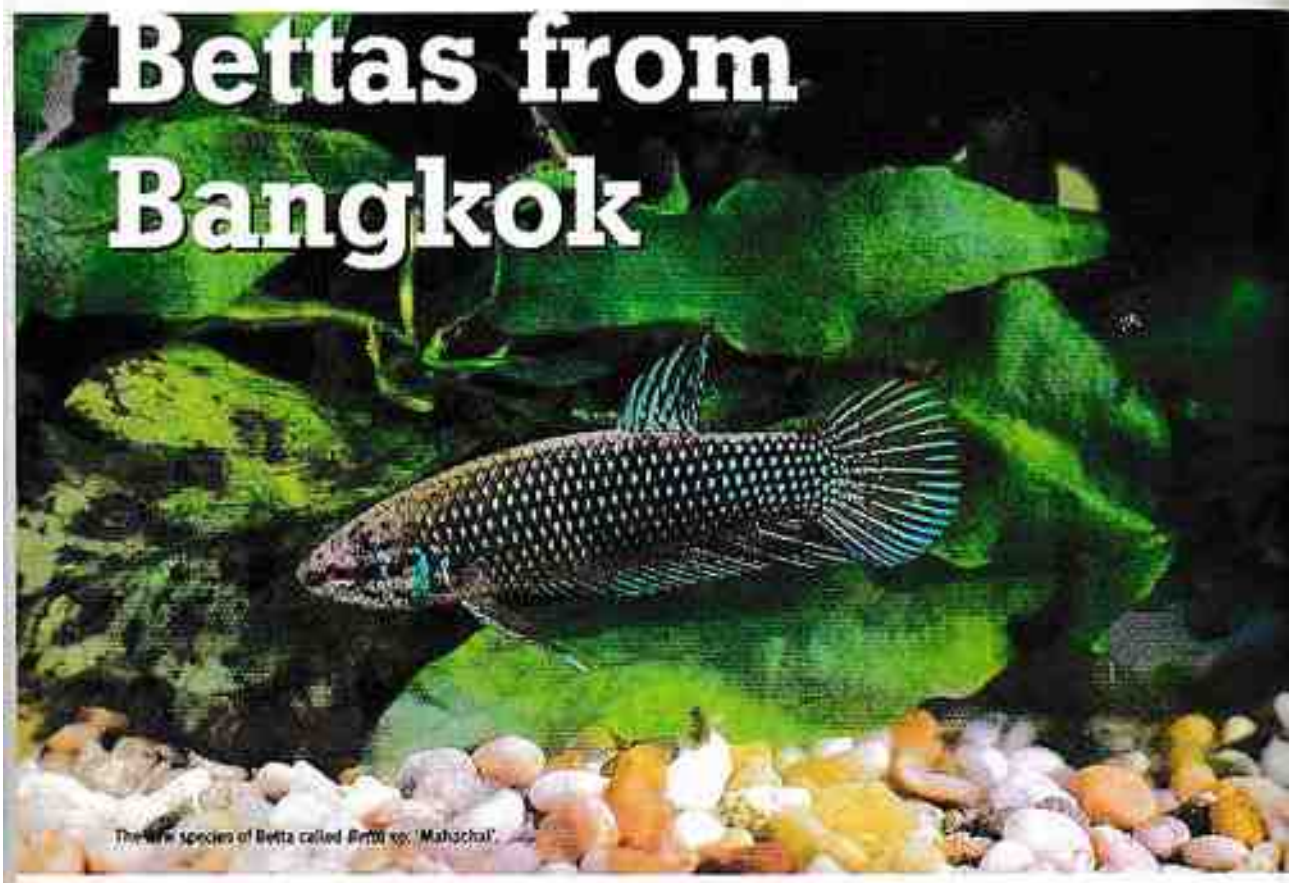
I prefer to plot results on a graph rather than draw up tables as, in general, our sort of testing should be used to indicate trends. Remember, too, that the taking of any measurement, unless undertaken at the same time of day and under the same circumstances, normally does not serve any real purpose. For instance, the pH will vary widely during any 24 hour period and low levels of nitrite will probably appear briefly shortly after feeding. Obviously if you suddenly notice something that is very wrong in the aquarium you should immediately undertake testing to see if it is poor water quality that is the cause of the trouble. I have spoken to people in shops when they have bought test kits and asked them why they bought specific ones. Normally they tell me the pack price is cheapest! Speaking honestly, what would you prefer to buy - 20 inaccurate tests for, say, £3.50, or 50 accurate tests for £6? Finally, remember that although any test is only accurate to a certain point it is not necessary to know the pH of your aquarium to three decimal places!

VIEWING THE RESULTS

You should always view the results in the way the instructions tell you. Looking down through a test tube will generally give a far deeper colour than looking across it. View your sample in the same light each time, which should be as bright as possible as the human eye is not good at differentiating between colours at low levels of illumination. I prefer to do the tests in the kitchen, which has white (colour temperature 3500°K), fluorescent lighting and a nice white cupboard to view tests against. Try not to take your reading against an ordinary tungsten light bulb. Also remember your own possible failings! Your own eyesight may well have defects that accentuate colours unevenly, so the next time your eyes are tested ask the optician to look at your colour perception as well as your ability to focus. Even the colourmetric scale should be viewed with suspicion! I recently took three boxes from the same manufacturer and put them side by side and because of variations in the printing process or exposure to light the colours on the boxes were quite different.

Always compare the results as directed by the test kit manufacturers instructions.

Bettas from Bangkok



The new species of Betta called *Betta* sp. 'Mahachai'.

David Armitage goes in search of Bettas in Bangkok.

The natural habitat of *Betta* sp. 'Mahachai' is not the most scenic of places.

It was the heaviest rain Bangkok had experienced for some time; the drains were overflowing and cars ploughed through flooded roads past houses under water. It was also the first day of our fishing expedition to Thailand and we were already in the field and, despite the deluge, catching quantities of fish.

Once again, Tony Pinto, Dennis Yong and I had met up for a fishing trip, this time in Thailand. Fortunately, we had made contact through the web with Nanai Pantyang and he had agreed on our first day in Bangkok, to take us to a site for a new Betta, 'species Mahachai' which had made quite an impact in the fish market of Bangkok.

Between two factories, a bleak scrub stretched before us, surrounded by a Nipah palm swamp. Where we parked, sea-shells had been dumped to make hard standing and just by the entrance to the site was a small stilted shack that served as a coffee shop. Noran expressed fears that the high water might make fishing problematical but the first dip of Tony's net brought forth a colourful female Betta and mine captured a beautiful male with a green sheen. Noran

HOW TO SEPARATE BETTAS

	B. splendens & sp. Mahachai		B. smaragdina	B. imbellis
Fin rays	[illegible]	[illegible]	[illegible]	[illegible]
Pelvic fin tip	Black	Blue	Black	Black
Tail colour	Red	Green	Green	Red
Body	Wide	Slender	Slender	Normal

looked impressed, he was clearly in the company of hardened professionals. In the next couple of hours, we captured plenty of immature fish and females, mainly in puddles on the fringe of the swamp or in the peatland. However, few males were in evidence. Noom showed us how the males built nests in the leaf axils of the palm and explained how the locals caught the fish with bare hands by chasing them out of their refuge with a twig. The site also contained plenty of Croaking gouramis, *T. vittatus*, Half-beaks, Yellow Panchax, young *Channa striata* and even an eel!

The problem with all Bettas near urban conurbations is that female 'pla kats', the domesticated strain used for fighting, are often introduced into water courses to increase the supply of wild-caught fish for the market. This means it is never certain whether the fish are feral or truly wild. In the case of Betta sp. Mahachai, the consistency of their morphology and the uniqueness of the habitat suggested they might not be hybrids but a new local form, or even a new species. As we discussed the difficulties of distinguishing the different Bettas used for fighting, Noom drew up the following table to act as guidance.

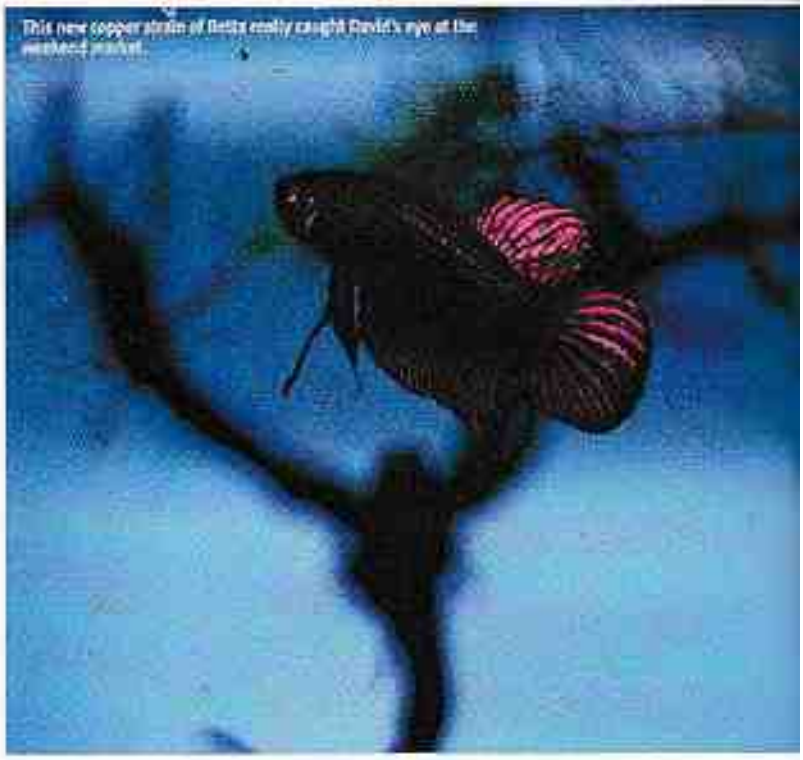
We then travelled north to Udon Thani on the quest for *B. smaragdina* and *T. schalleri* and then south for the mouthbrooding species, *B. simplex* and *B. prima* (see Part 1) but ten days later we returned to Bangkok on the return leg of our journey. Arriving at

This Red Siamese fighter was on sale at the weekend market. It is what a good red Siamese fighter should look like.

Betta smaragdina is a close relative to the new species but there are several important differences in colour pattern.

BACK HOME

My trip home was uneventful but Thailand had a final little gift for me. After one and a half days back at work I came down with what I thought was flu. I made a care visit to my doctor a couple of days later and he packed me off to Seacroft Hospital Infectious Disease Unit, Leeds where I was treated for Leptospirosis for 5 days complete with saline drip and catheter. So final thanks must go to all at Ward 1 for keeping me alive.


This new copper strain of Betta emily caught David's eye at the weekend market.

our favoured hotel, the reasonable and convenient 'Nice Palace' in Bangkok with a free afternoon, Tony was determined to make the best of our time and booked an evening cruise which showed us the full horror of the tourist centre.

Tony was to fly out early on Saturday, so we spent Friday at the Chatuchak weekend market - touring the fish shops in the morning where I was much taken with some of the *B. imbellis* / *B. splendens* crosses - particularly the Copper Pla Kat - and Tony could not resist investing in some fancy guppies.

I saw Tony to his taxi the next morning but my fishing was not yet over. Shortly afterward, Nonn arrived to take me looking for wild *B.splendens*, in the vicinity of Bangkok. We arrived at an edible frog farm near Nong Kae where one of his contacts showed us a canal and lent us his offspring to look for bubble nests beneath which we could net the adults. Soon I had a couple of pairs wriggling in my net but close examination made me think these resembled the more aggressive morphology of the feral fighting fish rather than the truly wild strain. It turned out this was typical of the 'end of season' mature fighters.


A wild caught male *Betta splendens* from Nong Kae looks nothing like the fish we see in our shops as Siamese Fighters.

I collected our captures of the very first day from Nonn's house and bade him farewell back at the hotel. We can be assured of keeping abreast of Thai developments on his web sites (http://www.siamensis.org and http://www.pariltong.com) and in his skilfully illustrated magazine articles which are raising the profile of the native species in Thailand.

INTERESTED IN LABYRINTHS?

For further information on labyrinth fish contact The Secretary, ANGF, 29 Chiltern Crescent, Spotborough, Doncaster, DN5 7PE or visit www.angfs.org

Beating the odds

Kathy Jinkings looks at egg scatterers and how more is better.

Many of the most popular aquarium fish are egg scatterers. This pair of Leopard danios (*Danio rerio*) will scatter hundreds of eggs every week or so if well fed.

Many of our most popular aquarium fish are egg scatterers. In this form of reproduction, the male and female come together at spawning time, liberally scatter the aquarium with usually vast numbers of eggs, and then forget all about them. Often the parents, hungry after their exertions, will go round the aquarium and eat the eggs they have just produced. Egg scatterers are, in general, ideal for life in a community tank. Because they have no interest in their offspring, they have no reason to bother holding on to a territory, and are therefore usually peaceful. If any fry are to survive, given the disinterest of their parents, there have to be a lot of them — the law of averages is the only thing they have on their side, and the more there are the higher the odds that a few will survive.

Odds stacked against them

In the community aquarium, however, the odds are already stacked against them. If they hatch in a river or lake, there is usually a lot of space, including shallows or heavily overgrown areas where the big fish cannot reach them. In an aquarium they are not only very limited in the number of places they can hide, but there is a large population of hungry fish continually hunting in the same area. Although they may often spawn in the community aquarium, the aquarist must set up a nursery tank if any are to grow to maturity. Often, in practice, this nursery tank will be set up in a state of panic, when the aquarist comes home to find a tank full of eggs and his fish busily engaged in hunting them down. "Tank" is often an overstatement — in an emergency a bucket with a heater and a sponge air-powered filter is perfectly adequate. A bottle of biological filter starter should be a part of every aquarists emergency kit; with a good dose of this every day for a few days a new tank (or bucket) can be set up safely and quickly. A rearing tank is usually best without any substrate; this avoids misplaying bottom-dwelling fry, and also allows the aquarist to siphon out the dirt more easily. Air powered sponge filters will not suck in and "filter out" tiny fry, and moreover will also grow colonies of micro organisms on their surface which can provide a food source for fry. Alternatively, the more organised aquarist may plan for his new family, by setting up a spawning tank and stocking it with a nice fat female and her mate, who can be removed once the happy event has taken place.

Breeding Goldfish

There are many egg scatterers who are ideal for a starter project. In an unheated tank Goldfish will often take the initiative themselves. You will know when the happy event is imminent by the behaviour and appearance of the fish. Females become very fat, often lopsidedly — looking at the fish from above one side will be fatter than the other. Males begin to show raised white spots on the gill covers and upper lip — these are known as tubercles, and are not the first sign of some dreadful disease, but perfectly natural. When they are nearly ready to spawn the males will start chasing the females around the tank. At this time they need to be provided with lots of plants (cotton Elodea is ideal). You can trigger the spawning by a water change or by lowering the water level. Usually early next morning you will hear the frantic splashing as the males drive the females into the plants, and the plant fronds will soon appear to be decorated with tiny pearls.

Although goldfish are enthusiastic egg eaters, they are also very prolific, and provided there was enough dense planting there will almost certainly be plenty of eggs for you to remove (still attached to the plants) and rear. With Goldfish, as with

Fancy goldfish make a great first egglayer to breed

many egg scatterers, you must be careful not to take off more than you can chew – if you carefully rescue every egg, you are going to need a small reservoir to rear the fry. About twenty eggs is a good number to remove, taking care not to choose those that are white and opaque (these are the infertile ones), and if you are one of those who has set up the emergency bucket, now is a good time to start getting a large tank ready to hold them.

When the eggs first hatch, the fry are visible clinging to the glass and look like tiny glass splinters. After two or three days they will become free swimming, and at this time need to be fed. Proprietary fry food from the aquarium shop is taken enthusiastically, and they grow rapidly. Do not be disappointed that they are all brown – all little goldfish are, and they will start to get their adult colours when they a between an 3 and 5 cm long.

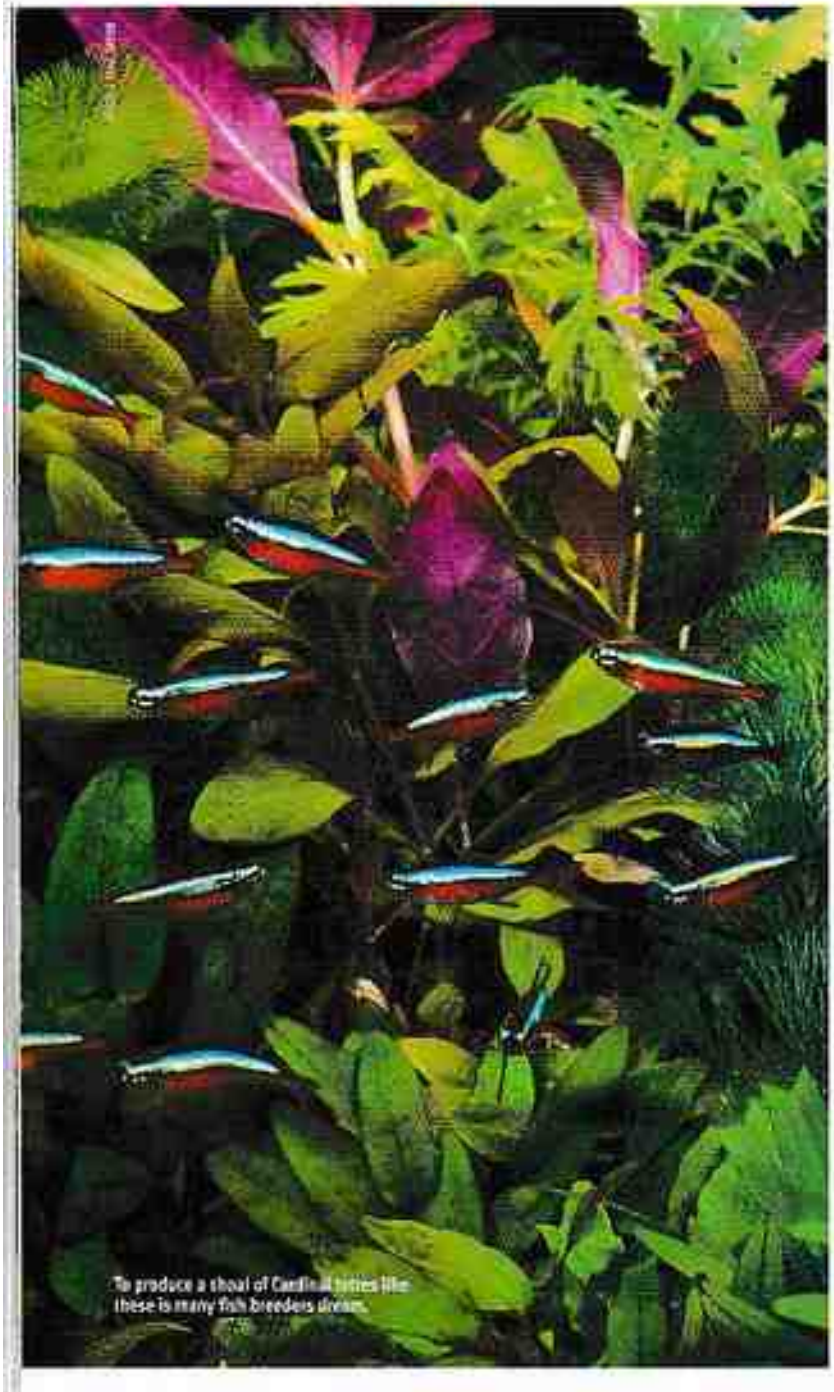
Corydoras

Corydoras catfish are not strictly egg scatterers, as the female will carefully place each egg rather than just scattering them around, but the same principles hold true, as she takes no further interest in them. Bronze Corydoras (*Corydoras aeneus*) are the first fish to spawn for many aquarists, and produce large numbers of eggs. Personally I had no luck with these, only ever getting one (badly infertile) egg. I did, however, have plentiful success with the smaller, and, in my opinion at least, cuter *Corydoras pando*. These spawned, without fail, immediately after the weekly water change, at which I changed about 25% of the water for new, cold water. As soon as the new water started to flow in, the males would start to nudge and pursue the females, eventually assuming the 'T position' with the male's head pressed to the female's side. After a few seconds, she would swim away, and an egg could be seen held between her pelvic fins. She would carefully inspect a variety of places in the aquarium, including rocks, plants, and the aquarium glass, before carefully depositing her egg. This process would be repeated until around twenty eggs had been laid, and those on plant stems could easily be moved to a rearing tank.

