Today's Fishkeeper

NOVEMBER 2003 £2.95

FROM BEGINNER TO ADVANCED

Guardian Angels

Fish that care for their young

Vampires and flesheaters

Fish you really wouldn't want to meet

Exploration

Swimming with Elephants in search of Bettas

PONDS

Comets – one of the very best pondfish

EQUIPMENT

From Dawn till Dusk the prize winning lighting system

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Welcome

EDITORIAL CONTACT INFORMATION
Tel: 01673 885352
E-mail: derek@trmg.co.uk
Fishkeeping answers:
fishkeepinganswers@trmg.co.uk

Welcome to the November issue of *Today's Fishkeeper*. Having spent the better part of a day hobbling around the GLEE trade show this week and only seeing a very small portion of all the stands present at the show, I can truly say this hobby of ours is supported by a huge range of companies providing every possible piece of equipment, food and medication you can think of. After last year I decided I would need at least two days just to do the aquatics stands and had everything planned on that basis for this year. That was before I managed to damage my calf muscle (I refuse to say how ,however, "Get well" cards are definitely not in order for someone who has done something that silly!).

Knowing how difficult driving to the event was going to be I decided to let the train take the strain. Now I know what my brother (and every other commuter who has to use public transport daily) is always complaining about. It was a rare train that day which was running to schedule. Still it brought me right to the door of NEC and a short walk from hall 4 where all the aquatics companies are concentrated.

As I hobbled around the stands it was obvious how much time, money and effort had gone in to them. The *Aquatic Solutions* stand in particular looked impressive with a huge cylindrical tank containing a pair of young sharks. This had what is known as the "Wow" factor in full measure and certainly kept people coming to the stand to see the display. It even made the front page of the GLEE daily newspaper (yes the show even has its own newspaper for the 3 days it is open).

One of the most important aspects of the show is the new products that are launched at it. In the past each sector (garden, aquatics etc.) would have their own display of these in the hall concerned. This year they decided to change that system and put them all in hall 6 – a 15 minute trek for an able bodied person from hall 4. Luckily I got to see most of them on the exhibitor's stands instead of even attempting that hike.

Next day I was due to go back with my camera and take some pictures of the more amazing stands, and touch bases with those exhibitors I had not had a chance to see the day before. Sadly my leg decided otherwise and even with the best will in the world there was no way I was going to be walking anywhere that day.

Fortunately Alex Macleod, who is *Today's Fishkeeper's* advertising manager, was there the next day and could explain what had happened. So my apologies for not having a picture of the *Aquatic Solutions* stand for you to see, and my thanks to all the kind exhibitors who found me a chair or stool to perch on and rest. This was Alex's first GLEE and he would like to add his thanks for the warm welcome he received at the show and is looking forward to seeing you all next year – hopefully with a mobile editor!