When the fry hatch they are still attached to a large egg yolk – only as this disappears do they need to be fed. They will eat packaged fry food, but particularly enjoy baby brine shrimp. These have the added advantage of reassuring the aquarist that they are eating – all the little fish will have orange, rounded, brine-shrimp full tummies. The two Corydoras mentioned will spawn happily in most community tanks, without any special preparations. There are, however, lots of different species, and some are challenging spawning projects, requiring soft water and live food to inspire them.

'if you carefully rescue every egg, you are going to need a small reservoir to rear the fry.'

Kathy never had much luck breeding bronze corydoras but *Corydoras pando* which is considered far more difficult breed virtually every week.



To produce a shoal of Cardinal tetras like these is many fish breeders dream.

Overstocking leads to bad water quality, which will rapidly result in severe understocking!

A real challenge

One of our most popular aquarium fish is the Neon tetra (*Paracheirodon innesi*), and its cousin the Cardinal tetra (*Paracheirodon axelrodi*). Although these make their appearance in just about every small community tank, spawning them is somewhat more tricky. In community tanks they are adaptable to a range of water chemistries, but for spawning require special effort to provide them with conditions similar to their Amazonian home. Rainwater in which peat moss has been soaked provides the soft acidic conditions similar to their blackwater homes. The pH needs to be low, at about 6.0 or lower (in their natural habitat the pH can be as low as 5). To condition the fish, separate the males and females, and feed them as much live food as they can cram into their hungry little mouths. They can be spawned in groups or trios, but a single pair of a nice fat female and a healthy male should produce plenty of eggs.

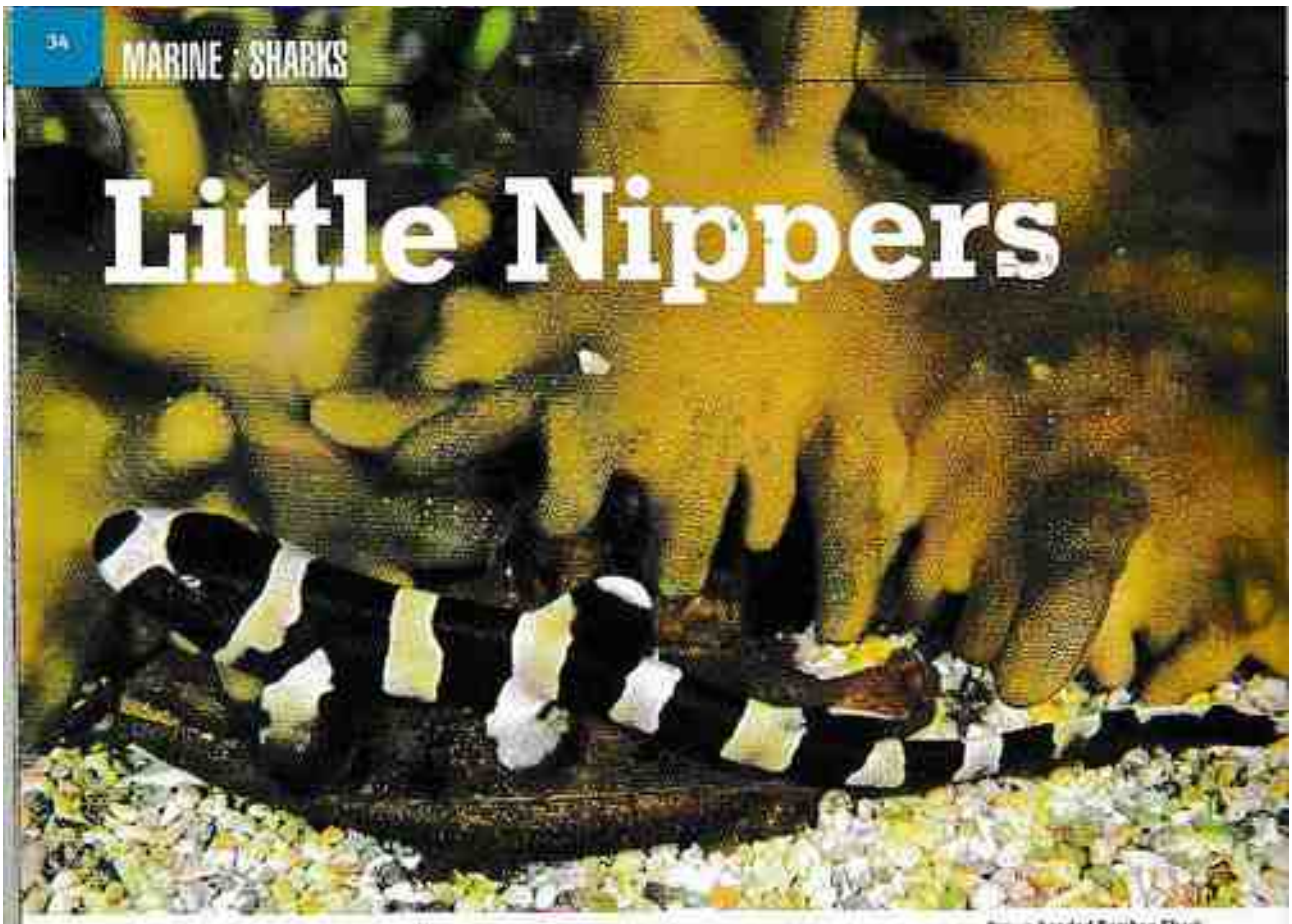
Place them together in the spawning tank, which should have fine leaved plants or spawning mops. A mesh at the bottom of the tank, through which the fish cannot swim to reach the eggs, will stop them eating most of them. When the fish have finished spawning, this will be evident by the reduced swollen of the female. The parents can then be removed, and the tank covered to keep it dark. The eggs will die if kept in the light. This is also a good time to start an infusoria culture — Neons aren't very big as adults, and the fry will need very small foods. You can feed them on a commercial fry food, but suitably sized live additions will help their growth.

Throughout their rearing, it is essential to keep the aquarium and water clean. Neon tetras can produce around 500 eggs, so unless you have a very big tank (or tanks) you will need to thin them out periodically. Overstocking leads to bad water quality, which will rapidly result in severe understocking!

All fish are easy to spawn

We tend to think of fish as being difficult to spawn or easy to spawn. In reality all fish are easy to spawn — after all, they do it perfectly well in their natural habitat. What is difficult is working out the precise set of conditions which the more fussy fishes require. Once the required conditions are known, then it is simply a matter of giving them those conditions. In general, you can judge whether a fish will be fussy or not from its wild distribution. If they are widely distributed over a large geographical area, then they are probably quite tolerant. If they are found only in very specific conditions, then there is probably a reason for that, and you need to expect to have to reproduce their natural conditions quite closely. ■

Little Nippers



Anthony Calfo takes a look at some of the practicalities of keeping Sharks in captivity.

Brown-banded Bamboo Shark (*Chiloscyllium punctatum*) is a staple in the aquarium trade and is an excellent aquarium specimen. They are a fine beginner's shark being hardy and growing to a slender 1 m in length. It even breeds well in captivity.

Few creatures in the sea inspire such awe and admiration among observers and aquarists as the noble sharks. My own endearment notwithstanding, these fishes are hardly practical in home aquariums. By and large, they are unsuitable for casual aquarium keeping and require dedicated or species-specific displays. They have special, if not extraordinary, needs in husbandry and housing, and demonstrate above average sensitivities to water quality, diet and transportation issues. A few exceptional species, like several sharks in the family Hemiscyllidae, do make excellent aquarium specimens. Most elasmobranchs, however, are not recommended for use in aquariums of only 1000 l in volume.

Leopard sharks (*Triakis semifasciata*) are one species which is sometimes housed in smaller aquaria but after a few years they perish having been stunted and stressed by poor water quality. Never keep a fish you cannot house correctly from day one - that bigger set up you have promised the fish and yourself often remains a dream.

Tank Size & Shape

Unlike most adaptable captive fishes, the very shape of the aquarium for elasmobranches is of significant if not critical importance. It's no coincidence that the best displays are cylindrical or have some curved aspects to the perimeter. For the most active sharks, a circular vessel facilitates the need for constant motion with a considerate wastage (centermount). And for those species for which constant motion is not so important, the curved vessel still affords a very practical and empathetic design for the turning of these long bodied and large fishes. Your goal for housing elasmobranches should be to provide as large an aquarium as possible. Low, wide and long aquaria, as you might imagine, will be much better than tall for the purpose. I recommend minimum housing of at least twice the width as the probable maximum length of your shark, meaning that all such systems will be "custom builds" of more than 1 m in width and at least 2 m in length. It would be unfair to subject a

specific minimum tank size by volume for keeping sharks considering the markedly different needs and habits among those in the trade. That said, however, some sort of guideline is in order... and pegging a vessel for aquarium-suitable species seems about right at around 1.5m x 2.6m x 0.6 - 1m in height. For even the smallest of the hardy species, anything under 800l is unthinkable.

Tops, canopies, tank covers

Nope... they aren't just for holding up lighting fixtures! Sure... they prevent the cat from getting pulled in and devoured by frisky fishes. Even more importantly, they prevent small children from making your aquarium into a chocolate chip cookie-making vat. But most important of all, they keep your fishes on the best side of the surface of the water. A secure, latched, or very heavy aquarium cover is necessary to prevent sharks from jumping out. Many are lost due to incomplete or lightweight covers; don't lose yours this way. Elasmobranchs are strong muscular fishes capable of launching themselves through and out of the water with great bursts of speed. Avoid the use of glass or brittle plastic materials. Thick safety plastic or Lexan is in order. Clear tubular Lexan (used in greenhouse glazing) makes a strong, light admitting and insulating cover of particular utility in chilled vessels. A locking aspect will need to be fashioned to secure such lightweight but durable materials. Ultimately... there is no rocket science involved here. Simply procure a reliable and sound cover that clearly guarantees that your fishes stay inside the aquarium and don't look back.

Aquarium décor

In most shark displays, the height of the water column is not of great importance, however the arrangement of the seascape and placement of benthic (bottom) invertebrates should be considerate and allow for clearance around the perimeter from top to bottom. Sharks every now and then seem to go "bonkers" thrashing about their captive system. Hence the need to allow clear paths (and secure covers as mentioned above). Beware of sharp, branching decorations and articles in the tank. All aspects of the aquarium interior (décor, artifacts of filtration, substrates) should be employed with regard for the active nature of these animals. Beyond concerns for dislodging desirable features (rockwork) and sessile invertebrates, we

REALITY CHECK

Nurse sharks should never be kept in aquaria as small as 800lt.

Smaller aquariums for smaller shark are often promoted as "acceptable". But do consider that the smallest species in the trade with rare exceptions, still reach an adult length of 60-90 cm and will do so in just a couple or few years. How appropriate does an ever-so-popular commercial 900lt tank, for example, really seem at that point? It's not even as wide as the animal is long, and it's barely two times its length. A 1m long dog forced to live its life in 2m long cage is cruel by any rational standard. How is it then that a shark, with a home range in the sea larger than any wild dog on land, is appropriate for small aquaria? Heaven forbid one should try anything smaller! For perspective, the demure and sedentary California horn shark has been cited as having a home range of over 1,000 sq. metres roaming from the shallows to depths approaching 160m!

Rationalising the keeping of juveniles in smaller aquariums is perhaps the worst of all. Too many well-intended aquarists buy large species as juveniles with the promise of getting a bigger aquarium "some day". Rarely does this occur as planned and years can slip by causing irreparable developmental damage to the captives in most cases. This harks back to the oft-cited reality of Leopard sharks kept in 250lt aquariums or Nurse sharks kept in 800lt tanks and then dying "mysteriously" after a few years. Such deaths are no mystery to even the barely informed if not intuitive folks. With all due respect, if one cannot afford the proper housing and hardware from the start, then the animal should likely be left in the ocean; a true show of respect for that which is admired. There is no glory or merit in having living treasures of the sea stunt and die prematurely in the aquarium for inadequate husbandry despite good intentions.

Many sharks (these are White-tip reef sharks) come in contact with live rock and course sand or aggregates in the the wild, however, given the confines of an aquarium these materials are best avoided.

must consider the various surfaces that will come into contact with the skin of the occupants. Non sharp sand is best to prevent chafing of their delicate undersides. Some elasmobranchs may very well find live rock and course sand/aggregates natural to their habitat, but many will not fare well upon it for repetitive contact in the unnaturally narrow confines of an aquarium. The polar opposite side of this issue can be a challenge too; fine sand or mud will be regularly disturbed and cause severe turbidity in the display. Medium round grain sands in the 2-3 mm range are good for most. Some species may want or need finer substrates and will require special accommodations (filtration dynamics) and tolerance for some turbidity by the keeper.

Filtration

As a rule, I favour filtration designed for heavy bio-loads that employs emerse (not submerged) media as with trickle-filters, bio-towers and the numerous interpretations of these methodologies used by Koi enthusiasts for outdoor pond keeping. Fully submerged media like fluidised bed sand filters or traditional aquarium filtration, will be in direct competition with the fishes for available oxygen in the water which can have catastrophic results in the event of power failures. Trickle style media, however, allows the media to derive oxygen from the atmosphere and is not a burden on limited oxygen levels in the water in the event of system failures.

Remember, even small aquarium-suitable sharks can easily grow to weigh 7 or more kilograms as an adult. They will eat as much as a small dog or family cat with the less than charming reality of having to pass their waste in the same limited space and have to live and breath in it... unlike furry fellow house pets that can roam. Can you imagine what it would be like to offer the same amount of food to a dog or cat living in a litter box the size of your aquarium, but only clean/change 25% of it monthly? To say that keeping any elasmobranch requires very special consideration of filtration would be an understatement. Mere monthly water changes are not practical or even possible for most. Large weekly water changes are in order, and testing water quality will verify this need. Filtrative processing of water needs to be "supersized" compared with "regular" tropical marine fishes and invertebrates. These fish are messy eaters and copious waste makers. Yet, even when fed (appropriately) sparsely in systems with aggressive protein skimmers, vigorous water movement is needed to keep water quality optimised and stable. Excess food, faeces and other detrital matters must be kept in suspension for processing by mechanical and biological faculties. Arrange powerheads, submersible pumps, or better - external pump discharges, in a "circular" pattern to move water in a vortex. This allows for a more complete movement of water as well as a current for your shark to swim against. Employ two large skimmers and stagger the cleaning of their collection cups and necks on alternate days to improve the yield and consistency of skimmate production.

Planning your display

Think wide-open spaces when planning your display, and keep large masses of live rock or course substrates remotely for filtration. If you must (ancillary refugiums or other filter-aquaria). For the larger aquariums, custom artificial reefs made of smooth fibreglass and plastics have proven to be safe, economical and utilitarian. Modern evolutions of these structures have really become an art form with special effects. The Hollywood mask-making technologies, which brings supple and flexible latex elements into the mix for the construct of lifelike invertebrates that move with the currents! Be sure to visit several large public aquariums with successful programmes of husbandry to glean such ideas for keeping your sharks properly and handsomely. ■

today's fishworld Letters

In *Today's Fishworld* section of the magazine we have gathered together all the news, views, new fish and products from around the world of fishkeeping.

I'm Back!

Dave Clarke won our "Xingu Experience" trip of a lifetime to visit the Rio Xingu and Altamira.Here Dave brings us up to date with his experiences.

"I'M BACK" alive and well from the depths of Amazonia. What a truly amazing time I have had. To get the opportunity to fulfil a lifelong ambition and to understand just what human endeavour it takes to collect and supply these

Dave Clarke was the lucky winner of our trip up the Amazon

varieties of fish. To watch divers risking life and limb by going to collect Zebra Plecs (L 46 at a depth of 20-40 metres with the most basic diving equipment, enduring strong currents, poor visibility and the risk of being attacked by Caymen, is just mind blowing. I have been snorkelling and seen shoals of Red Noses, Tetras and Characins corkmettos away from my face and watched the crew of the boat collect

Golden nugget plecs L18 and other varieties of fish with the greatest of ease. Well, it was for them anyway. We all went fishing for Piranhas with the bateck (no not) and caught enough to feed on easy. Yes, we ate them. I have also eaten very large Golden nugget plecs, which was an unusual experience for sure?