Good fish keeping,

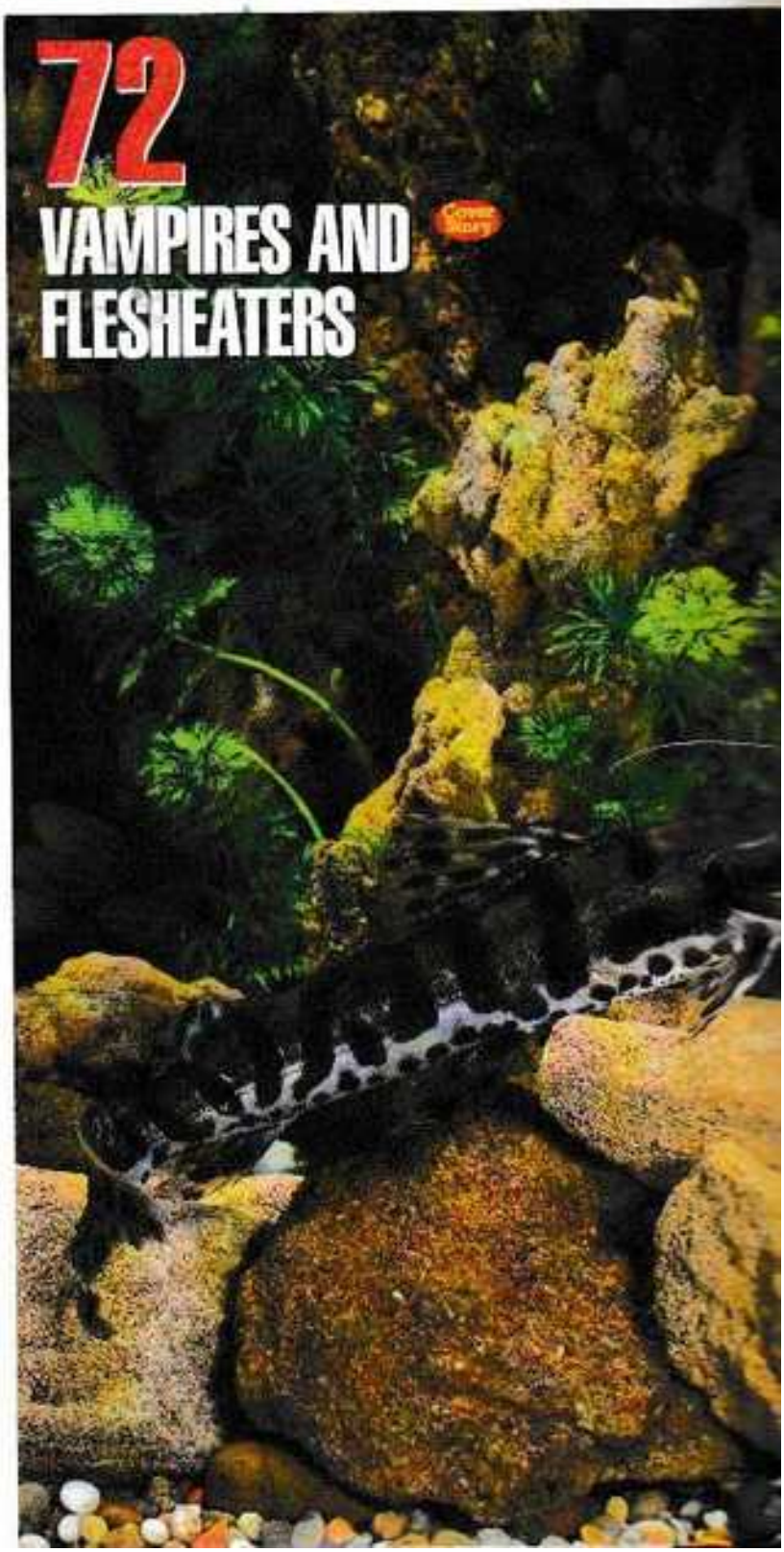
Derek

NOVEMBER inside thi

TROPICAL/MARINE/COLDWATER

MARINE

PLANTS



s issue

Today's Fishkeeper

TODAY'S FISHWORLD

CUT OUT AND KEEP

TROPICAL

PONDS & COLDWATER

BEGINNERS

REPTILES & AMPHIBIANS

REGULARS

Starting Point...

New to the hobby? Pat Lambert writes especially for you.

Bonfires, Guy Fawkes, November 5th, bangs and flashes! What have all these things to do with fish? Has Pat gone completely crazy! No, all these things remind me of the livebearing species *Girardinichthys viviparous*. I had a lovely tank of these fish which all turned over and died on November 5th. In the habitat where these fish were collected the population has a latent form of TB which can be triggered by outside circumstances which stress the fish. Stress in fish is often talked about as though it were the same kind of stress as we humans endure from time to time which it is not. However, fish do react to circumstances in a stressful manner. They cower in corners to hide from aggressors, dive among the plants to escape the attentions of over-amorous males, pale or darken in colour when they are agitated. They make rapid, abnormal movements through the water. Sometimes the movement is vertically for an extended period of time rather than the horizontal normal swimming motion. Watch how female Guppies do this just prior to giving birth. The side to side weaving motion of fish, which is known as shimmying, is a sign of stress which often occurs when water conditions are not quite right. Inside the aquarium and its immediate environs are under our control and we can create conditions in which our fish can live fairly stress free lives. Let's get a sense of proportion about all this though, for it's important to remember that in the wild fish live very stressful lives and it's the awareness of danger that helps them to survive.

Female Guppies often behave erratically when they are giving birth.

FASCINATED BY PIKES?

This male Pike is on the prowl for a tasty meal – which means no small fish is safe.

A fish that is sometimes seen in aquatic outlets is the Pike livebearer. This fish grows quite large females growing to 20 cm and males to 15 cm. The male is a particularly beautiful animal and many fish keepers I know are constantly on the look out for these predatory fish that really need a diet of live fish to thrive. They can possibly be weaned when young on to other foods but live fish is their preferred food and if you buy adults, they will starve rather than eat anything else. They are not voracious predators as they only hunt when hungry, they only kill to eat and they can go for several days without seeking out food. If you keep a pair and the male is much smaller than the female, as is often the case, she may become hungry enough to try to eat him. The problem comes when they breed. My female produced 200 babies, needle -like fish 2.5 cm long. These required some heavy feeding (as babies do) and as they grew each one would need one baby fish per day. The young also grow at different rates and larger ones may be twice the size of their siblings and will turn round and eat the smaller ones if hungry enough, which is usually most of the time as babies. When my female produced 200 fry I hastily rang my nearest wholesaler who willingly bought them from me. When she produced another 200 one month later he was a little more reluctant to take them off my hands.