I have also had the pleasure to see Scarlet macaws flying overhead, a tinatou and Tamarind monkeys having their breakfast. An Amazonian otter and many other wild and wonderful birds, animals, butterflies and of course fish. I will have to show you the photographs and video footage.

To say thank you to you, "TODAY'S FISHWORLD" and "INSIDE" for the sponsorship, barely scrims enough. This was the best prize any fishkeeping magazine has EVER come up with and in my eyes will NEVER be beaten, unless you are going to run a similar competition again! Reading this I had better start saving for Steve's "GOLDENLINE" next trip!

Thank you once again.

Dave Clarke

Local fishermen catch fish with only the most minimal of equipment.

Dave smiled up trying a large Golden nugget pleco

Zebra plecs are caught between 20 and 40 m down.

Enter a paradise

Today's Fishkeeper visits ***Waterlife Exotic Plant and Pet Centre*** in Longford, Middlesex.

Cute and reptile fondly go together in many people's minds, but the fact is Reptiles really are cute creatures.

Clean, light and airy, the new centre shows how a pet outlet should be set up.

The free flight aviary allows the birds to be shown off to their best.

When we heard about SeAquariums Waterlife Centre opening a new exotic plant and pet centre we knew we had to go and take a look. The aquatic outlet was well known to us, having lived not too far away from it when we were based in London and it was always worth a visit then. Add in exotic plants (both Derek and Pat are into gardening) and animals (various amphibians have always been a part of their set up and Derek wants to try some reptiles - Pat does not!) and it was a mixture just too tempting to miss.

The drive down from Lincolnshire was fairly straight forward and after an interesting tour of Heathrow Airport (We Derek did it again and managed to get them lost) we turned in to the car park on a warm and sunny day. As usual we delved into the aquatic shop first and checked out the well stocked tanks. Derek managed to talk Pat out of some very nice *M. Princeps* and both were impressed with the well maintained tanks and wide range of healthy stock on offer. At the time of their visit a number of tanks were in the process of being replaced and a major refurbishment is planned over the coming months.

Next it was off to the new centre. The first thing that hits you is how clean and light everything is. Fair enough it is new but the care lavished on this new project was plain to see. The plants on display numbered some interesting exotics including Banana plants which can just about cope with living out doors in the south of England, although they would make a fantastic feature in a conservatory. Indeed looking round at the selection you could put together a display which in a few years would be on a par with many public conservatory displays.

Moving on to the exotic animal enclosures and we found some fantastic lizards, weird snails, stick insects, beetles, Tarantulas etc... It was a real Aladdin's cave of creatures. Joanne Jones, who is manager of the premises, used to work at the London Butterfly House where she obtained a great deal of experience of looking after all these wonderful animals, but it is the reptiles that are her first love having started keeping them herself 16 years ago and being particularly fond of reptiles of the family Agamidae. Of those reptiles displayed a lovely pair of Blue tongued skinks which were basking in their ample enclosure (see pages 80/81 for details of these pushy reptiles) caught Derek's eye. Almost all the reptiles offered for sale are completely tame because they are handled by Joanne or one of the staff on a regular basis. Indeed they were happy to bring them out and show them off - although you get the distinct impression that they would be very sad to see any of their charges sold!

Moving on into the other room and you come to the exotic bird section. This has a fantastic free flight aviary with a selection of birds to match. Obviously catching any of these out of such an environment would be tricky so the birds for sale are kept in cages around the edge of the main room.

Shop details: Waterlife Exotic Plant and Pet Centre, 478 Bath road, Longford, Middlesex, UB7 0EB. Tel :- 01753 685566
Shop opening hours: 10am - 6pm 7 days a week
Proprietors: Graham Cox
Manager: Joanne Jones
Staff : Emma Butler & Mona Taylor
Number of tanks: 19
Vats & holding facilities: All stock kept for two weeks before sale
Specialities: Snails (Beginners level), Lizards, Frogs, Mini Beasts, & Japanese Koi.
Staff knowledge: 10 years' experience
Brands stocked: Euro Rep / Zoo-Med / Hagen
Which groups of fish do you sell? Koi
Additional services: Advice line/Website

Our verdict

Well a great day out. We only concentrated on the Exotic pet centre on this visit but the fish side is always worth a visit.

Joanne's verdict on the manufacturers

Which manufacturer has the best range of products in your opinion? - Euro Rep

Which company gives you/your company the best service? - Euro Rep

Chill out

Sadly many corals and fish have been killed this year because of the high temperatures they experienced during the summer. These deaths would have been prevented if a cooler had been installed on the aquarium BEFORE the heat wave struck. So, although over heating is unlikely to be a problem now, here we present *Deltec's* range of coolers so you can make sure your fish are safe for next summer.

The ECO range of coolers is cheaper to run and in all but the hottest summers will be enough for most aquaria.

What generates the heat?

Apart from the ambient room temperature rising too high during the summer months, there are a number of other factors that can also generate heat in a marine aquarium. The need for water movement and high intensity lighting to keep salt water coelenterates and fish alive and well means that large numbers of pumps and lights are often employed on marine aquaria. These create heat in the water column which is not healthy for a stable aquarium environment and can lead to coral bleaching and stressed fish.

When looking at coolers there are several different factors to consider. Firstly, check the size of aquarium for which the manufacturer recommends the unit , then delve a little deeper and compare the power consumption of the cooler and the cooling wattage as well. these two factors will have a dramatic effect on how much the unit costs to run, which long term will cost you more money than the basic price of the unit.

Another important point to look at is environmental impact. In *Deltec's* range of refrigerant coolers the latest gas is used, so they say you can be assured that their coolers are technically efficient and environmentally friendly. They also supply the units with or without digital

THE REFRIGERANT RANGE

DK 350

Power Consumption: 350W
Dimensions: L: 350mm W: 140mm H: 320mm
Cooling Watt: 600W
Flow Rate: 2000ltrs per hour

DK600

Power Consumption: 570W
Dimensions: L: 600mm W: 370mm H: 430mm
Cooling Watt: 950W
Flow Rate: 2000ltrs per hour

DK900

Power Consumption: 890W
Dimensions: L: 600mm W: 400mm H: 450mm
Cooling Watt: 1200W
Flow Rate: 2250ltrs per hour

DK1400

Power Consumption: 1250W
Dimensions: L: 600mm W: 450mm H: 600mm
Cooling Watt: 2800W
Flow Rate: 2000ltrs per hour

THE ECO COOLER RANGE

ECO Cooler No: 61050

Power Consumption: 44W
Dimensions: L: 490mm W: 360mm H: 390mm
Cooling Watt: 700W
Flow Rate: 1500-2000ltrs per hour

ECO Cooler No: 61051

Power Consumption: 44W
Dimensions: L: 490mm W: 360mm H: 490mm
Cooling Watt: 1000W
Flow Rate: 2500-3000ltrs per hour

ECO Cooler No: 61052

Power Consumption: 88W
Dimensions: L: 730mm W: 420mm H: 490mm
Cooling Watt: 1800W
Flow Rate: 3500-4000ltrs per hour

thermostatic controls and for those purchasers who already have an IKS computer system they can use their IKS to control the cooler without the digital temperature controller.

Water flow

It is important to have the correct water flow through a cooler for it to work at its most efficient. Ideally there should be between 1.0 to 1.5°C temperature drop between entering the unit and leaving it. For this to be achieved in high ambient room temperatures it may be necessary to slow the water flow through the cooler.

Economical and environmentally friendly

Apart from the refrigerant units *Deltec* also make the ECO cooler range which is more environmentally friendly and economical to run. Once again it can be used for both salt and fresh water aquariums and these units borrow its technology from a water cooling tower. It is possible to use the ECO cooler in conjunction with refrigerant coolers, therefore, reducing the size of the electricity bill substantially and being secure in the knowledge that even on the very hottest days of the year the temperature in your aquarium will remain stable.

FURTHER INFORMATION

For more information check out the *Deltec* website at www.deltecaquariumsolutions.com

Do you want to see the Light? Or do you want to see your fish?

New lights from *OASE*, *Interpet* aquarium heaters and *Tetra's* tempting offer.

OASE, the water garden specialists, have added to their array of award winning lighting products. The extensive range of indoor and outdoor lights has been extended with the Lunagard patio and garden light and the innovative Lunaqua 2002 pond down lighter.

A common problem when installing pond lights is that of being blinded by the light when looking into the pond. Enter the new Lunaqua 2002 down lighter! The Lunaqua illuminates large areas of the pond, even right down to the bottom (depending on depth and water clarity), with no glare or dazzle allowing all the light to reflect down into the water. The lamp can be either floated on the surface or comes with its own height adjustable stand.

The Lunagard patio and garden light has many creative possibilities with its elegant looks and 180-degree angle range. Designed as a garden light it is equally at home in the pond. Both Lunagard and Lunaqua 2002 come in 20 and 35-watt versions.

The new Lunaqua 2002 down lighter eliminates the problem of being dazzled by your pond lighting.

Further pond lighting products from *OASE*

For ponds and gardens the Lunaqua 2 range offers some unique advantages. The weatherproof transformer makes installation simple and the 20watt lamps produce a very bright light that travels over great distances to light up even the darkest of corners. For pinpointing certain features, the Lunaqua 2's beam can be adjusted to a fine spotlight, and with a simple twist of the light turning that beam into a wide angle floodlight to illuminate larger areas.

When very large ponds or features need lighting, the Lunaqua 50 range is the only answer. Still using a safe 12-volt system, the unique underwater transformer allows up to a massive 75-watt reflector halogen lamp to be used, throwing light over a huge distance. The component system allows for a light system to be created that is as individual as you are. Trees and large fountains or waterfalls can be illuminated with ease.

All OASE lights come with fixing brackets and ground fixing stakes and can be used in or out of the water to great effect (except the 75W Lunaqua 50 and Lunagard). The Lunaqua mini and Lunaqua 1 are suitable for small table top or conservatory water features and look great in aquariums. Their halogen bulbs produce a dazzling light for the use of just 5 watts, and their plug in transformers make them easy and safe to use.

TASTY OFFER

Tetra has decided to tempt your Oahes taste buds with their Prima granular promotional offer. With immediate effect, Tetra, one of the UK's leading fish food and fish treatments manufacturers introduces added value packs of *Tetra* Prima granular foods which will carry a free additional 25% extra fill. That's a quarter more to you and it these are available from pet and aquatic stockists while stocks last. The 31g pack will be available at the retail price of just £3.69 so if you have never tried your fish on this high quality granular food now would be an excellent time to give it a go.

There has never been a better time to try TetraPrima granular food.

FURTHER INFORMATION

For details of your nearest stockist or a catalogue, please contact OASE on 01376 533203 or www.oase-uk.co.uk

Heaters from *Interpet*

Available in 50w, 100w, 150w, 200w, and 300w the AquaTherm range form Interpet is a no-frills yet exceptionally reliable heater. Aimed at the budget end of the market, the AquaTherm retains many of the features that have made Deltatherm heaters so popular. There is an easy to adjust temperature control; LED heat on indicator and the heaters are fully submersible. The heater is secured to the aquarium glass by a robust sucker system and the compact design of the AquaTherm makes it unobtrusive in the aquarium. They are guaranteed for 12 months and come modestly priced at a Mrrp from just £16.99.

Reliable and easy on the pocket *Interpet's* Aqua Therm range of heaters is a good option for many aquarists.

FURTHER INFORMATION

For more information about these or any other Interpet product contact the Interpet Information Centre, Interpet House, Horsham Lane, Dorking Surrey RH4 1TF.

MARINE PRODUCTS FROM MARC WEISS

In shops you look and see an array of additives for the marine aquarium but why do we need all these bottles, simply because our life within our aquarium is slowly absorbing such elements and utilising them for bio-chemical reactions, so we have to dose various items of different chemical elements. The current market is well saturated with these, so it was to my horror that I heard a load of additives were on their way over to me for testing. Why was another company entering the market for additives? Testing additives is hard because every aquarium is different chemically and biologically and what works very well in one aquarium might not have the same result in another.

The parcel duly arrived and the contents were not what I expected, but a different range working in a different manner. Very briefly the range is based on bio catalysts and enzymes. Both act to give aquarium animals an enhanced ability to bio chemically utilise various substances for growth and vitality. The result should then be an increased growth rate and increased coloration along with an improved resistance to disease.

I looked at 5 products and an accurate description on each is not possible here so for further reading please go to www.MarcWeissCo.com. The products I looked at were Coral Vital, which increases the ability of photosynthic animals to obtain nutrients, Coral Vital LSB for micro fauna and micro flora enhancement in deep sand beds and live rock, in fact anywhere these beasts are found. Spectra vital is used to enhance filter feeders such as sponges, Fan worms etc, and claims to enhance larval development of fish. Amino vital to increase the pigment primers of corals, allowing a greater absorption of light energy. Combo vital a mixture of the previous and black powder to maximise the colour and vitality of all filter feeders.

The scientific background in using products such as catalysts and enzymes for animal and algal enhancement is sound, only not well know yet. These and other products are now available and well worth a look , some will work better than others depending on your aquarium, I did find a distinct improvement in the coloration and health of all the animals in my aquarium, though the increase was only slight in some species. On the whole this is a group of additives well worth considering.

Andrew Caine

MORE INFORMATION

For Coral Stockist Advanced Aquarium Products calls 7 please and for more information on how these products work check out www.MarcWeissCo.com


Striped julie
Julidochromis regani
25°C
22°C
10cm
today's fishworld
Copy for Today's Diary Dates
October's show, auction and club meeting dates.

Wed 1st	**Corby & D.A.S. meeting.** Contact 01536 790952
	Oasis Fish Club (Sunderland) meeting. Contact 0191 3841433
	Perth A.S. meeting. Contact 01738 621704 or 01506 515558
	Clacton Fish Keeping Club meeting. Contact 01255 428065
	Portsmouth A.S. meeting Contact Gill Uting, 9 Inverness Rd., Gosport, Hants.
	Bracknell A.S. meeting. Contact 01189 732824
	Ryedale A.S. meeting. Contact [illegible]
	Tameside A.S. meeting. Contact 0161 339 6593
Thurs 2nd	**Glenrothes meeting.** Contact D. Smart, 4 Torridon Ave., Kinglassie, Fife.
	Falcity A.S. meeting. Contact 01738 561291 or 07714 189507
	Sandgrounders A.S. meeting. Contact 01704 541177
Friday 3rd	**Basingstoke A.S. BBQ.** Contact 01189 701 1460
	West Cornwall Fishkeepers meeting. Contact 07799 011248 or 01209 612458
	North West Cichlid Group meeting. Contact 01942 207503
Sat 4th	
Sun 5th	**WASPS (Sunderland) Open show and auction** Contact 0191 5237460.
	British Cichlid Association Meeting Dr. Uwe Romer will be talking on Neotropical Cichlids. Contact BCA Publicity, 70 Kenton Street, Middleton, Manchester M24 6AY or BCAPublicity@aol.com
	Halifax Auction Contact 01274 880471
	British Killifish Convention Contact [illegible]
Mon 6th	**Kirkcaldy A.S. meeting.** Contact 01738 631689 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
	Reigate & Redhill A.S. Contact 01293 781282
	Merseyside Aquarist Society meeting. Contact 0151 260 3664
	Warrington A.S. Contact 01925 483279
	Port Talbot & District Aquarist Society Meeting. Contact 01639 770736.
Tues 7th	**Southend Leigh & D.A.S.** Contact 01702 305760
	Paisley & District A. S. meeting. Contact [illegible]
	York & District A.S. meeting. Contact 01904 414072
	The Irish Tropical Fish Society meeting. Contact 01 4561836
	Hatton A.S. meeting. Contact 0151 2698192
	North Bucks A.S. meeting. Contact 01908 377313
	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 01484 445543
Wed 8th	**Linlithgow Aquarist Society meeting.** Contact 01506 520558
	Halifax A.S. meeting. Contact 01274 880471
	Bradford A.S. meeting. Contact 07788 668697
	Hounslow D.A.S. meeting. Contact 020 8890 6933
Thurs 9th	**Mid Sussex A.S. meeting.** Contact 01524 602407
	Kings Lynn Fish Club meeting. Contact 01553 769582 or 01553 762702
	Falcity A.S. meeting. Contact 01738 561291 or 07714 189507
	Isle of Wight meeting. Contact 01983 721246
Fri 10th	**South East Marine Aquarist Society.** Contact 01279 301542
	Yorkshire Cichlid group meeting Willem Heijns introduces his visit to the crater lakes of Nicaragua. Contact 01924 367086
	Basingstoke A.S. meeting. Contact 01189 701 1460
Sat 11th	
Sun 12th	**Doncaster A.S. Open show and auction.** Contact 01302 885352
	Preston A.S. Auction. Contact 01772 321145
Mon 13th	**Kirkcaldy A.S. meeting.** Contact 01738 631689 or 01592 205565
	Port Talbot & District Aquarist Society Meeting. Contact 01639 770736.
	Ilford & D A.S.P Society Auction. Contact 020 8510 2370
Tues 14th	**Darwin A.S. meeting.** Contact 01254 769025
	Northwich A.S. meeting. Contact 01606 882966
	Caer Urfa A.S. meeting. Contact 0191 5737464
	Telford & D.A.S. meeting. Contact 01952 616410
	Lang Toun Aquarists and Pondkeepers Group meeting. Contact 01592 595825
	Northern Goldfish and Pondkeepers meeting. Contact 0161 9607567
	Greenock D.A.S. Meeting. Contact 01475 704219
	Bangor Aquarists & Breeders Society. Contact 028 9127 3539
	Clyde Aquarist Society meeting. Contact [illegible]@freeserve.co.uk
	Hull A.S. meeting. Contact 01964 562382
	Sitood & D.A.S. meeting. Contact 01634 222131
	Dunstable & D.A.S. meeting. Contact 01582 207280
	Oldham A.S. meeting. Contact 0161 281 3725
Wed 15th	**West Yorkshire Marine Aquarist Group meeting.** Contact 01924 420101
	Clacton Fish Keeping Club meeting. Contact 01255 428065
	Tongham Aquarists Society meeting. Contact 01252 25646
	Portsmouth A.S. meeting. Contact Gill Uting, 9 Inverness Rd., Gosport, Hants.
	Perth A.S. meeting. Contact 01738 621704 or 01506 515558
	Bracknell A.S. meeting. Contact 01189 731874
	Workington A.S. meeting. Contact 01900 67951
	Tameside A.S. meeting. Contact 0161 339 6593
Thurs 16th	**November 2003 Today's Fishkeeper on sale**
	Glenrothes meeting. Contact D. Smart, 4 Torridon Ave., Kinglassie, Fife.
	Bristol Tropical Fish Club meeting. Contact 0117 975 3145
	Sandgrounders A.S. Contact 01704 541177
	Falcity A.S. meeting. Contact 01738 561291 or 07714 189507
Fri 17th	**Discus Ireland meeting.** Contact 00353 1 [illegible]
	West Cornwall Fishkeepers meeting. Contact 07799 011248 or 01209 612458
	Festival of Fishkeeping & Water Gardening Weekend. Contact 0208 8473586
Sat 18th	**Festival of Fishkeeping & Water Gardening Weekend.** Contact 0208 8473586
Sun 19th	**Festival of Fishkeeping & Water Gardening Weekend.** Contact 0208 8473586
	Viviparous Livebearer Auction and Meeting. For further details contact Alan Rothwell 01282 312745
	Merseyside Auction. Contact 0151 260 3664
Mon 20th	**Kirkcaldy A.S.meeting.** Contact 01738 631689 or 01592 205565
	Bristol Aquarist Society (Goldfish) meeting. Contact 01793 853497
	Grimsby & Cleethorpes meeting. Contact 01472 349078
	St Helens A.S.meeting. Contact 01942 671463
	Otley A.S. meeting. Contact 01274 551418
	Robin Hood A.S. meeting. Contact [illegible]@freeserve.co.uk
	Port Talbot & District Aquarist Society Meeting. Contact 01639 770736.
Tues 21st	**Southend Leigh & Dist A.S.Auction.** Contact 01702 305760
	Greater Manchester Cichlid Society meeting. Contact 01706 826684, 01706 353363, 0161 766 4167 or 01422 947155
	Midlands Marine Aquarists Society. Contact 0121 359 4469
	Lang Toun Aquarists and Pondkeepers Group meeting. Contact 01592 595825
	Wyke A.S. meeting. Contact 01484 445543
	South Park Aquatic Study Society. Contact Eric 0208 6792689
Wed 22nd	**Hounslow D.A.S. meeting.** Contact 020 8890 6933
	Halifax A.S. meeting. Contact 01274 880471
	Workington A.S. Contact 01900 67951
Thurs 23rd	**Mid Sussex A.S. meeting.** Contact 01273 601407
Fri 24th	
Sat 25th	
Sun 26th	**Caer Urfa Auction.** Contact 0191 5737464
Mon 27th	**Kirkcaldy A.S.meeting.** Contact 01738 631689 or 01592 205565
	Thorpe & D.A.S. meeting. Contact 01653 605394
	Solway A.S. meeting. Contact 01387 750606
	Merseyside Aquarist Society meeting. Contact 0151 260 3664
	Ayrshire Fishkeepers Association meeting. Contact 01294 605272
Tues 28th	**Northwich A.S. meeting.** Contact 01606 882966
	Lang Toun Aquarists and Pondkeepers Group meeting. Contact 01592 595825
	Greenock D.A.S. meeting. Contact 01475 704219
	Croydon Aquarist Society meeting. Contact 020 8654 0984
	Sitood & D.A.S. meeting. Contact 01634 222131
	Oldham A.S. meeting. Contact 0161 281 3725
Wed 29th	
Thurs 30th	
Fri 31st	**Eastbourne & District Pondkeeping.** Contact 01323 771359