TAKE NOTE

One of the most important aspects of fish keeping is note taking. We all lead very busy lives and it is very easy to forget important or useful information particularly when things are happening all the time, as is the case when you're starting out. Dates of purchase, size of fish when purchased, growth rates of young fish are indications of the progress of your charges. Routine tasks should be included such as types of food offered (you will not need to note feeding times if you establish a regular feeding regime). You will also establish a regular routine for water changes but sometimes nitrate levels shoot up and the water goes off and this needs to be noted so you know if it's just a one off or is happening more often. Notes on water testing are also important. When new light bulbs are fitted should also be noted so you can change them before they lose their efficiency. Dosage, timing and type of treatment should be noted. It seems a lot to do but if you do it in chart form minimum note taking will be required.

In my fish room which contains many tanks I always write dates of birth in the top right hand corner of the tank and the date of most recent water change in the top left. If you have one beautiful furnished aquarium in a living room, however, it is best to keep the notebook in the cupboard beneath, or close by.

The problem of keeping your notebook from becoming a soggy mess has been solved by Aquascribe who manufacture a waterproof notebook and pencil. Note taking is a really important aspect of your fish keeping and you will become the better fishkeeper for it.

WARNING

Be fully aware of the problems associated with fish treatments before you purchase.

The Frontosa cichlid is a beautiful giant of a fish.

How's this for a peaceful large cichlid!

This month I am introducing a larger species as these are preferred by some beginners. Large cichlids are the choice of some fishkeepers and there are some beautiful ones. Very few could be called beginners fish but if you really love large cichlids and want to keep a group of half a dozen in a 180cm tank the Frontosa cichlid. *Cyphotilapia frontosa* may be the fish for you. This fish grows to 30 cm and is strikingly marked with a huge nuchal lump that develops on its head as it matures. Although in a group there will be a dominant male, aggression towards other males is limited to just showing them he is the boss now and then. They need rocks and caves to hide in and love around most of the time, but they are a peaceful community cichlid which is a rarity. It should be a community of fishes of comparable size though, smaller fish might be considered food.

LOST FOR WORDS

Anadromous fish: These are fish such as Salmon that spend most of their life at sea and migrate into fresh water to spawn as opposed to *catadromous fish* like eels that spend most of their life in freshwater but migrate to the sea to breed.

Parasitism: This is when an organism finds and lives on or inside a fish usually feeding on the host's tissue. Unlike symbiosis where two organisms derive benefits from each other, in parasitism the benefits are all one way. In extreme cases it can lead to the death of the host.

Osmotic shock: Through osmoregulation a fish maintains the salt and water balance in their bodies. If a fish is damaged by disease or injury to the extent that the skin's impermeability is lost then the salt/water balance will be lost. If the water conditions are not suitable for the particular species, such as a sudden change in water chemistry or the fish is allowed to remain in unsuitable water conditions for a prolonged period then osmotic shock occurs and this can be fatal.

Tea tree extract: This uses the antibacterial power of an extract from a variety of tea tree *Melaleuca* originating in Australia. It is a natural remedy and is used in the healing of wounds and damaged fins. A widely used and respected remedy is *MelaFix* which can be used with fresh and salt water fish.

Limiting factor: Any environmental conditions that puts limits of tolerance on an organism. In fish the temperature, light, water chemistry have lower and upper limits of tolerance and conditions should always stay within these limits.

Reverse Osmosis Unit: This removes all impurities from tap water, demineralising it and leaving pure H_2O. Used for fish that need mineral depleted conditions.

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

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

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

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

THE FISH

Stocking levels: For freshwater tropical we recommend 12cm² of surface area per 1cm of fish.
Marines: For a fish only setup we recommend 2.5cm of fish for 3l of water and for Reef only setups we recommend 2.5cm of fish per 2.7l of water.
Ponds to a maximum of 250cm of fish per 4500l of water.
Measurements should be based on the optimum adult size of the species not the size at the time of purchase. **NEVER OVERSTOCK**

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

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

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

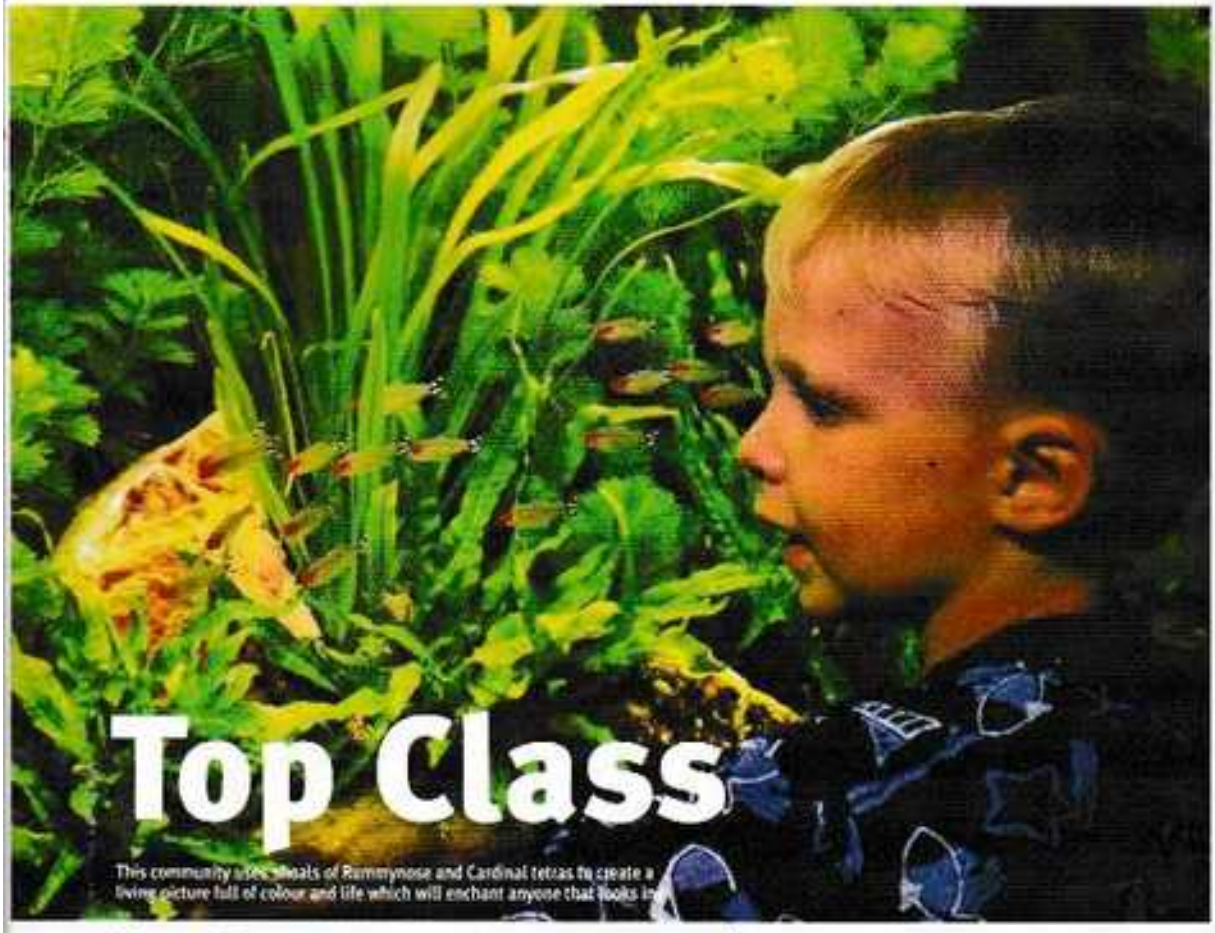
THE ROUTINES

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

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

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

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



Top Class

This community tank shoals of Rummynose and Cardinal tetras to create a living picture full of colour and life which will enchant anyone that looks in

Mary Sweeney creates a community around Rummynose and Cardinal tetras.

The best-looking tank I ever had revolved around tetras and plants with a few Cory's for bottom fun and an Ancistrus to do the windows. I don't think I've had another tank since that could match it for pure eye-appeal. I've had fish that have cost more than all the fish in the tank, the tank, and the box of fish food I kept hidden behind the tank, but they still couldn't match this collection for aesthetic appeal, not a chance. I just hope I'm able to do it justice in the description that follows. It really was lovely, really lovely.

The Players

Starting from the bottom, you have your small school of *Corydoras*. Four to six cory's will do if the aquarium is on the smallish side, but if you have room to spare, a dozen Cory's are a real eye-opener. Which species you select doesn't really matter much as Cory's are universally cooperative. They thrive in the company of their own kind and though they are not especially colourful, they have so many other nice qualities that

Looking at this beautiful *Brochis multiradiata* you can see why they are called Emerald catfish - they simply glow green when in good condition and living on a dark substrate.

PLAYING BY THE RULES

The main appeal of a good community set-up is camaraderie. Every fish should be compatible with all of its neighbours. Any rude behaviour is cause for immediate eviction. This is non-negotiable. Of course the fish don't know anything about this concept, so it's up to us to make sure we choose species that are going to play by the rules. Surprisingly little information is published about the ethology, or behaviour, of fishes, especially at the hobbyist level where we most need it. Some of the information that is found is incomplete or just plain wrong. And sometimes we just don't want to believe good advice. While there are exceptions to so many rules, some fish behaviour is bedrock. Two male Betta splendens are always going to have a go at each other. They just don't know any other way to behave. Single male bettas are pacific with other species, and are likely to be ravaged by the fin-nipping tetras that are the foundation of so many successful communities. Once in a while a trusted fish will take you by surprise and eliminate a tankmate or even a tankful, but you can usually figure out why: it grew up; it wanted to spawn; the other fish finally fit into its mouth... it's a short list and one that we'd all rather not have to refer to. Destructive behaviour is likewise prohibited. There should be no heavy digging, wanton shredding of plants, nor even eating of aquatic greenery. An exception is made when it comes to rasping of algae from any surface, even if it includes some consumption of driftwood. Ancistrus spp. are worth the trouble of replacing some driftwood every few years. The sawdust is important to their digestive function and they should not be kept in an aquarium where there is no driftwood available.

make them welcome in all the best aquariums. If you're looking for a bit more colour and have a very well-stocked aquarium shop locally, *Brochis splendens*, the Emerald Catfish is one of the few fish that can boast some green coloration. Don't expect emeralds exactly, but a school of *Brochis* in good condition is just glorious.