Ready, Steady, GO!

All the news from around the club scene.

Just a small selection of the goodies given to those people who are lucky enough to be staying the weekend.

Festival of Fishkeeping and Water Gardening

With just a few short weeks to go to this year's Festival of Fishkeeping and Water Gardening, things are shaping up to be the best ever. Virtually all the rooms are booked now (there is alternative accommodation available in the area and of course day visitors are welcome) and the line up of speakers has been finalised. Foremost among these is Juan Miguel Artigas Azas from Mexico. Juan will be speaking on Cichlids on the Saturday and Livebearers on the Sunday. The Sunday lecture will be followed by a livebearer auction organised by the British livebearer organisation, Viviparous, and will include a great range of rare and unusual livebearers as well as some wonderful cultivated varieties and a few great equipment bargains. Other speakers include Dr Peter Burgess of the Aquarian advisory service, Rupert Bridges of Tetra, Brian Walsh of the Catfish Study Group (U.K.) and Kevin Scadey of Kusuri products. All of whom give great talks any aquarist will enjoy and learn from.

The displays this year include stands by major manufacturers as well lots of hobby displays. Two new shows this year will add a new dimension to the exhibition. Throughout the weekend there will be an extensive Koi show taking place in a marquee. The other new show will take place on the Saturday and is for the top pairs and breeders teams of tropical fish as well as mini-furnished aquaria and Aquascapes. These will be in the same hall as the Goldfish, Catfish and British Open shows. Sunday is the day for the "Hagen Masters" Open show which encompasses all types of fish from Guppies to predatory Catfish.

For those of you into reptiles, amphibians and even cute little (or very large remembering last years monster) fluffy rabbits then there will be displays of all these creatures as well. For the really exotic fish don't forget to check out the display of fancy Goldfish staged by the Goldfish Society of Great Britain. This will include some varieties very rarely seen outside of China. All in all a great weekend for every fishkeeper and at a day visitor fee of just £2.50 adults or £1.00 child and senior citizens it represents really good value for money.

Rupert Bridges of Tetra will be there with a stand displaying many of the company's products and will also be giving a presentation over the weekend.

Dr Peter Burgess of the Aquarian Advisory Service will be lecturing on new methods of curing fish diseases.

FURTHER INFORMATION

For further information contact the information hot line on 0208 847 2586.

Champion of Champions exhibition

Plans are now well in hand for this year's Champion of Champions competition. Here are the details so far :-

After the disappointment of having to re-schedule this years Champion of Champions competition from August back to November, we are pleased to announce the date and new venue of the UK's most prestigious show. For most of its life the Champions of Champions was held at the very end of the year with all "Best fish in show" winners for that year eligible to enter. Traditionally this has translated into the first weekend in November and for this reason we have chosen Sunday 2nd November to be this year's date.

In line with the decision to move the event to a much better venue than where it was held in previously, we have now secured a lovely room at the Chesterfield Hotel right in the heart of Chesterfield itself. This venue has recently been refurbished to the highest standards and includes a top quality leisure centre including an indoor heated swimming pool, Jacuzzi, and Gym.

Apart from the Champion of Champions exhibition we have teamed up with a number of manufacturers and specialist societies to stage some displays and an auction. The auction will feature rare and unusual fish as well as a wide range of equipment donated by many of the UK's best known manufacturers.

Sandwiches and a full bar will be available throughout the day and for those who want a hot meal the hotel restaurant serves a great Sunday lunch at a reasonable price.

One of the lovely rooms at the Chesterfield Hotel.

This comfortable hotel has a number of pleasant seating areas where "schools" of aquarists can gather and talk fish.

WHICH FISH ARE ELIGIBLE?

Any fish which has won a 1st, 2nd or 3rd "Best in show" at any open show around the country - regardless of which Federation's rules it has been run to. To register your entries for this event please contact :

The Champion of Champions Organiser,
"Northside"
Spridlington Rd.
Faldingworth,
Market Rasen,
Lincs.
LN8 3SD.
E-mail : white.shark@btinternet.com

Or phone Derek Lambert on 01673 885302 during office hours.

THE JUDGES

Obviously with such a prestigious prize on offer we needed a team of judges which truly reflect the opinions and judging methods used throughout the whole country. For this reason the judges panel will hopefully be drawn from all the UK Federations and each judge is being asked to use their own Federation standards. This way the result will truly reflect which fish would win wherever it is shown.

WHO REALLY OWNS THE BEST SHOW FISH?

Come and see the very best show fish in the UK at the Champion of Champions exhibition. At the time of going to press most of the owners of fish which have won "Best Fish in Show" awards around the UK have said they will be bringing their fish to the final contest to prove THEY have the best fish. This really is going to be an amazing contest! All the top showmen shopping it out to win the most coveted title in the whole of the show calendar - the Champion of Champions.

BRITISH CICHLID ASSOCIATION MEETING

To be held at the Henley-in-Arden School, Henley-in-Arden, Warwickshire. On Sunday October 9th.

Guest Speaker

Dr Uwe Romer Author of the Badroch Dwarf Cichlid Atlas will be talking on Neotropical Cichlids (not just Dwarfs).

Other attractions

Sales Stand - offering books on cichlids and related topics, 300 lot Auction, Raffle - Prizes include: Large bucket AQUARIAN flake food, 1 years subscription to *TODAY'S FISHKEEPER MAGAZINE*.

Doors open at 10am. AGM to start at 11am prompt Admission AGM Free to Members. Speaker & Auction £3.50 for Members £4.00 for non-members. Refreshments will be available on the day.

FURTHER INFORMATION

BCA Publicity, 78 Morton Street, Middleton, Manchester M24 6AY or BCAPublicity@aol.com

New loaches

Some interesting cobitids have been imported for the first time very recently much to the delight of loach lovers. Arguably one of the prettiest is a Botia species imported from Thailand. This species, whose exact identity remains unclear at the moment, has immediately been given several trade names.

Hans-Georg Evers named it the "River Kwai-Loach", André Weimer the "Pinkadil-Loach" and Ingo Seidel the "Myanmar- Loach". The species most closely resembles *Botia dayi*, but one can observe differences between the fish and a drawing of *B. dayi*. The location where the *Botia* is collected (to date, the Salween River drainage in Myanmar or the Kwai River drainage in Thailand have been the

A fish of many common names but is it really *Botia dayi*?

Although *Liniparhomaloptera disparis qiongzhongensis* is imported as a tropical fish it requires cooler water than most.

most likely candidates) is probably outside the known distribution of *B. dayi*. The colour pattern changes with age, most noticeably in the spots becoming smaller proportionately. The identity of this loach is being determined, and the answer as to whether it is a described species is forthcoming.

The second loach introduced here was made known to aquarists without any trade names, since a scientific name, *Liniparhomaloptera disparis qiongzhongensis* Zheng & Chen, 1980, was already associated with it. Presuming that the identity is correct, the fish comes from the Wanquan River in Qiongzhong Xian (county) on Hainan Island (off the southeast coast of China). But this identity could not be validated. Because I was unable to obtain a copy of the original description, I asked Heok Hee Ng for some help, and he sent a drawing to me of this subspecies.

The colour pattern in this drawing led to the result that the imported specimens obviously belongs to the nominal species *L. disparis disparis* and not to *L. disparis qiongzhongensis*.

This species has the typical morphology of river loaches (Balitoridae), which is adapted to living in rapid stretches of rivers. I do not know its maximum size (a check with FishBase also drew a blank). These fish should not be maintained under warm conditions, even if they are consigned tropical fish. They do best in temperatures of 20 to 23°C.

References:
Evers, H.-G. (2001): Eine wunderschöne neue Prachtschmerle aus dem Grenzgebiet Thailand-Myanmar. (Neue Fachmag., 35 (3/2001): 30)
Seidel, I. (2003): Neuheiten und Raritäten. (Aquar. Jrkt., 11 (4): 8-9)
Shaw, G.E. & Shebbeare, E.O. (1937): The Fishes of Northern Bengal. (J. Roy. Asiat. Soc. Bengal 3: 1-79)
Weimer, A. (2003): Neue Prachtschmerle aus Myanmar! (DATZ 56 (8): 32)

Top of the Pops

Everyone has their own "*Top of the pops*" in the fish world. Here Emma Pike, a 16 year old reader from Somerset gives her 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, AL10 0RN

Upside-down catfish

EMMA'S VERDICT
This fish gets its name from swimming upside down although I've rarely seen it! One to have in a community tank.

A magnificent specimen

Scientific name :-	*Synodontis nigriventris*
Aquarium type :-	60 x 30 x 30cm
Distribution :-	Zaire
Diet :-	All types of commercial foods but also likes some live food in its diet.
Companion species :-	Other peaceful community fish.

Angelfish

EMMA'S VERDICT
An unusual fish to have in a tank of shoalers and known to get boisterous to others on an empty stomach!

As mature fish they lose the red fin colour

Scientific name :-	*Pterophyllum scalare*
Aquarium type :-	90 x 30 x 45cm
Distribution :-	South America
Diet :-	All foods but likes some or frozen food in its diet.
Companion species :-	Other medium sized community fish.

Platy

EMMA'S VERDICT
Many varieties to choose from. One of my favourites is the Micky Mouse platy with Mickey's head on its tail

A beautiful coral red platy

Scientific name :-	*Xiphophorus hybrid.*
Aquarium type :-	60 x 30 x 30cm
Distribution :-	Central America
Diet :-	Flake, granular, frozen and live foods. Easy to feed.
Companion species :-	Other small to medium sized fish.

SEE KEY TO SYMBOLS ON PAGE 5

Guppies

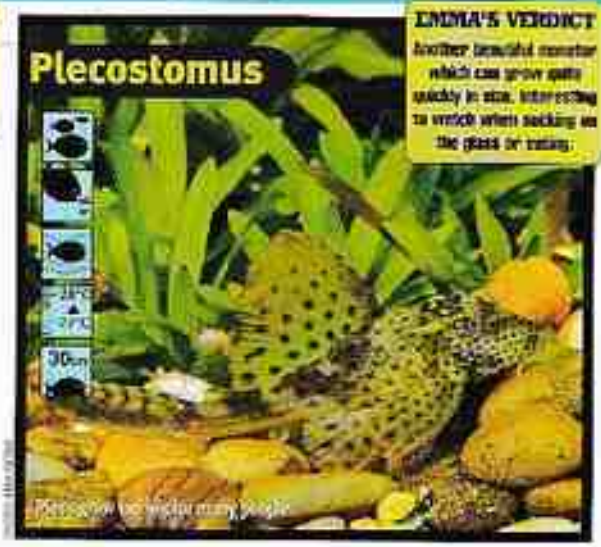
EMMA'S VERDICT
One of the most popular tropicals I know. A very easy fish to breed especially for beginners.

Guppies are beautifully coloured fish.

Scientific name :-	*Poecilia reticulata*
Aquarium type :-	45 x 30 x 30cm
Distribution :-	Originally South America and the Carribean, now world wide.
Diet :-	Flake, granular, frozen, and live foods. Easy to feed.
Companion species :-	Other small sized community fish.

Plecostomus

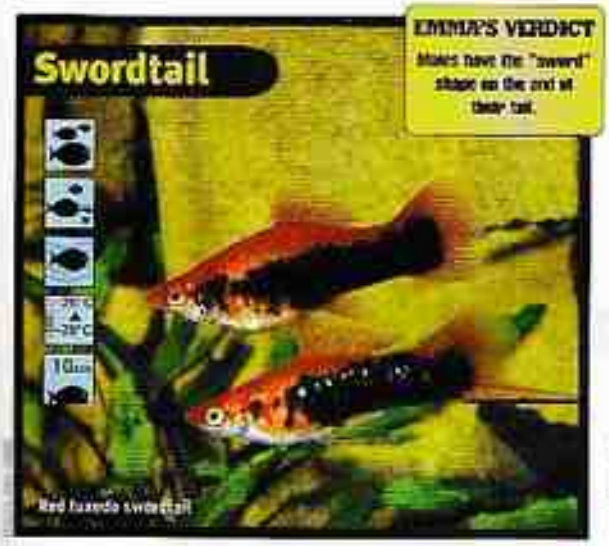
EMMA'S VERDICT
Another beautiful monster which can grow quite quickly in size. Interesting to watch when sucking on the glass or rocks.



Scientific name :-	*Hypostomus punctatus*
Aquarium type :-	180 x 60 x 60cm
Distribution :-	S. & SE Brazil
Diet :-	All commercial foods, plus any vegetable matter they can find.

Swordtail

EMMA'S VERDICT
Males have the "sword" shape on the end of their tail.



Red fuzzie swordtail

Scientific name :-	*Xiphophorus hybrid*
Aquarium type :-	90 x 30 x 30cm
Distribution :-	Central America
Diet :-	All foods including commercial flake and granular.
Companion species :-	Other medium sized community species.

Neon tetra

EMMA'S VERDICT
A very colourful, bright fish. Beautiful in a large shoal of 12 - 15 where you can really see a lovely display of colours.

Neons are fairly easy fish to look after.

Scientific name :-	*Paracheirodon innesi*
Aquarium type :-	60 x 30 x 30cm
Distribution :-	Peru
Diet :-	Not fussy. Flake, small granular, frozen and live foods.
Companion species :-	Well suited to a small sized community aquarium with other peaceful fish.

Sea view

This month **Andrew Caine** looks at conditions for soft corals and introduces a small fish and a tiny invertebrate.

Long established Mushroom corals (this is Fungia fungites) sometimes start to shrink and perish. Why? We still don't know but occasionally they recover all by themselves.

Pulsing corals from the family Xeniidae, can all be doing very well showing great growth, then in the space of one day the whole lot becomes a gunky mess around the rock work. This is by far the fastest die back known in corals to date and we don't know what causes it. It could be a sudden loss of a chemical required by the coral that we cannot test for, or loss of a certain type of food. The plain fact is we do not know. However, if your coral suffers from this, try to keep its base, which seems to be unaffected, and new stalks can re-grow!

Some soft corals from the genera Capnella and other branched forms (tree corals) can suddenly fall over, their stiff stalk suddenly loses its strength and over it goes, never to recover. Again this can suddenly occur in an otherwise healthy coral which has been in an aquarium for many years. If this happens then it is time to cut small frags off the doomed coral. Do not mistake this with shrinking, a trait in which the stalk always remains erect. This behavioural trait is quite normal.