Ancistrus dolichopterus, the Bushynose or Bristlenose, is not always easy to find, but when you do you'll never want to be without one again. They stay small. The largest is just over 10 cm. They don't generate too much waste as is often the case with other loricariids. The bushy nose is a real conversation piece and gives them a fierce expression that is totally undeserved except when there are two males, one female, and only one habitable cave. Because of the mayhem that will certainly follow should this situation develop, I would have to take off points from the peaceful grade awarded to *Ancistrus*. The problem isn't a problem, though if you have a compatible pair or a single *Ancistrus*. They are not aggressive in the least with other species of fish. Sexing *Ancistrus* is simple if you can choose from a group. The males have the big bushy noses and in the females the bushy nose is small or absent. They will stake out a territory in a cave or on the underside of a piece of driftwood and pretty much stay out of sight in the daytime. In the evening they become much more active and can be seen giving every possible surface in the aquarium the once over with their mouths. They are dynamite for removing brown algae (diatoms), and will generally keep the glass pristine on the inside. Feed them in the evening and be sure to offer fresh greens regularly. They are fond of Romaine lettuce, zucchini, and green peas with the outer layer slipped off.

Now for the shoals

Now for the shoals. Here we want all the colour and action that is available in the group of fishes known as tetras. One particularly desirable species is *Hemigrammus rhodostomus*, the Rummynose Tetra. At just 5 cm in length, a school of six or more Rummynoses will pack 30 cm worth of living colour into your aquarium. These fish have a reputation for being a little delicate, but if you get good stock and treat them according to a few simple rules, they will be surprisingly hardy and reward you with a red beacon on the tip of each little snout: a mascot to many. Here's the plan. When the tank is all set up and good to go with thriving plants, the catfishes in place for two or three weeks, then you add the Rummynoses, provided of →

Cardinal tetras have the reputation of being a little touchy but once settled in an aquarium will live happily for many years.

There are several different species of Rummynose tetra. This is *Hemigrammus bleheri*. All have the bright red nose to a greater or lesser extent.

course that your tests for ammonia, nitrite, and nitrate are all zed. If the water is not right, wait on the fish. It's that simple. Hold your hand on the heavy feedings until you have a full population as well.

The next species that goes into this community would be Cardinal tetras. This is a fish that it's hard to have too many of. Like the Rummynose, many people see the Cardinal as tetchy. They are fine in the wild, and that's no cakewalk. Treat the Cardinals as well as the Rummynoses and they'll glow like the jewels they are.

Both the Rummynoses and the Cardinals are considered difficult to breed. This aquarium set-up just may be conducive to romance in these species. The thick grass on the bottom should protect at least some of the eggs from the frequent spawnings that will inevitably occur. The floating plants are full of microscopic foods. It's not outside the realm of possibility that you could have a self-sustaining population in this community.

Plants

Floating plants, like Water Wisteria, are ideal in this set-up. This plant gives the fish a great sense of security, covering the top of the water like it does. It prevents many a short leap into oblivion for startled little fish. *Elanchonis* planted in clumps looks great and leaves some open gravel for the catfishes to prowl. I would stay away from

Pretty as a picture. Once established your community could look like this [illegible]

the red plants unless you want to double up on the lighting and add CO2 to the water. Anubias sp. attached to the driftwood will do well even with floating plants covering the top of the water.

Aquarium Conditions

The aquarium should be a good 80 cm in length for this collection. One of the new designer acrylics would be very nice for this show tank. The raised lighting unit that I've seen lately brings to mind some intriguing possibilities with the emersed plant forms...flowers...seeds.

A natural river pebble substrate would be perfect, but any dark, soft substrate is good. How do I get a "soft" substrate? I take that to mean rounded gravel without any sharp edges, more fine than coarse, but heavier than the light builder's sand that's come to use lately. I did not have a good experience trying this substrate. It always looked dirty after the first few weeks no matter how much cleaning was done. Don't be misled! It's only while the day the aquarium was set up for the photo. Besides, fish don't look well over a light background. They tend to lose colour trying to blend into their environment. A sub-substrate of laterite is recommended by many aquatic plant experts. When I use this kind of amendment I prefer to plant in a pot to keep everything contained.

All the fish mentioned in this article do best in slightly acidic, warm (23 to 29° C) water. If the water is on the soft side, so much the better. Generally, aquarium water tends to become acidic in time, so it's best not to mess about with chemicals unless it's absolutely necessary. It is difficult to maintain chemical consistency when the chemical values are produced by the hand of man. I do realise that there are some taps and wells that dispense very hard, alkaline water. Some of us are intrigued by what we can do with test kits, peat bombs, and chemistry sets and are able to keep up with the routine, but those folks are in the kind minority. It is still best to keep the fish that thrives in your water conditions. No matter what kind of water your tap produces, there are fish that will do well in it. Still, there's no harm in putting a bit of peat into a bag in the filter if it will help achieve a fishkeeper's dream.

Do use some aquarium-safe driftwood and decorations. These structures will be put to good use by various members of the community and they add to the aesthetic pleasure to be derived from an attractive tank. Don't forget to use a background on the aquarium—unless it is a room dividing tank—it enhances the view through the front glass.

This is one time that I would definitely recommend a canister filter. Pristine water chemistry is essential for the health of all fishes, but tetras particularly are vitally impressed by nitrate free water. The Rummynoses will signal their approval with their bright red snouts. Enjoy!

I don't think I've had another tank since that could match it for pure eye-appeal.

Tropical Q&A

BROUGHT TO YOU BY NUTRAFIN & FLUVAL

Star Letter

What can I feed my baby Guppies?

Q **Not so long time ago my female Guppy was pregnant and now I have seven babies. I am feeding them with a liquid fry food for 10 days. Now I need something else like Vinegar eels, Microworms or Grindal worms. I looked over the net but I couldn't find any starter cultures that can be shipped over to Northern Ireland, so if you have any source of a good fry food just let me know it please.**
Moulaz Fawzy via e-mail


Even the correct feeding a male Guppy will look like this when he is only 6 months of age.

A Baby Guppies are best fed on newly hatched Brine Shrimp virtually from the day they are born. There are plenty of firms that sell the dried eggs over the net or you can buy them from some aquatic retailers. You should also feed a good quality fry food (don't just grind up normal flake food - the growing babies need more protein in the formula than adults do) several times a day.
Derek Lambert.

Combination filtration

Q **I have a 1.3m tank with undergravel filter using an air pump as the uplift and an internal filter which is attached to a powerhead. I clean the internal filter every 2 weeks and it removes a lot of waste. I find these two systems work very well together as my tank is clean and my fish are very happy. Could you advise me how I can clean the undergravel plate without having to remove the whole thing. Any tricks of the trade/tips would be very helpful. Also how often should the plate be cleaned, every six months/year?**
Peter O'Brien. From Dublin, Ireland.


Internal power filters like this Fluval filter from Hagen work very well by themselves, however when used in combination with an undergravel filter the aquarium will be even more stable.

A I too have used a combination of internal power filter and undergraven filter to great effect. The internal power filter seems to remove a lot of the debris before it settles into the gravel (or is allowed to by a fine gravel) while the under gravel filter provides the aquarium with some underlying filter instability, helping the aquarium to remain stable in between Internal Power Filter changes. The simplest way of maintaining and cleaning your gravel bed is to use a gravel cleaner (consisting of a siphon tube and a gravel cleaning adapter which allows the lighter debris to be removed in the flow of the siphon, allowing the cleaned gravel to settle back to the aquarium bottom). That way you will not need to clean out your undergravel plate ever. You could couple this with each Internal Power Filter clean, using the siphoned water to rinse out your sponges. You will also keep your aquarium fresh this way by replacing the siphoned water with fresh, treated tap water.

Ben Hann

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.

Pretty Rocks

Q **I found some lovely marble rocks on a beach which I would like to put in my aquarium but I am not sure it is safe to do so. Will the marble affect the water chemistry and if so, how? If they are safe to use, how should I prepare them?**
Hazel Millar via e-mail

All newly acquired rocks and wood should be thoroughly soaked and carefully washed in warm water before use.

A Marble is the product of limestone that has changed its form by being subjected to many years of heat and pressure. Consequently, even though it will be far more physically robust than limestone, it will still have the same chemistry, with a tendency to buffer aquarium water, increasing its hardness and pH. You can confirm this using the vinegar test. If it fizzes, it's limestone. This would be ideal for Rift valley cichlids and other alkaline-loving fish, but if added to an Amazonian aquarium, will prevent you from attaining your desired acid/neutral pH and soft water. If you are still intent on using them for aquarium decoration, you should let them sit in fresh water for several days to remove any traces of saline water. For future reference, regarding the removal of the rocks from the beach, I have a feeling that there may be laws or bylaws preventing you from doing so in the name of habitat conservation. It may be worth checking.
Ben Helm

Home made stand

Q **I am looking to set up my 2.6m tank for freshwater tropicals and am wondering what type of support it would require. I was thinking cavity blocks surrounded by a wooden frame. The tank in question would hold about 960lt. I live in Ireland so stands and the like are not widely distributed here. Also I am wondering if it is safe to use children's sandpit sand sold in a garden centre a friend told me this was fine.**
Declan Gowran

A The support for your anticipated aquarium will have to be substantial (as will the flooring beneath your support!). There are a number of DIY ways you could look at constructing a suitable stand using the cavity block route.