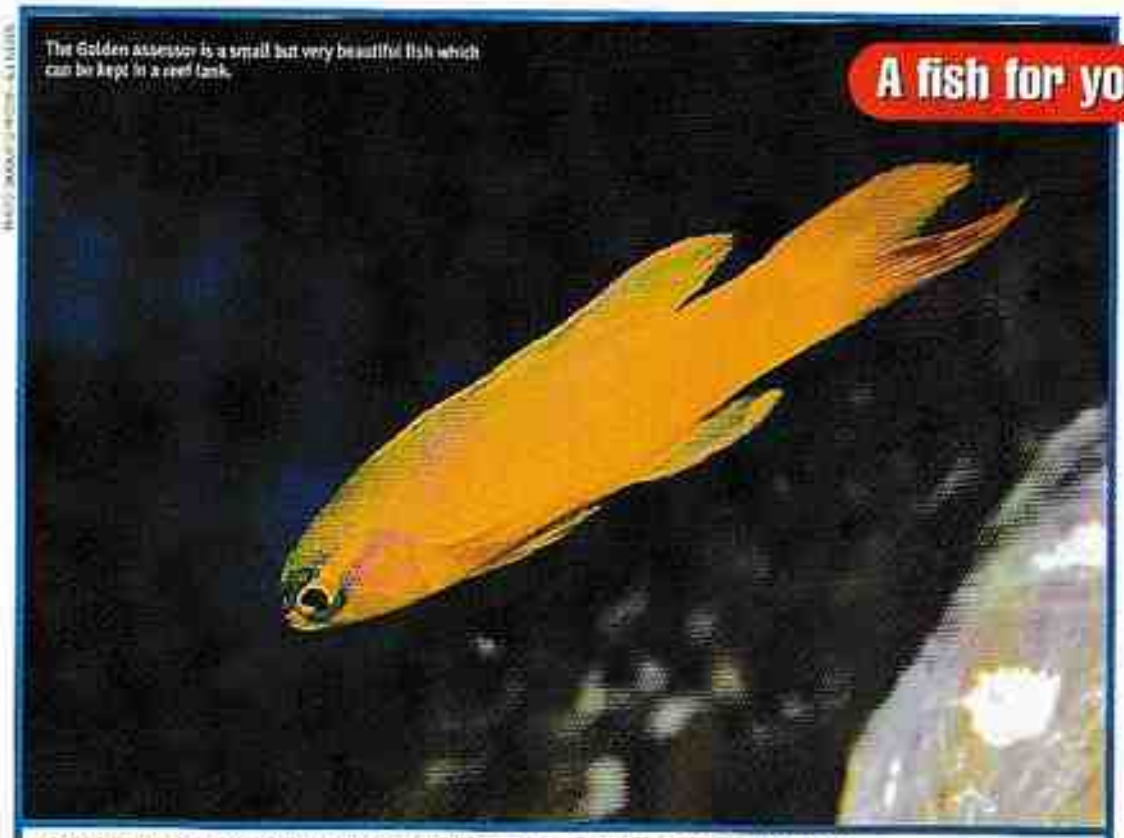
Mushroom corals that have been happy for ages suddenly start to shrink, the defined condition remains, and can do so for many weeks before they finally perish. In this case recovery is very rare but it has occurred and we have no idea why this happens. The key here is that the corals' sudden deterioration is not due to their being new additions suffering from incorrect positioning.

Tentacled corals can also suffer from a collapse which should not be mistaken for a slime cover. To close down the polyps retract and remain within the coral, the skin can change colour and a sheen forms over the surface which can last for over four weeks. Then suddenly the polyps start to re-emerge, pushing up the old skin forcing it to be removed from the body. Growth has just occurred and this is termed as a close down and is perfectly normal.

When a toadstool collapse (the resemblance to close down is hard to distinguish, only when parts of the coral start to rot away do we realise that we are in deep trouble. If this happens, cut away the area and perform a coral dip in a strong solution of aquarium water and iodine. This has shown good results and many corals do recover.

Over the past few months we have seen just how little knowledge there is in the area of coral diseases. If we take care in handling the corals, acclimate them correctly and feed them, mortality will decrease. Prevention is the name of the game. Most causes are unknown but I believe that the gradual decrease in any one element of a system over time causes such distress. Remember that you will lose water velocity over time as the pump slows down, lighting intensity and wave length alter, pH fluctuates, the list can go on and on and all will contribute to coral stress. One parameter however, is the biggest cause for coral mortality and that is temperature. Every biological, physical and chemical reaction is governed by temperature, and high fluctuations of over 1 degree Celsius in 24 hours is bad. Yet this is a fact most people ignore. Never forget there is one word that will help in all situations in a marine aquarium, STABILITY, keep stability and you will keep healthy animals.

A fish for you



The Golden assessor is a small but very beautiful fish which can be kept in a reef tank.

GOLDEN ASSESSOR (*ASSESSOR FLAVISSIMUS*)

Yellow tangs, Dwarf angels and Wrasse. It's so easy to miss out on one of the most spectacular fish you can keep in a reef aquarium. This happens because the Golden assessor is very small, often only 2 cm long in the dealers' tanks, yet costing between £20-£25. A big Tang can be bought for that so why pay the same for a small fish?

This is not an easy question to answer. Weight for weight you get more for your money and those bigger fish are just fantastic too. But what makes the Assessor one of the best reef fishes you can get.

Remember the beauty of reef keeping is not just the corals or fish. For outweighing the sight of these relatively large beasts, the most important aspect of reef keeping is, in my opinion, the beauty and total joy of the unknown. What are the little things? There's the reef I put in a month ago, what delight that brings. There's that Assessor, hovering upside down under that overhang and swimming upside down, and there aren't many fish that can do that on your reef. That one fact should make you go out and purchase one.

I have never seen an Assessor with any form of disease whatsoever. Other people may have but I have not, eg white spot, nothing. If this is not a hardy fish ideal for the beginner I do not know what is! It is very peaceful, so you have to be careful and watch for any signs of aggression from bigger fish or your golden beauty will be banished into the rockwork for ever. A shoal of 5 is a brilliant sight but introduce them all together and make sure you have one individual larger than the rest to act as a dominant fish. A shoal of golden fish hovering upside down under an overhang in your reef is truly a delightful sight.

PROFILE

Family:
Pleuroplidae

Name:
Assessor flavissimus

Location:
Western Pacific

Feeding:
Small meaty vitamin enriched foods, at least twice per day

Reef Compatibility:
Great reef fish

Size:
5-5 cm

An invertebrate for you

Pygomatid barnacles with their feeding arms gathering food from the water. Only a year ago these were almost impossible to keep in captivity.

BARNACLES

I love em, they are truly amazing animals and if Mr C. Darwin spent 8 years studying them then they are worthy of a few paragraphs in Sea View. Sometimes you may come across the stalked barnacle from the genus *Lepas* in shops, but more commonly you will find single animals attached to a hard coral that you buy. These are Gall barnacles or Pygomatid barnacles.

Barnacles belong to a group known as the cirripedia, the name is taken from the fact that their legs have become so modified into feeding structures they are not legs anymore, but cirri, so cirri and pedis– legs. When a larval barnacle settles it lies on its back and cements itself to the surface by a bio-adhesive, then builds a shell around the body. It has a cuticle exoskeleton which, like crabs and shrimps, is moulted allowing any damage to be repaired and growth to occur. The legs are now the feeding appendages which also force water down into the shell providing a current allowing the animal to breath. If you place a small barnacle encrusted rock in a tank, you will see how these limbs beat to catch food. If you are in luck you will see a nibble. Watch how the animals respond when you pass a shadow over them, for the shadow could be a fish waiting to nip off a juicy arm.

Why look at one of my personal bests in the invert world? Until recent advances in the aquatic industry we could not keep such animals alive for long periods, so one year ago 99% of barnacles in the aquatic world were doomed. This was simply because we starved them to death. Nowadays hundreds of people drip feed phytoplankton and liquid coral foods into their aquarium all day. This means, we are supplying many such animals with enough food to keep them alive and growing whilst keeping water quality.

When in shops look on the hard coral stock and try to find a little bump in the skeleton. Coral polyps cannot overgrow the barnacle so they are easy to find. Look for the beast inside as you do not want an empty shell. The most common hard corals to contain boring barnacles are Euphyllia, Galaxea and Acropora species but they are found on many others. Remember that you must have the correct conditions for the coral you are buying as the barnacle MUST be considered as a secondary item of livestock or as Mr Bruce Forsyth says "a finney bonus" and what a bonus they are. Hunt them down, find them and enjoy!

PROFILE

Phylum :
Arthropoda

Name :
Many species, mostly unknown to science belonging to the Pygomatid barnacles

Location :
Global tropical distribution

Feeding :
Live phytoplankton and other liquid food dripped into the aquarium constantly

Size :
From 0.1 - 0.5 cm

Water flow :
Moderate to high

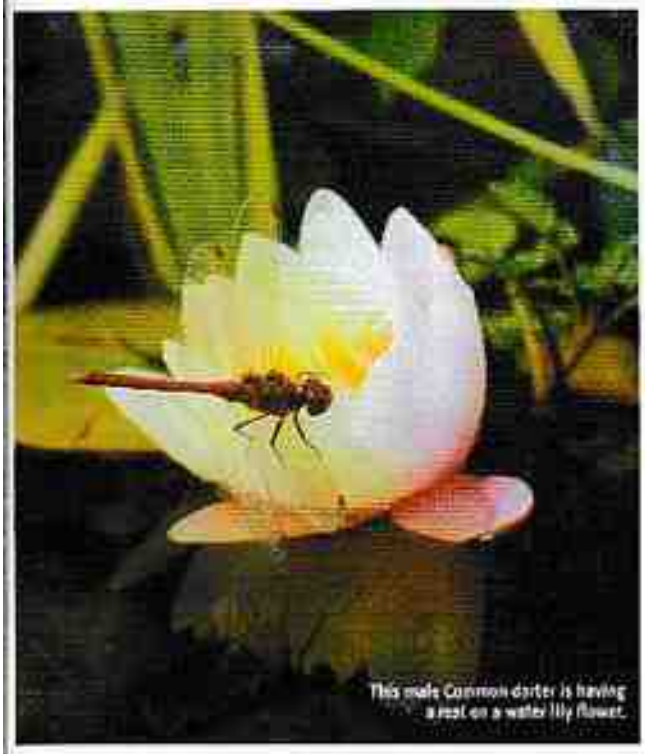
Lighting :
Intense lighting for the coral

Difficulty :
For the more advanced hard coral reef keepers

truly amazing animals and if Mr C. Darwin spent 8 years studying them then they are worthy of a few paragraphs in Sea View.

Ponderings

Some vital jobs need to be done now to keep a healthy pond environment and **Dave Bevan** questions whether a fish often sold as the ultimate solution to blanket weed is all it's cracked up to be?



This male Common darter is having a rest on a water lily flower.

Common Darter

Even as late in the year as October there may still be the occasional dragonfly to be seen round the pond and the last one to give up the struggle is usually a Common darter. In fact the latest I have seen one on the wing, albeit a very discoloured and bedraggled specimen, was 8th November.

The Common darter is a one of the smallest dragonflies with a wingspan of around 55 mm. Females have a yellow brown body and the males are reddish brown whilst the wings are transparent with tiny black spots in the corners.

Earlier in the year they are often seen at the pond making short darting flights from perch to perch among the vegetation as they hunt for small insects. They also spend long periods sunbathing with their wings held back in a characteristic pose.

ESSENTIAL AUTUMN JOBS

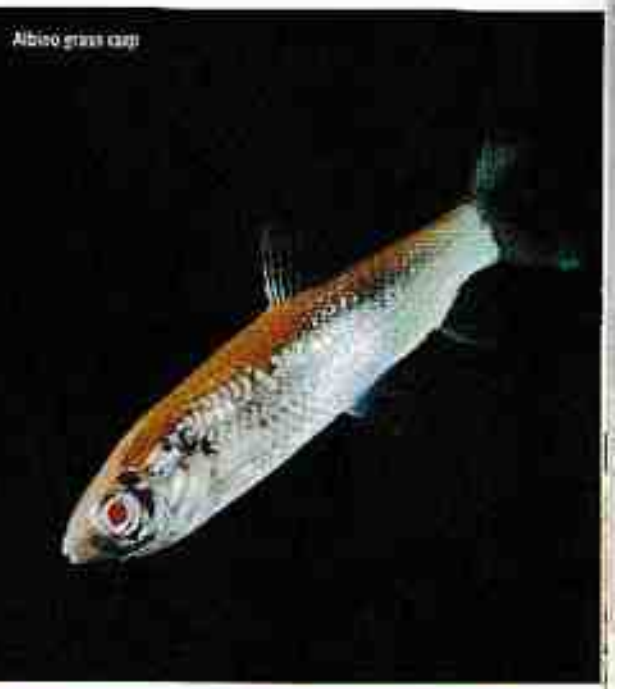
If your pond and its inhabitants are going to survive the winter and emerge through into warmer in tip top condition it is important to get on top of these autumn jobs.

1. As marginal plants die back cut off and remove the foliage to prevent it from adding to the biological load on the system.
2. Gather plantlets or turions from floating plants like water soldiers and frog bit and store them in a frost free place. They can be reintroduced into the pond in late spring.
3. Install a pond heater, which can be turned on if the pond shows signs of icing over. By keeping a section of the pond open to the atmosphere you will prevent the build up of poisonous gases.
4. Throughout the autumn feed the fish with a wheat germ based food, which is easily digested even at lower temperatures.
5. When feeding stops remove the pump and clean it in preparation for reinstallation in spring.

Net the pond to make the collection of windblown leaves easier.

GRASS CARP FACTFILE

SPECIES:	Grass carp (*Ctenopharyngodon idella*)
OTHER NAMES:	None
OTHER FORMS:	Albino
SIZE:	Up to 1 metre
WEIGHT:	Up to 30kg
AVAILABILITY:	Most aquatic outlets in spring, although the albino form is more difficult to find.
HABITAT:	Originating from China it likes large warm rivers with a slow flow and plenty of weed.
IDENTIFICATION:	A light golden fish with a streamlined shape and upturned mouth. The albino form is lighter in colour with a very pronounced red eye.
HABITS:	Shoaling fish, happy in ponds with plenty of plant growth. Does not spawn until water temperature is above 20°C so will not spawn naturally in this country.
POND FISH VALUE:	They are not very showy fish and have a tendency to grow very large. Contrary to popular belief and their name they are not the answer to weedy ponds as they show little interest in plant material until the temperature reaches 15°C and then consume large quantities until it rises above 20 degrees. They will eat blanket weed but it is not a preferred choice.



Albino grass carp

FIN AND TAIL ROT

This koi has a badly infected tail and fin rot has become well established

Fin and tail rot is caused by a variety of bacterial organisms gaining a hold on the physically damaged tail or fin tissue which may be the result of bad handling or bullying by other fish. Poor water conditions will allow it to progress from the edge of the tail or fin where a distinctive white line on the outer margin moves inwards leaving the margin badly frayed. The soft tissue between the rays slowly rots away until in extreme cases there is only a stub left.

When caught in the early stages proprietary fin rot cures can be used and the fin tissue will heal with some regeneration taking place. In more extreme cases the bacteria invade the body tissue and antibiotics will be required.

INVISIBLE POISON

A vegetable filter needs strong growth to ensure nitrate removal.

A pond full of crystal clear water does not necessarily mean that your fish are living in a healthy environment. Most of the waste products produced by your fish are colourless and even the largest and most efficient biological filters cannot remove nitrates from the water.

Nitrates are the end product produced by the nitrifying bacteria, nitrobacter, during the breakdown of waste products. Fortunately they are much less poisonous than ammonia or nitrites but at levels of more than 50ppm can start to cause stress so it is important to routinely check the levels.

In the fish pond nitrate levels are controlled by changing a proportion of the water but in the natural system nature has found a way of ensuring they do not get out of hand. Nature's answer is plants and nitrates are important for plant growth and exist in solution when are absorbed through the roots of all water plants thus removing them from their pond.

A vegetable filter, which consists of a bed of quick growing plants like watercress, can be used to help to control nitrate levels. However, as with any natural system, the results are not instant and the amount of nitrate removed is proportional to the rate of growth of the plants and the amount produced in the fish pond.

EQUIPMENT CORNER

Straw, or more specifically barley straw, has been used for years in the fight to control algal growth in garden ponds – the cause of green water and unsightly blanket weed. It is a natural and therefore safe method of control which will not harm either fish or plants and for many ponds is very effective.

Laguna have gone one step further and converted the barley straw into pellets to provide a convenient and effective slow release of the natural products which inhibit the growth of algae. Supplied in a 2.5 kg resealable bag there is sufficient to treat a 2000 gallon pond, but if your pond is smaller add it at a rate of around 1 pellet for each 100 gallons. Simply weigh the pellets into the mesh bag provided, close with the special seal and place the bag in the pond. For best results it should be in moving water like the will flow from a waterfall.

Barley straw pellets from Laguna, the simple and natural way to control algae.

Rivalry between pair in mating wheel

JUST LIKE THAT!

Dragonflies do not believe in a long courtship! The males patrol the pond and as soon as a female appears it is grasped in flight at the back of the head by the male using its anal appendages. From this tandem position the male curves his body downwards and the female upwards to form a copulating wheel.

'A pond full of crystal clear water does not necessarily mean that your fish are living in a healthy environment.'

FISHY TALES

Trout are not usually recommended for garden ponds due to their requirement for clean highly oxygenated water. If, however you have a pond system where Koi can thrive then trout will also be successful. At close quarters all trout are stunning fish although the Brown trout blends in with the background making it a less showy fish than the Rainbow trout. The Rainbow trout adapts better to the pond situation and a small shoal of equally sized fish will spend hours cruising round the pond when their bright pink side stripes become obvious.

Recently I came across a Blue trout at a local fish farm, which is a form of Rainbow trout with a steely blue back and upper flanks. They mix happily with the Rainbows making the water literally boil when a handful of food is thrown in.

On a warm summer evening there are few sights to beat one of these trout as it jumps clean out of the water in pursuit of a fly.

PLANT LORE

You can increase your stock of most water plants by normal vegetative cuttings but if you are looking for larger numbers of plants then raising them from seed is the cheapest method. However some cultivars rarely breed true and must be produced vegetatively. And this unfortunately includes most of the water lilies.

With most water plants you will get the best results by sowing the seed when it is fresh, straight from the parent plant. Initially the seed of marginals and deep water aquatics should be sown in a heavy loam compost and covered with a layer of silver sand. Keep them wet but do not immerse them in water until they have germinated and roots because the seed will usually float out of the container.

Flag-lily seed pods on plant. These should be sown as soon as they are ripe.