1. Space the stacked block supports no further than 50cm apart with a planed wood frame on top.

2. Space the blocks further apart (to allow more space beneath the aquarium for filters, storage etc) and span the blocks with a small RSJ (rolled steel joist). You should be able to locate them at a reasonably sized builder's yard. I have used this method for an oversized 2m aquarium with no problems at all. Bear in mind that the smaller the footprint of blocks on your floor, the stronger the flooring will have to be. The RSJ method was used on a concrete floor.

Regarding the choice of substrate, you can use sand, but there are several things you should bear in mind. In my current planted aquarium I have used a mix of silver sand (from a garden centre) and larger gravel grit. The major benefit of using sand, besides it's price, is that it is inert and will not affect your water's chemistry. However, the potential problem when using a sand as substrate is its fine particle size which can lead to anaerobic conditions (bad egg smell), especially if left unagitated over time. It also cannot be used with undergravel filtration. To overcome its tendency to compact, try mixing it with some larger gravel grit to open up its structure. If you get the mix correct, your plants will thrive in this combination of substrates (if supported with CO2, good lighting and the addition of an iron-rich clay in your substrate).

Ben Helm

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 Fishkeeper, Ltdhg Ltd., Winchester Court, 1 Forum Place, Hatfield, Hertfordshire, AL10 0RN.

Internet Service

Fishkeeping Answers is also available via e-mail. Most of our experts can be contacted via the internet. A few are still not on-line so we will have to print your messages or 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: fishkeepinganswers@ltdhg.co.uk

Q&A

Snail problem


Clown loaches are not only useful for eating snails, they are very attractive fish as well.

I have a Juwel 180 community tank (freshwater tropical) and I am having a lot of trouble with snails. Can you please advise me of how to get rid of this problem as it seems to be getting out of control. I went to my local dealer for some help and he told me the only way was to use a snail trap as treatment will kill my fish. Can you please help me.

John Walker via e-mail

There should be no need to use chemicals to treat your snail problem as mother nature has the perfect biological control – Clown loaches. Clown loaches (probably best stocked in a pair because of their shy nature) are effective because they will eat the snails' gelatinous eggs, leading to a decline in your snail numbers as the adults gradually die off naturally, and unable to start subsequent snail generations. When choosing your pair of Clown loach, choose them as large as possible (worth paying more) as smaller Clown loach are less likely to adapt and compete in their new environment.

Ben Hahn

Confusing Barbs

Q I purchased a group of 4 Golden dwart barbs (Barbus pelius) from one shop and then added another group of 4 from a different shop a few months later. My problem is they don't look the same! The original fish are much smaller than the second batch and their body shape and colour is slightly different. I know some fish have different colour morphs, could this be the reason why my two batches look so different? If they are different colour morphs what am I to do about breeding them. The whole point of buying the second batch was so I had more fish to choose from when it came to breeding them.

Peter Bates, London

A I am pretty certain that you actually have two different species of fish. The first batch are probably Barbus pelius. These come from Africa and usually spawn on the undersides of plant leaves. The other species is Barbus canisa which comes from India and is often sold as Barbus pelius. The Canisa barb grows bigger and has a more pointed snout than the Golden dwart barb. It also scatters its eggs in tiny leafed plants. Although both species have similar coloration there are marked differences when you put them side by side (see the pictures with this answer for a comparison).

D. Lambert

Q&A Marine

Star Letter

Powder blue tangs often fall victim to a variety of diseases if not kept in perfect water conditions.

I have recently purchased a juvenile (5cm) Powder Blue Surgeon and whilst it has been swimming and feeding normally, it has developed white 'blotches' across its body over the last two days. I am using a vectron UV steriliser but I know that these species are particularly susceptible to disease. I considered 'ich' but as they are not 'spots', and the other Tangs in the tank all seem perfectly normal, I take it that it may be something else?(all water parameters are 'perfect') Any advice that you could provide, as to the problem, possible causes and suitable treatments would be of great help.

A.Milner via e-mail.

Without seeing an actual picture of the infected fish I can only make an educated guess at the probable cause of the disease. It is most likely to be a bacterial condition caused by Flavobacterium or Mycobacterium. The patches become evident as the fish loses the mucus over the infected area, which can lead to secondary infections and fin rot. Treatment in a reef aquarium can be tricky but your best result would be from Melafix which is a natural antibacterial remedy utilising tea tree extract. One thing to be aware of is that when you use this product in a marine aquarium, you must turn off the skimmer for it will foam intensely. The one thing with Powder blues is that they are extremely susceptible to a wide range of diseases. They should not be introduced until an aquarium is over one year old even if you think you have perfect water quality. The reason is that your water conditions are too unstable and only time will give you that stability. One thing about perfect water quality, I hear so many times that the water has been tested and all is OK, when I ask what has been tested the normal response is Ammonia, Nitrite, Nitrate, pH, and Calcium. Big deal but we are talking about marine water, and if you want to know your true water quality you should also be testing for Phosphate, Carbonate Hardness, Alkalinity, Magnesium and Iodine so we have a total of at least nine parameters to test for. If people only test for three or four then how can they ascertain the true quality of the water.