Plants for the bog garden can be raised from seed sown in trays of seed compost and will benefit from the protection of a cold frame. Once they have reached the seedling stage they can be pricked out and grown in individual pots for planting out the following spring.

DISCUS PROBLEM SOLVER

Our resident Discus expert helps solve another batch of Discus problems.

A beautiful Cobalt blue discus. The red eye really stands out on this specimen.

Nitrate reduction problem

Q In my Discus tank which is 200 litres filtered by an external canister filter I have 6 large Discus and a small shoal of mixed tetras and a few catfish. All my tests are normal or acceptable except the nitrate which I have never been able to get down to below 25ppm and it rises to 40ppm on occasions. How can I lower this preferably to zero.
Sean Porter, West Yorkshire.

A You do not say whether your set up is bare or planted. Nitrate is a by product of your feeding and is also a constituent of your tap water. In a bare tank it is usually more prevalent than in a planted tank as the plants remove such pollutants. Firstly, test your tap water to see the level there because if your tap water is 25ppm this may be the reason it is always at least 25ppm rising to 50ppm through feeding. Nitrate is easy enough to remove with a resin in your filter or a unit of which there are various on the market designed specifically for that job. Personally I do not worry below 100ppm as it is not that toxic and as long as you know what the level is, you can monitor it. High nitrate content annoys the fish and will give you the same symptoms of a parasite infection such as fin flicking and rubbing against objects and only requires a water change to lower it, not a medication to cure something that rarely the same symptoms.

Can I keep Catfish with Discus?

Q I have heard that most Catfish are dangerous to keep with Discus but would like to keep some with my Discus community tank. Can you tell me which are safe to put in with my Discus and which to avoid.
M.Forster, Nottingham

A I would like to assure you that most Catfish are definitely not dangerous to keep with Discus. Some have gained a bad name but all have been maligned. As a general rule, for all Discus tankmates, if it grows too large or is known to be aggressive it is to be avoided. Cats in the *Corydoras* genus are excellent tankmates. Smaller suckermouths such as the *Ancistrus* genus are also good. Large suckermouths like *P. gibbiceps* really grow too large.

How are Discus measured?

Q Can you shed some light on how Discus are measured as I have bought fish in the past which quite frankly were not the size I expected when ordering them and I have been given many explanations.
Ian Peterson, Hull

A I will try to shed a little light but it is really up to the people selling the fish to get their act together. Overall length includes the tail, average length is an average length and height. I prefer standard length which is used by judges in competitions. This is the length from nose to the caudal peduncle (excluding tail) and is, I am sure the measurement we should all use.

At yours when full grown Red or Saddle pleco (*Pterygoplichthys gibbiceps*) grow far too large for most tanks!

The experimental aquarium photographed in March 1998.

Testing Times

Alf Nilsen has always been at the forefront of developments in the marine hobby, here he explains how he tested various technical equipment on an experimental aquarium and compared corals living in this system with the same colonies in the wild.

Some years ago I had the opportunity to start and monitor a small experimental aquarium with the purpose of tracking the physical, chemical and biological changes that occurred over time when no water was replaced. This was a most interesting and important experience and really revealed some surprising results. In a couple of columns I would like to share the events with you readers.....

The secret of a stable reef aquarium

An important part of the secret of the stable reef aquarium is patience. From my point of view, based on what I have seen in many European reef tanks and learnt from hobbyists in Germany and elsewhere in Europe, the aquarium should be populated very carefully and must be allowed to complete a break in period of several weeks or even several months.

Main goals of the experiment

The main goals with the experimental aquarium were:

1. To log the changing in the concentration of major elements during the first period of operation when no water-change or adding of trace elements were done.
2. To log how the algae developed and grew from the live rocks and in the aquarium in general during the first year in operation.
3. To log which micro- and macro animals that appeared and established a healthy population in the aquarium during the first year of operation.
4. To log the growth of some stony corals during the first year in operation.
5. To test various technical equipment, especially the Ils aquastar aquarium computer.

The project could not have been done without the enthusiastic help of several companies and individual persons. Please see table 1 for details. This table also gives the specifications for the technical equipment used in this project.

Technical aspects

a) The Aquarium and the sump

The aquarium itself, which was supplied by NORDSEA, Bergen, Norway, is not very big and contains a total of only 189 litres including the 54-litre sump. The aquarium is a glass container glued with silicone. The water is transported to the sump through a surface runoff chamber on the left side of the aquarium and returned to the aquarium by the use of an Eheim 1060. The sump is also a glass container glued with silicone and placed in the cupboard below the left half of the aquarium. Some adjustments were made to the sump in order to make the water flow inside the sump correct.

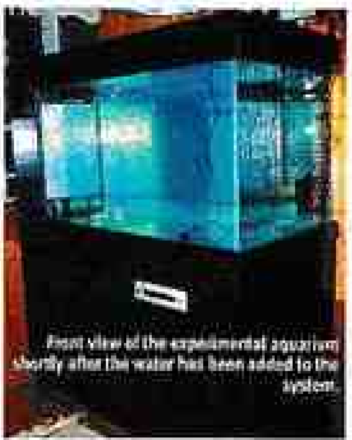
b) Filtration

An AFE Junior skimmer of the venturi type driven by an Eheim 1060 pump is placed in

BACKGROUND

In the very early days of marine aquaristic the European reef aquaria were sterile and decorated with dead coral skeletons regularly cleaned in bleach. The inhabitants were fishes only. Later on, in the late seventies and early eighties, the aquaria turned more biological, housing algae and live rocks. One major discovery that we made was that sick fishes healed and that epidemics were a rare event in the "biological" aquaria. When the combination of skimming, metal halide illumination, live rocks and refilling of calcareous water were added to the scene in the early eighties, we discovered that the growth of filamentous algae could be controlled and eventually replaced by calcareous algae. During some months the aquarium turned into a true "mini-reef".

I remember very well when we visited Mr. Johannes Birkholz in Linz, Germany back in 1983 and saw his impressive reef aquarium. When we asked: *"Why don't the algae overgrow your aquarium?"*, Mr. Birkholz leaned back in his chair and answered: *"I'll explain you why…"* The story that followed was more or less a summary of the paragraph above and could very well be said to be a story of a revolution of reef aquaristic, a revolution that took place in Europe in the beginning of the eighties.



Front view of the experimental aquarium shortly after the water has been added to the system.

the sump. The skimmer is the only unit of filtration in the system. (The live rock and the gravel in the system must, however, be regarded as functioning as a biological filter). The skimmer has functioned perfectly throughout the 15 months the aquarium has been in operation. It has been cleaned regularly and a total of about 5 litres of highly thick adsorbat has been removed during the period, giving an average of about 0.3 l/month. The content of the adsorbat has not been analysed.

c) "Kalkwasser"

A homemade system for refilling calcareous water is also placed below the aquarium. The system consists of a PVC container housing 9.6 litres (shaped as a cylinder with a diameter of 18.5 cm and a height of 35.5 cm), a magnetic spinner (KMO3, 0-1100 r/m), a level sensor from *Ro*, and a peristaltic pump (*Ro Vario XD* Model *MP 045*) with a rate of 10 ml/min.

The principle for the system is described in detail in Tosså & Nilsen, (1996). Calcium-hydroxide is mixed with fresh water using a magnetic spinner that runs for 2 minutes twice in 24 hrs. The freshwater enters the container, which overflows refilling calcareous water to the aquarium. An average of 3.9 l/day has been added during the period and over a 485 day period a total of 875 gram CaO has been used for making "kalkwasser" giving an average of 1.8 g/day.

b) Temperature

The temperature has been adjusted to a level of 25 degrees C Co by the use of *Ro aquastar* and the 300W *Aquasoon System* heater, and has been kept stable on this level all the time of the project, except for in the very hot months of the Norwegian summer (June-August 1997) where direct sunlight caused the temperature to rise and reach levels of 30 degrees C Co. This did, however, not lead to bleaching among the stony corals or other photosynthetic organisms.

c) Circulation

The flow between the sump and the aquarium creates a steady circulation of about 2000 l/h (there is a loss of flow caused by difference in level between the sump and the aquarium and by resistance in the tubes). In connection to this four *Aquarium Systems Maxi Jet*, 4 x 1200 l/h internal circulation pumps were installed and operated through the *Ro aquastar*. These pumps were

The sump hidden in the cabinet.

operated in a programmed sequence showed in drawing - no.

d) Light

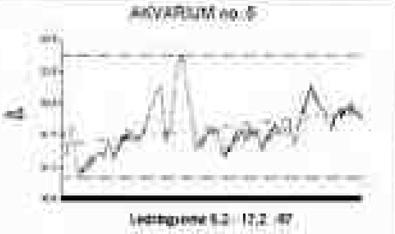
The main illumination of the aquarium consists of 2 x 150W HQI-TS *aquasunlight* 10000 Ko. The lamps have, however, been used in two different fixtures. With both fixtures about 50,000 lux was measured in the water surface (15 cm below the bulbs). With the *UFO Compler* fixture (used for the first 12 months) there are also 2x30W "blue-actinic" light tubes and 2x24W *Dulux* moonlight, controlled over an internal light computer, in use. The "blue-actinic" tubes give about 6500 lux at the surface for each tube. The *aquasunlight* (used for the last 6 months) includes moonlight (2x24W *Dulux*) controlled by an external Light Computer, but there are no blue-actinic tubes in this fixture. The HQI-lights used a light period of 10 h/d while the blue-actinic tubes were on for 14 h/d. The moonlight of both fixtures was controlled over a monthly light-intensity-cycle.

e) *Ro aquastar* aquaristic computer

The *Ro aquastar* aquaristic computer was used for the continuous survey of pH, redox-potential and conductivity. In addition the computer controlled and →

```
Time
00------03------06------09------12------15------18------21------24
Flow rates:
--------8400 l/t------"---[illegible]---"-----2200 l/t -----"------1100 l/t-----[illegible]----
xxxxxxxx all xxxxxx
                xxxxx ch. 5  xxxxxx
                          xxxxx ch. 6 xxxxx
                                   xxxxx ch. 7 xxxx
                                          xxxxx ch. 8 xxxxx
                                                        xx moon xx
```

The diagram shows how the four Instant Ocean Maxi Jet were programmed to produce a varied waterflow over a 24 hour period.



Fluctuations in conductivity (top) and pH (bottom) measured with IKS Aquastar during the period 9.–17. February 1997. The horizontal lines mark maximum value (in conductivity only), average values (slightly increasing in both conductivity and pH) and minimum values.

TECHNICAL DATA FOR THE *iks aquastar*

The manufacturer gives the following technical data for the measurements:

Parameter	Range	Resolution
PH	2.0 – 12.0	0.02
Redox	-300mV – +600mV	1.0 mV
Temperature	0°C – +50°C	0.05°C
Conductivity, range 1		
Conductivity, range 2	10mS/cm – 1.0mS/cm	
1.0 mS/cm – 100 mS/cm		1.0mS/cm
0.1 mS/cm		

The aquaristic computer has worked well during the time of the project. Direct sunlight does, however, seem to disturb the reading in the external display. The probes must of course be carefully calibrated and regularly cleaned. You also have the possibility to programme "set values" for pH, temperature, redox and/or conductivity. If the computer measures values out of the programmed "set values", an alarm lamp starts to flash and the normal "OK" reading is changed to "ALARM" in the external display.

Iks aquastar aquaristic computer can also be permanently connected to a PC and through the programme ComDis it is possible to follow the computer readings on a continuous basis. This feature also includes the amount of water refilled through the peristaltic pump.

In 1998 version 2.0 of the iks aquastar was released, a version containing many new features including moonlight- and tidal cycles. To-day, in 2003, the IKS-aquastar concept has developed further. See http://www.iks-aqua.com/html/engl/start.htm for details.

AQUARIUM and SUMP

NORZOO, Mr. Rolf Hansen, Markeν 4, N-5017 Bergen, Norway

Material: glass
Size: 94cmx70cm x 50cm (LxBxW) + sum-pit chamber (15x50x50 cm) + sump (50x47x25 cm), total volume: 365 liters.

SKIMMER

STAVANGER AKVARIEFORRETNING, Mr. Christer Olsen, Kongsgt. 4, N-4012 Stavanger, Norway

Type: ATK "Junior", diameter 20 cm, height 57 cm, volume 10 liters. Run by an EHEIM 1060 pump with at water flow of 2280 l/h.

LIGHT

Aqua connect, Mrs. Erica Schödder, In der Thunhorst 7, D-49152 Bad Essen, Germany

Type: *UKI-COMPLET*, 2x150W HQI 10000Kn, 2x30W blue-actinic lightubes, 2x24W Dulux blue moonlight bulbs, computer-controlled day- and moonlight rhythm.
(Used for the first 12 months of the project)

LIGHT

Aqua Medic, Dr. Manfred Schlüter, Johan Ulringer Strasse 7, D-49324 Melle, Germany

Type: aquasunlight, 2x150W HQI 10.000Ko + 1x24W Dulux moonlight, computer-controlled over Aqua Medic Light Computer (use for the last 8 months of the project)

measured the temperature, controlled the light, the circulation and the peristaltic pump that refilled "kalkwasser". The computer has 8 ports for connecting to probes. It is thereby possible to measure for instance pH or redox potential in several spots simultaneously. The computer also has the possibility to connect 4 x 4 100VAC (alternatively 110VAC) sockets where pumps, heaters etc. can be connected. There is also an external display that can be mounted away from the computer itself. The aquaristic computer can be connected to a PC through the RS232 port, and the data from the last month's readings can be dumped and displayed. ■

AQUARIUM-COMPUTER

Iks Computersysteme GmbH, Mozartstrasse 93, D-76307 Karlsbad, Germany

Type: iks aquastar, used for running the light, controlling the refilling of calcareous water, controlling and measuring temperature, measuring pH, redox and conductivity on a continuous basis, controlling the lights and the circulation pumps. Download to the PC possible through the *Nautilus* software.

SOFTWARE

Bernd Silbermann & Martin Gabriel, Softwaredevelopement, Auf der Schled 4, D-66822 Lebach Landsweiler, Germany

Type: *Nautilus Software* including the powerful ComDis where various data can be followed and surveyed if the iks aquastar is continuously connected through the running PC

PERSITALTIC PUMP

Iks Computersysteme GmbH, Mozartstrasse 93, D-76307 Karlsbad, Germany

Type: *iks VarioMP1045*, 4.5 ml/min. Used for refilling "kalkwasser", about 4 l/d

CIRCULATION

NORZOO, Mr. Rolf Hansen, Markeν 4, N-5017 Bergen, Norway

Type: *Aquarium Systems Maxi Jet*, 4 x 1100 l/h. Controlled by *iks aquastar* aquaristic computer.

Table 1 - Suppliers, support and technical specifications Use Supplier and Support Technical specifications

Today's Surgery

IN ASSOCIATION WITH
AQUARIUM PHARMACEUTICALS (UK) LTD

Gimme, Gimme! Most Koi only have to beg and they're fed - yet too much of the wrong kind of food will kill your fish.

Our resident vet, Lance Jepson,

deals with a case where too much of a good thing doesn't do you any good at all.

Sad though it may seem, much of the fish work that I do involves post-mortems, not only to try and find out why a particular fish died, but also to establish whether it died of a disease that could possibly be infectious to other fish in the collection. You learn a lot by doing post-mortems. You learn what is both normal and abnormal for a wide variety of different fish species. You also learn what are common problems in certain groups of fish, and sometimes you won't see these problems listed in text books.

Recent post-mortem

Take the post-mortem on a Koi that I was asked to do recently. It was a large Koi that had been fine and happy one day and found dead the following morning. All the other fish in the pond (48 Koi) were apparently still healthy. As is often the case with sick Koi, this one was the favourite and the one that the owners had had the longest. Three years from a tiny specimen to almost 50 cm long.

On initial examination the Koi had a standard length of 365 mm (which excludes the tail fin) and weighed 1.6kg so although not a monster this was the largest Koi in the pond. It had a very deep abdomen suggestive of a dropsy ancestry. Looking at the external features of the fish there were no obvious problems. No ulcers or haemorrhages. Skin scrapes revealed no external parasites present. The gills appeared pale but grossly normal, and again on microscopy no gill parasites were apparent.

SO WHAT DOES THE LIVER DO?

The liver is a very important organ with many different roles including detoxifying the bloodstream, producing bile to aid fat digestion, blood protein production and the synthesis of blood clotting factors. This is why I think this Koi died. It is highly likely that fat deposited in the lining of the blood vessels lead to a weakening of one of the major blood vessels at a point close to the heart where blood pressure is highest. A small rupture in the blood vessel wall should be plugged quickly by the formation of a blood clot. This wouldn't happen if there are no blood clotting factors.

Internal examination

The internal examination proved more fruitful. There was a huge amount of fat in the main body cavity and the carcass as a whole appeared pale. This Koi was female, but for an adult female in the middle of summer the ovaries were relatively undeveloped. The liver was very pale and fatty and the gall bladder contained some bile but this was yellowish rather than a more normal green.

Examination of the heart proved eventful. Around the heart there was a large accumulation of blood - a haemorrhage from one of the major blood vessels just as it left the heart. The diagnosis for the sudden death in this Koi was a fatal haemorrhage. I believe that the underlying problem with this fish was the excessive accumulation of fat inside its body - obesity in other words. The underlying reason is, I think, overfeeding or feeding an inappropriate food. This is often done in an attempt to promote rapid growth.

If we think about Koi, their main source of energy is dietary protein, followed by fat and least of all carbohydrates. The metabolism of fish, including digestion, absorption and the assimilation of food is dependent upon body temperature - in other words the temperature of the water. The optimum temperature for Koi metabolism is 22 - 28 degrees C. Forget about Koi being "cold water" fish - their temperature preferences mean that in commercial aquaculture these fish are classed as "warmwater". Energy coming into the body is used first of all for those processes needed to support life and maintenance of the body. Growth to some extent is a luxury. Protein is the main source of energy for Koi, and it is only if there is extra above their basic requirements that it can be used to build more muscle - "growth" in other words. But the temperature needs to be right as well - at their preferred temperatures growth in Koi is supported. Below around 15 oC little in the way of growth occurs. And ponds in the UK spend much of the year around 15 oC or so, with only the three to four months of summer when the water is warm enough for growth to occur.

> "the underlying problem with this fish was the excessive accumulation of fat inside its body - obesity in other words"

Feeding in the wild

Also consider that in the wild, food availability and quality varies throughout the year. In summertime the living is easy with high numbers of aquatic invertebrates and lush plant growth; during the winter on those days with temperatures high enough to trigger feeding, the only food mammals that wild carp would have access to would be whatever could be sieved out of mud and detritus from pond or river bottoms. Climatic conditions can also directly influence food availability. Energy expenditure in the wild is considerably higher than in a garden pond. Shoaling, avoiding predators, searching for food and swimming against currents use up a great deal of energy and much of this can come from stored fat reserves especially at times of poor food availability.

Bear in mind what we've discussed in the above three paragraphs and compare this with normal Koi-keeping practises in the UK. I would argue that most pond keepers feed their fish on a single brand all-food throughout the year irrespective of temperature. The protein content of these foods is relatively high because that helps Koi to grow and that's what Koi owners want to see. And that's what they get in the summer months, but during the spring and autumn (and mild winters) excess protein is not used for growth but is instead converted into fat and stored for lean times. In our ponds however, lean times don't come and so more and more fat is laid down inside the body. A common place for this to occur is in the liver and to some extent so much fat is stored there that it interferes with the liver's normal functioning. To compound the problem, compared to their wild cousins Koi lead a relatively couch potato existence. All they have to do is beg....

Recomendations

My recomendation to the owners of this Koi were to consider switching to a food with a lower protein content (by comparing the protein % on the packets) and to switch to a wheatgerm based food in all but the peak temperature summer months. It obviously wouldn't save this fish, but it might prevent future deaths in the rest of their collection.

In my experience this is not an isolated incidence. I've seen similar problems many times in Koi but also in other large fish such as cichlids and flat-tailed catfish, where again an excessive rapid growth is desired. These fish die young and apparently in prime condition. There is much to be said for varying the food intake of our fish either by regularly alternating between proprietary foods with different nutritional makeups, or even introducing "poor quality" foods such as salad vegetables, dried seaweeds or invertebrates such as crickets or spiders (obviously depending upon the species of fish involved) to bulk out an otherwise energy rich diet.

Variety is the spice of life

Male Golden darter goodeid in typical pose sitting on the bottom. With a swim bladder reduced in size all this genus tend to skitter along the bottom rather than swim like a normal fish.

Derek Lambert continues his series on Goodeids with a selection of species designed to show the variety of fish within the group.

Earlier I made reference to the wide variety of habitats and ecological niches the goodeids occupy. Space does not allow me to cover many species in depth, but what I shall do, is select a group of species that best reflects the variety within the family.

Golden darter goodeid, *Allodontichthys zonistius* (Hubbs, 1932)

This is a slender, torpedo-shaped species that achieves a size of some 9cm. The coloration is darker on the back than on the belly. There is a dark, longitudinal stripe similar to *Allodontichthys tamazulae* running from the eye to the caudal peduncle. However, in this species the stripe seems to be made up of brown blotches joined together. Above and below this line the scales are iridescent golden-yellow. The fins have dark crescents near the extremities, with all the ventral fins being golden yellow in colour. *Allodontichthys* are primarily distributed in the Rio Armeria and Rio Coahuayana systems, in the Jalisco and Colima states in Mexico. There is one other known species isolated in the upper reaches of the Rio Ameca system in Jalisco, Mexico.

In the wild all the Darter goodeids live in riffle habitats. During the dry season the water level drops to a few cms, while during the rainy season the river may become a raging torrent. The fish are normally found living under rocks on the bed of the river. Sometimes, however, they can be found in the deeper pools in and around plant roots. *Allodontichthys zonistius* is an aggressive species that is best kept in a small group of one male to three or four females. The tank should be large and have plenty of hiding places. These are territorial goodeids that need

Male Tamazula darter goodeid (*Allodontichthys tamazulae*). This species is more slender than most of the others in the genus.

Male Golden sawfin goodeid. If you look at the front of his dorsal fin you can see the rays are shorter than the rest, this has led some judges to down point the fish at shows

space if they are to do well in the aquarium. The water temperature should be about 23°C and regular partial water changes are appreciated by this species, as is a power filter to provide both mechanical filtration and a water current in the tank.

For breeding, remove the females when they are gravid and place them in a small tank with plenty of plant cover. The gestation period is about eight weeks, and broods number from 10 to 20. These are very large (up to 3.75cm) at birth and grow quickly on a diet of baby brine shrimp.

All *Allodontichthys* are essentially similar with regard to behaviour and breeding. *Allodontichthys tamazulae*, however, tends to spend more time in mid water than the rest of the genus.

Golden sawfin goodeid, *Skiffia francesae* (Kingston 1978)

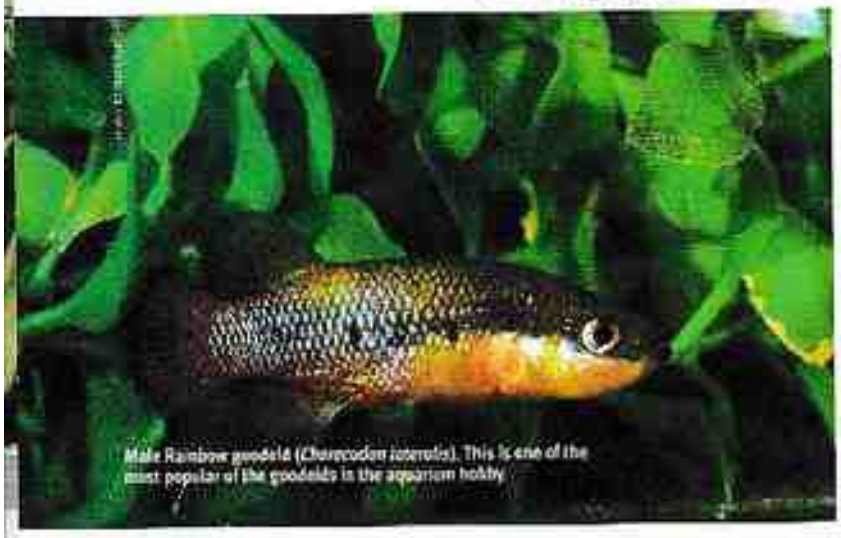
This is a deep bodied goodeid that achieves a size of 6cm for the males and 6.5cm for the females. Both the dorsal and anal fins are set well back. The general body colouration of the female is a delicate brownish yellow with a few spots along the sides. In the male the yellow colouration deepens toward the rear of the body. The dorsal fin of the male has the first few rays of the dorsal, as well as anal fins, shortened. There is a spot in the caudal peduncle of most individuals. *Skiffia francesae* is only distributed in the upper reaches of the Río Teuchitlan by the town of Teuchitlan, in the state of Jalisco, Mexico. Unfortunately, red platies (*Xiphophorus hybrids*) were introduced into this habitat and shortly afterwards *Skiffia francesae* could no longer be found.

This is a peaceful, timid species that tends to suffer if kept with more robust fish. To be happy they should be kept in a large shoal of 10 or more fish in a single species tank. In the wild, *Skiffia bilineata* can be seen swimming in large shoals of 50 or more fish. Ideally, a large clump of Java moss or some other plant should be included. Under such conditions the fish will feel more

Male Hooded sawfin goodeid (*Skiffia lermae*). The head of males, particularly wild caught fish of those kept in sunlight, become very dark. This fish is showing a little of the dark colour on its throat.

secure and feed on a regular basis. They are sensitive to water conditions and regular partial water changes are a must to keep them in top condition. Live foods are also appreciated and should be fed on a daily basis to gravid females.

Rainbow goodeid, *Characodon lateralis* (Gunther 1866)



Male Rainbow goodeid (*Characodon lateralis*). This is one of the most popular of the goodeids in the aquarium hobby.

Known as the Rainbow goodeid, this is a slender torpedo-shaped species with both the dorsal and anal fins set well back on the body. The male's body is a deep blood-red colour overlaid with green spangles. The belly and throat are yellow and there is a dark lateral stripe that runs from the mouth, through the eye, to the caudal peduncle. Some specimens have large black spots or blotches on the sides. All the fins are red near the body, pulling to yellow edged in black. The female is green with a line of black spots along the lateral line. The number and size of these spots varies from individual to individual. All the fins are clear to greenish.

The Characodon genus is distributed in the remnants of an inland former stream system on the interior slope of the Central Plateau of Mexico, in the states of Durango and Coahuila. This is an arid region with high daytime temperatures and little water during the dry season. Most populations of Characodons are centred in springs or spring fed streams and there is tremendous variation between populations and even males of the same population.

This is a shy and retiring species that must have plenty of plant cover to feel secure. A temperature of 21 to 24°C is ideal, and once again regular partial water changes are essential for the well-being of this species. Diet should consist of plenty of live foods, and some vegetable matter, such as peas or spinach, is much appreciated. Beef heart should be avoided because this is too rich a food for them.

This species seems to thrive best in a colony situation. Once fry and young are on the task, the adults will be seen swimming in the mid-water region of the aquarium. When maintained without fry or young they tend to hug the bottom of the aquarium in the rear corners. The most difficult stage of keeping this fish is in the initial stages before the colony is up and running.

Red-tailed goodeid, *Xenotoca eiseni* (Rutter 1896)

Males of this species have a red caudal peduncle and blue body which is distinctive among the goodeids. It has been widespread in the hobby for a number of years now and is one which can be found on commercial trade lists. Apart from the original colour form, another variant of this species has the portion of the body between the front of the dorsal fin forward almost to the pectoral fin covered in golden reflective scales. This colour variety was collected by Dr. Radda in 1981 near the town of Ezatlan in the state of Jalisco, Mexico, and is now widely distributed in the hobby. It may turn out to be a distinct species in its own right.

The female of both varieties is very plain, being deep green on the back with a white belly and a black gravid spot. Males achieve year and females 3 years in captivity. This is a very deep bodied, high-backed species whose body contour should resemble a circle with a caudal peduncle and caudal fin stuck on. Unfortunately, this distinctive body shape has been lost by many of the fish in the trade, as has much of the coloration.

Xenotoca eiseni come from the Rio Grande de Santiago, in the state of Nayarit, eastward to Ezatlan in the state of Jalisco, Mexico. It has the reputation of being an aggressive species that should not be maintained with other fish. This certainly seems true if they are not fed heavily or are reared on their own. Under such circumstances they will often become fin nippers and attack anything that comes near. However, if they are reared with other fish and are well fed, this aggressive behaviour is much reduced and they will mix quite happily in a community tank of mixed fish, such as Barbs.

In the aquarium they prefer a large well-planted tank with clean water and good filtration or large regular partial water changes. Their diet should consist of a wide variety of foods including flake, frozen, freeze dried and live. Lettuce and spinach can also be included. For them to achieve their maximum size, good food, and lots of it, will have to be fed on a regular basis. Broods are born on a six weekly basis from late spring through early autumn. The fry are very large at birth and can number up to 50. These grow well on copious amounts of baby brine shrimp and flake food.

There are many more fascinating species of goodeid I would like to include in this article, but I have run out of space. Suffice it to say, I have only just scratched the surface of a topic that deserves a book all its own.

Male Golden saddle goodeid which at present is thought to be a colour form of *Xenotoca eiseni*.

Eight banded false barb

A pair of Eight banded false barbs, the male is towards the rear.

Derek Lambert profiles a great little community fish which has been overlooked by many in the hobby.

The Eight banded false barb (Dimotus octozona) belongs to the Cyprinidae family which contains many other popular aquarium fish, yet this one seems to have been over looked by many aquarists. This is a real pity because it really deserves far more popularity that it has at present.

It has a pale golden body which shades to silver on the belly. Over this are a series of distinctive vertical black bands. These can be a little variable between fish and there are often dots or extra broken bands on the body as well. The band which connects the dorsal and pelvic fins continues into the base of these fins. Otherwise all fins are clear to pale yellow or with a hint of red in males. This additional coloration and a generally slimmer body shape are the only indication of the sexes. It has proven somewhat difficult to induce to spawn in captivity but is known to be a straight forward egg scatterer in the wild.

In its natural habitats in south east Asia the water is soft, acidic and warm and these water conditions should be provided in the aquarium.

In captivity it loves a well planted aquarium with gentle to moderate water flow. Lighting should be sufficient for good plant growth but not so bright that it leaches out all the colour from this pretty little fish. Ideally it should be kept in a shoal with other small peaceful fish. Although it will swim at all levels of the aquarium, it will spend most of its time in the low to midwater areas. Here it will poke about in plant thickets and between rocks and pieces of gravel on the lookout for any food which may have slipped down out of sight. When resting it tends to adopt a slightly head down attitude almost like a headstander although this not so pronounced.

Although the fish comes from soft, acidic water conditions, it can adapt to hard alkaline water provided this is done slowly. This is best done during quarantining. Find out what water conditions the fish you are planning to buy are in and match them in your quarantine tank. Then go and buy your group of Eight banded false barbs. When home float the bag in the normal way to equalise the temperature and despite the water being of similar pH and hardness slowly mix the bag water with the aquarium water before releasing the fish. After a week, provided all the fish are eating well, you can start to change the water chemistry over to your normal aquarium conditions. This is done by removing 20% of the quarantine tank water and refilling with water from the fish's final home. Do this again every day for at least a week. By the end of that time the water conditions in both aquaria should be very similar and your additions can be moved over without any risk of pH shock.

It is worth mentioning that when purchasing these fish you can expect them to look a little thin in the belly. This is normal with newly imported specimens but they soon fill out with regular meals. Newly hatched Brine shrimp is a fantastic treat for them at this time and will help build them up to peak condition very quickly.

PROFILE

Name:
Eight banded false barb

Scientific name:
Dimotus octozona

Size:
5 cm

Aquarium type:
Community

Distribution:
S.E. Asia

Diet:
Omnivore which will eat live, frozen, or flake.

Temperature:
23 - 26°C

Eight banded false barb

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Recipe for success with plants

Indoors or out **Peter Hiscock** shows how good preparation now will lead to a healthy plant display .

Creating a healthy planted display can take many months, during which time you may have refined your "recipe for success" regarding lighting and fertilising techniques. Some plants will have thrived whilst others may have died back or been removed. Eventually you will be left with a selection of well established plants and a balanced aquarium that seemingly needs only a little attention. Becoming complacent now may result in some plants simply taking over and others becoming tatty and/or showing reduced growth. To keep a display looking vibrant and exhibiting continual new growth, the plants must be regularly trimmed, thinned, divided and replanted. In the aquarium environment most plants do not have the room to spread and propagate to their full potential as they would in nature. Regular and correct maintenance will keep most plants in a "perpetual youth" state, with fresh new leaves being continually produced and old tired leaves removed from sight.

Removing old leaves

Slow growing plants with prominent leaves such as Anubias or Microsorium sp. will eventually exhibit older leaves which become covered in stubborn algae, tatty at the edges and may even show dark patches or holes. These leaves can simply be cut away at the base of the leaf. It is important to regularly remove these leaves to make room for new growth. If too many leaves are left past their best, when they are eventually removed you will end up with a plant without much substance.

Trimming stem plants / replanting

Plants that produce a number of leaves on a central stem can be trimmed when they reach an undesirable height. The trimmed

Stem cuttings like these should be taken regularly to keep the display looking fresh and vigorous.

Dividing plants

Plants such as Cryptocoryne produce new leaves or offsets directly next to the parent plant which can eventually produce a very large clump of leaves. In some cases this can look very attractive but you may wish to limit the plants spread by thinning the plant or even replant a portion of the plant elsewhere. To do this the plant must be carefully removed from the substrate then the leaves can be separated to find an area of division. Some plants will pull apart easily whilst others may need to be cut through the main rootstock. The trailing roots of each division should then be trimmed before replanting in the substrate.

stem will regrow and often produce offshoots, creating a more bushy plant. Trimming should be carried out infrequently. If it is done too often, the plant will become damaged beyond recovery and growth will be reduced or stopped. For most stem plants, trimming should only be done when at least 15cm (6 in) is to be removed from the top. This length of cutting is also an ideal length for replanting in the aquarium where it should root and grow. To encourage the growth of cuttings, the lower few leaves should be carefully removed from the stem (the area of attachment is called a node) and the cutting planted with the node just beneath the substrate. The bare node should then produce the first roots and the cutting will quickly establish. Even if you feel you have enough of a particular stem plant, it is worth replanting some cuttings as these will often create a better looking plant than the original, which may start to drop some leaves or become tatty over time.

Encouraging smaller growth

Strong healthy growth can become a problem if the plant has the potential to reach large proportions. A large Amazon sword (*Echinodorus* sp.) for instance, has the potential to produce leaves in excess of 50cm. Most aquariums would not be able to accommodate this and a few leaves of this size would quickly take over the display. For plants such as *Echinodorus* sp., the leaf size can be limited by regular removal of the largest leaves and occasional trimming of the roots every few months. Eventually, the plant will simply only produce smaller leaves and can then be left untouched. More delicate plants such as tropical lilies (*Nymphaea* sp.) will not cope as well with such regular disturbance of the rootstock. To keep these plants producing new leaves which can be seen underwater and not just at the surface, the number of leaves at the surface should be minimised. If your lily has several surface leaves but little new growth, remove around half the leaves and then only allow this number at the surface at any time.

Autumn pond plant care

It seems only a few weeks ago that many fishkeepers were having trouble with aquariums and ponds overheating but as the days become shorter it is time to face reality and admit that summer is over. For pondkeepers, now is the time to think about preparing plants for the late autumn and winter periods. A few simple tips will prevent problems with fish health caused by decaying plant matter and encourage the best growth in early spring. Firstly, as plants die back, all dead plant matter should be removed from the pond area. It is also worth placing a permanent net cover over the pond to catch any leaves falling from surrounding trees and vegetation. It is often fallen vegetation in the pond which decays slowly and causes the bacterial problems associated with ponds over winter and in the first warm weeks of spring when the temperature rises. Depending on whether you want the same level of growth next year or more growth, now is also the time to either cut back some plants or re-pot plants into larger containers. Although the growing season is over, it is still a good time to introduce early flowering marginal plants which will be established by the spring and grow more successfully than if bought next year. Most aquatic retailers will be selling off their remaining pond plants at heavy discounts so a few bargains can usually be

At this time of year a net helps to prevent leaves getting into the pond.

Creeping Ludwigia (*Ludwigia repens*)

This popular aquarium plant is found in a number of leaf colours and forms. Most varieties exhibit oval-round leaves with an olive-green topside and reddish-orange underside. The plant is very adaptable and fast growing and it is worth letting the stem reach the surface where the leaves will become very compact and the stem will grow horizontally across the surface. This feature makes the plant ideal for the background of an aquarium where only the compact top area need be visible.

Creeping ludwigia is an excellent plant for use at the rear of a display.

New Guinea blue tongue male. This species will sometimes hiss when picked up but they do not bite.

Poking their tongues out

Bob and **Val Davies** look at two Skinks ideal for the beginner.

The family Scincidae contains over 1000 species. In this article we are looking at the popular blue tongued and Pink tongued skinks or *Tiliqua* species.

The most commonly available blue tongued skinks are *Tiliqua scincoides* scincoides from Australia, sometimes referred to as the Common blue tongue and *Tiliqua gigas* or New Guinea blue tongue. Although a few of the latter are occasionally imported most specimens of blue tongues will be captive bred. As the common name implies these skinks have a blue tongue which contrasts with the pink mouth lining. Throwing open the mouth, protruding the tongue and hissing is a defence mechanism when confronted with predators. However since they are usually acquired as youngsters the keeper will rarely witness this behaviour. These short limbed, heavy bodied skinks are terrestrial but will clamber over rocks for additional exercise. These creatures become very tame and are long-lived. Some of our *T. gigas* and *T. s. scincoides* have lived for over 15 years and one or two are now in their early twenties.

Blue tongues are omnivorous. However, a healthy appetite and lack of opportunity for exercise can be their downfall. Too much protein fed to adults, combined with lack of exercise will quickly produce an overweight animal which will accumulate fatty deposits on various internal organs. This will not ensure longevity.

A number of keepers and breeders have found that it is better to keep blue tongues separately after reaching about 5-6 months of age. Whilst some specimens will tolerate each other, since they are basically solitary animals fighting (male v male, male v female and female v female) can break out. Also blue tongues which live together do not seem to achieve the same breeding success as those maintained separately.

Pink tongued skinks

Pink tongued skinks (*Tiliqua gerrardii*) are smaller than Blue tongues. Initially the babies' tongues are blue but this gradually changes to pink whilst retaining a blue rim inside the mouth. They have a long semi-prehensile tail and fairly long claws, both of which are used for climbing. Pink tongues are more gregarious and it is possible to keep one male to several females. However the keeper should ensure there is no bullying at feeding time.

CAPTIVE CARE FOR BLUE TONGUES

Vivarium size for a single adult should be about 90x 45 x 45cm, although larger would be beneficial. Whilst newspaper is a convenient substrate from a keeper's point of view it does nothing for the Blue tongue. Calcareous (rounded) gravel is ideal. It is absorbent and helps the creature to slough skin from the toes. Retained skin on the feet and tail tip can cause problems. Since Blue tongues are heavy bodied any furnishings will need to be robust. We use 25cm diameter half round earthenware clay pipes as hides and large rocks for climbing over. A light spray of tepid water should be given every morning and fresh water provided. Temperatures and photoperiod are as for Pink tongues although the cooler temperature will be at the opposite end of the cage to the spot lamp. The UVB tube should be placed along the top of the cage. Young specimens i.e. under 4 months can be kept on newspaper with cork bark hides. Temperature and lighting requirements are as for adults.

It is hard to know whether blue tongues eat to live or live to eat, hence the cautionary note above regarding obesity. Blue tongues are omnivorous but need a high fibre diet. For adults a ratio of 25% protein 75% vegetable matter should be the rule. Feed no more than three times a week. For a youngster under 7-8 months old the ratio is 50% protein 50% vegetable matter and it can be fed 5 or 6 times a week. Suitable proteins include rat/mouse pinkies (thawed), low fat cat/dog food, snails (if available), boiled egg, cooked chicken, large crickets and locusts. Chasing the latter two will provide exercise. Vegetables and fruits include bean sprouts, finely grated apple and carrot, diced mushroom, courgette, diced peppers, watercress, endive, melons, plums. Bananas are eagerly accepted but should be used as an occasional treat only. Vegetable foods should be sprinkled with powdered cuttlefish bone daily and twice a week with multivitamin/mineral powder. As wide a range of food as possible should be used. Any uneaten food should be discarded.

Young Blue tongue tucking into a varied diet you can also see the tip of tongue.

CAPTIVE CARE FOR PINK TONGUES.

A vivarium about 60 x 60 x 90cm is ideal for housing up to 5/6 specimens. Sturdy branches, cork bark shelters and some live plants such as sturdy palms provide an ideal arboreal habitat. The substrate should be moisture retentive and covered with moss. A daily spray will help to provide the necessary 65-75% humidity. A small water bowl should be provided. In addition to a thermostatically controlled basking lamp a full spectrum UVB tube is essential. The shape of the vivarium means that this is best placed vertically on the side rather than along the top. Temperatures required are 32°C at the hot end (top of cage) and 25°C near the floor with about 15-22°C at night and a photoperiod of 12-14 hours.

Pink tongues are specialist molluscivores. Their main diet is snails although some will eat the small garden slugs (Agriolimax species). It goes without saying that these foods should come from uncontaminated sources. However, many breeders, recognising the problems of obtaining snails, usually wean and rear babies on cat food. Our youngsters quickly adapted to this diet (although they did not touch the fish flavoured varieties) as well as the convenience foods for carnivorous lizards (obtainable from many reptile outlets). Initially young specimens can be kept on newspaper substrate with clumps of damp sphagnum moss. A few low branches can be placed in the cage. Temperature and lighting are as for adults.

Adult male Pink tongue. These are gregarious creatures which can be kept with one or more females.Rough green snake. An insectivorous Colubrid feeding on crickets and requiring a planted, more humid vivarium. however breeding methods are the same as the others mentioned here.

TO SUM UP

Although not cheap and not always readily available the skinks in this article are some of the most rewarding we have kept and thoroughly recommend you try them.

Skimming along

Andrew Caine explains what information you need to make a sensible choice when selecting a protein skimmer.

When purchasing a major piece of kit to put onto a new system or upgrade your existing marine set up, it is always accompanied by a

Selecting the right protein skimmer for your set up is certainly not child's play!

sharp intake of breath whilst handing over the cash. With this in mind you don't want to mess up do you? So before such a purchase a lot of research is required. There we all information overload!

Manufacturers do not help, as regardless of the make, their brand all skimmer is quite simply the best. Shops may only carry a couple of makes and are only interested in selling what they stock. You go on the net, look at the forums, take all the advice and still your head explodes. You weigh up your pro's and con's take a gamble with a few hundred quid and hopefully you win, but for every winner there will be loser.

So if you are thinking of buying a skimmer then we will now dispel information overload and explain which criteria are vastly important and should be labelled clearly on the skimmer packaging.

How skimming works

Efficient skimming is a balancing act between the amount of water passed through the skimmer measured in litres per hour, the volume of air injected through the skimmer measured in litres per hour and the size of air bubbles created by the skimmer. These three factors should be researched by the purchaser.

One factor that should be totally ignored is the stated capacity. Manufacturers have a tendency to overstate the capacity of a skimmer (this is my own opinion with over 23 years experience and having used nearly every make of skimmer). If a skimmer is labelled at a capacity of 400 litres then do not consider this one for over 200 litres capacity. If labelled at 1000 litres then your cut off is 500 litre capacity. Another trick is to label the capacity as normal stocking and reduce the capacity for heavy stocking. What is their normal and heavy stocking guide? If we don't know that, the information is useless as it makes the intended purchaser guess, and on such an expensive item guessing is just not good enough.

Flow through of water is important because you do not want the water passed through too slowly or too quickly and there is no hard rule here. As a guide, water flow through the skimmer should not exceed 5 times per hour and not fall below twice per hour. So look at the food pump required and then your capacity to work out this little problem. Another point here is that when you enquire about a skimmer get the correct's price or you may have to pay more than you wanted to for the feed pump if it is not included.

Blowing bubbles

Let's look at air injection now. As the whole process depends on air bubbles in the skimmer, then the amount of air injected is critical, the smaller rate is the more the better. The skimmers that inject the simplest quantities are those that run solely off an air pump. Then we come to the venturi injection where instead of pumping we are sucking (nice) and more air is injected. If you want to see how much air is being injected then utilise an air meter. I have never seen any information about this aspect quoted by makers.

Let's look at bubble size. If you take one air bubble and cut it in half then you have two smaller bubbles. Measure the surface area of both, however, and you will find that this is greater than the one bubble. So the best will have an air injection system and a means of chopping the air bubbles into smaller ones. Pump impellers do this and many have been modified into pin or needle wheels which chop air into tiny smaller bubbles than a normal impeller. So look out for the needle, pin wheel or other device to chop the air up.

So let's sum up. For the best skimmers, halve the capacity, look for the flow through rate, check if the feed pump is included, amount of air injected and size of bubble created. You do your homework, go out to the shop and look at the skimmer range. Take them **ALL** off the shelf and look at the box to confirm the information you require and you are back where you started! For **NO** skimmer box contains all the required information. WHY? Look at a E20 pump and a nice flow chart is labelled on the box, **LOOK AT A E250 SKIMMER BOX AND YOU GET ALMOST NO USEFUL INFORMATION.**

Plea to the manufacturers

What your customers need and want are clearly labelled products showing all the information needed to make a sensible choice. In this day and age there really is no excuse for this lack of information. So go on companies, please get the correct labelling on the skimmer box.

A Simple Reef Tank Top-up System

Tim Hayes of Midland Reefs shows you how to make a simple Reef tank top-up system.

At Midland Reefs I have a number of different systems and individual tanks on the go at any one time. This can be a problem in the evenings as I need to get number one son off to school on time, feed all the tanks, and make up evaporation losses with RO water before we leave the house. With 2000 ltr of tanks spread about this can be quite time consuming. I can be losing 15 litres or more a day and even with Rob's help we can end up getting out of the house late. Obviously I had to come up with some sort of automated top-up system, the difficulty being I required a method of topping up multiple tanks. I needed to end up with an inexpensive system. Coral farming (the only form of aqua culture) is not the most financially rewarding occupation, so I couldn't afford to buy an off the shelf top-up system for each tank out-up - 15 at the last count!

Erdington aquatics have just taken delivery of the new dosing pump.


The new SP 3000 peristaltic pump has many different applications in aquaria.

New peristaltic pump

At Erdington Aquatics we'd recently taken delivery of the new Aqua Medic SP3000 dosing pump, and it occurred to me that this was a possible solution. The SP3000 is a peristaltic pump capable of delivering 72 litres over a 24 hour period. A peristaltic pump works by using a drive wheel with rollers that rotates, repeatedly squeezing fluid through a length of flexible pipe. This has the advantage of forcing the liquid under pressure and delivering accurate measures, and can also be used to transport liquids that might corrode or block a conventional pump.

The pump works continuously, so to control it I used an analogue timer, setting it to turn the pump on 15 minutes in every hour. The initial set- up used a 23 ltr water container as a RO water reservoir. Water is drawn from the container through a piece of rigid airline pipe, this pipe is capped at the lower end with a hole pierced about 5cm up so as to avoid drawing in any detritus that may settle on the bottom. From the rigid pipe flexible airline joins to the pump, and hence on to the tanks being topped up. I ran flexible airline around the farm tanks, tee-ing off as required. The spur that is tee-ed outstream of the airline check valve and utilises an airline g-clamp or adjustable valve. The check valve (or one way valve) is to prevent air being drawn into the pipeline when the pump is off, and the adjustable valve or clamp allows you to fine tune the amount of water being delivered to each tank.

In operation the system works surprisingly well. It takes a bit of fiddling to reach the desired aim of constant water level in all the aquaria, I suspect that just altering the flow to one tank has a knock on effect of altering the flow to the rest. I've certainly noticed an improvement in the condition of my corals given the more stable salinity but it is still important to remember to periodically check my water parameters, a change in ambient temperature around my tanks will lead to a change in the rate of evaporation you experience. I find that a weekly check allows me to make any minor corrections to salinity that are needed, and by marking the maximum water level on all my tanks I can tell at a glance when something's going awry.

The system could be improved by using black silicon flexible tubing instead of standard airline pipe, as this would prevent the growth of algal or bacterial films inside the pipes which could affect water flow.

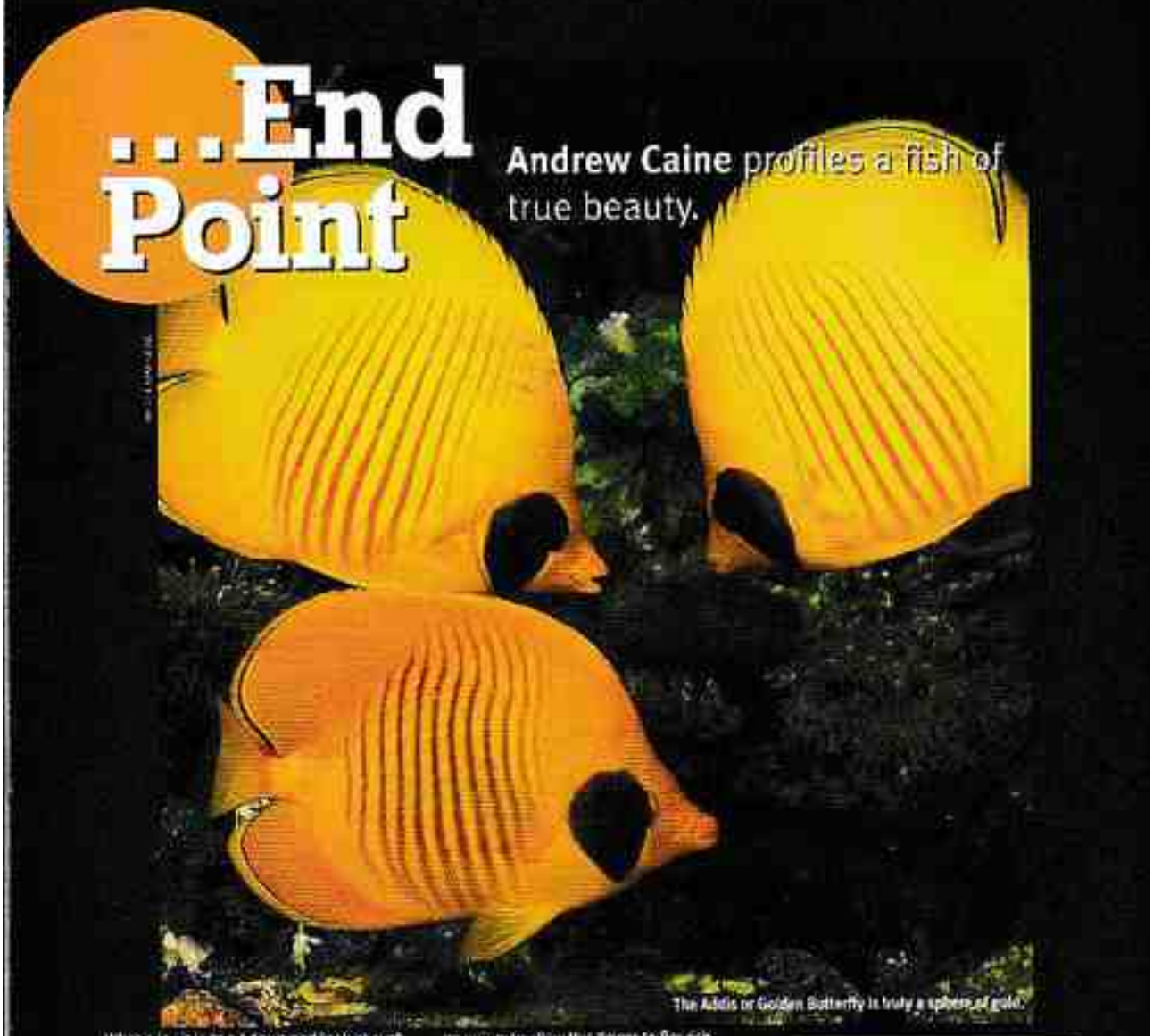
At some point I intend to use a digital timer to operate the pump. This will allow me to take into account the difference in evaporation rate between night and day - obviously evaporation will be higher during the day due to the heat of the lights. At the moment the system works on averaging the evaporation over a 24 hour period.

Currently the system is pumping from a floor level reservoir up to the tanks. It won't be that big a step to upgrade it so that water is pumped up to a kalk stirrer higher than the tanks returning kalkwasser by gravity as helping calcium levels at the same time as keeping water topped up to a constant salinity.


TFSH 84
TFSH 84
CHINESE ZEBRA GOBY
Ptereleotris zebra
26°C
10cm
PHOTO: MAX SIBBS
TODAY'S FISHKEEPER

...End Point

Andrew Caine profiles a fish of true beauty.



The Addis or Golden Butterfly is truly a sphere of gold.

What a joy it is to sit down and look at such simple beauty, this beast is just visual perfection, with no complicated colouring just pure single joy. The vertical banding is as complicated as it gets in this fish with these bands emphasising the physical features of the fish, just adding to the all round visual experience this magnificent beauty brings to the modern marine aquarium.

However what are we to expect if we want to add it to our aquarium. First and foremost do not put this one into most reef aquariums. Stinging corals of course be ensured along with most Star polyps and *Xenia* species. Large leather corals are likely to remain untouched so only to the reef maintaining leathers exclusively can we add such splendour of gold. In the fish only aquarium you will get the best results if you exclude any aggressive fish, we need a peaceful aquarium to allow this flower to flourish.

When choosing specimens for your aquarium look for a full gut and thick body under no circumstances choose adults because these are harder to acclimate to aquarium life. Make it easy for yourself and ask to see them feed, it is not too hard to initiate a feeding response but that is the job of the shop not yours, that is part of what you pay for. Once at home, feed at least 3 times per day, but feed as many times as you can in small amounts. Feed them small, meaty foods but always add your vitamins to get the colouration to scream at you. Make the most of this fish and buy in pairs or a small shoal, giving them the space to swim around unchecked. Your aquarium size should be at least 250 litres and 1.5m long, with an always excellent water quality. Truly a specimen fish worthy to grace any indoor living room.

PROFILE

Name:
Addis or Golden Butterflyfish

Scientific name:
Chaetodon semilarvatus

Size:
23cm

Aquarium type:
Fish only system

Distribution:
Red Sea

Diet:
Vitamin enriched small meaty food

Temperature:
26°C