I cannot stress this enough, everyone who tests for all the parameters and responds to the results have far far healthier animals than the people who only test for a few parameters. Please test for everything and your success will increase. Remember there is a direct relationship between the amount of effort you put into an aquarium and the success of that aquarium.

A.Caine

Moving house?

Q I have to move my reef aquarium due to redecorating of our room and building work. I have never performed such a task and wonder how I can do this, causing as little stress as possible to my fish and inverts. I have a simple reef Berlin style with a total of 350 lt of water, no sump, halide lighting, a hang on skimmer and power heads for water movement. Livestock is 8 fish countless Hermits, 6 Shrimps and 12 soft corals. The aquarium when re-set up will not be moved again so we are looking at a long term move. Your help in this matter will be much appreciated.

Peter Jones, Barnsley

A good question and one which, if you follow some simple rules, will result in a successful move without too much stress to yourself or the livestock. First set a date in your head and prepare. You will need enough buckets for the water and fish boxes and bags for the livestock. Also make sure you have about 50 l of new water made up and ready to use, then banish all other livestock (wife, kids, and dogs) from the house, and crank up the volume on the music system! Turn off all equipment and remove from the aquarium without disturbing any rock work what so ever. Then bag up all your corals and place in the fish box with the lid on. Then bag up water ready for the fish but do not attempt to catch fish at this point. The next step is the secret, the key to all moves is to save as much water as possible, so start to siphon off the water. As the level drops, remove any Snails or Hermits and place into a bag. Keep siphoning off until you are left with about 10cm water depth, then, and only then, remove the rock. If you remove the rock before this time you will release all sorts of particulate matter into the water and dirty it. With the rock work gone, it is a simple matter to net your fish in a small unobstructed water body, bag them and then close the lid on the box to alleviate stress levels. As you remove the rock inspect it for Crabs and Snails or even a Blenny! As they might be hiding in the rock, place the rock in buckets or boxes and keep it damp by covering it with bags or wet paper.

Clean the aquarium, move it, replace all the equipment, build your reef, fill with water and heat. Float the animals and acclimate and re-introduce. Pay close attention to your water quality. When the residents of your house return, take them out for a nice meal to thank them and all should be OK. Good luck with your animals and remember, **no new additions for eight weeks to allow the system to settle.**

A Cane

Hermit crabs are experts at hiding in caves and crevices – make sure you track them all down when emptying a tank for moving.

Goldfish changing colour

I am a beginner and I need some help please. On my goldfish I noticed that the scales of the fish have started to fall off and it is turning from gold to silver. I don't know what to do other than that the fish looks normal and active.

Taz via e-mail

Goldfish often change colour as they grow older and it is common for them to go from 'gold' to white or silver. This is normal and is nothing to worry about. Scale loss can be due to infection but if this is the case it often looks quite angry at the site of scale loss with some reddening and bruising. If this is not present then you probably have nothing to worry about - its just normal colour changing and white scales can be difficult to see.

Lance Jepson

This white Goldfish may well have been a lovely gold colour when it was younger.

Brown algae problem

My Goldfish tank has brown coloured algae which I can't get rid of. I have some snails in my tropical tank would it help to put some of them in my goldfish tank.

Jenny via e-mail

Heavy growths of brown algae are probably due to high waste levels in the water, especially nitrate and phosphate. This comes into the tank in the fish food. Make sure that your filters are working at their best (regularly cleaned etc), that you're not overstocked or overfeeding and I would start using a phosphate/nitrate absorber such as Hagen's Biton-X. In theory you can add live plants to out compete the algae for dissolved nutrients such as nitrate and phosphate but these require very good lighting and are likely to be eaten by the Goldfish.

Lance Jepson

What fish is this?

The attached photo is of one of 3 fish of this type in my pond. Could you please tell me what breed of fish it is?

Scott Hodson via e-mail

I can't really tell what this is. I'd have a better idea seeing it in the flesh, moving and swimming.

My guess is that it is not an Orfe variant, it may be a Rudd variant, it also doesn't help as it looks a little emaciated. Sorry I can't give you a definite answer.

Ben Helm

This is a young silver Orfe which could be the mystery fish. There is a blue form as well as the usual golden form.

Little red devils

Central American cichlids include some real gems. This month Mexican Cichlid fanatic **Juan Miguel Artigas Azas** starts a new series on these beauties with a small colourful species, "Cichlasoma" *salvini*

"Cichlasoma" salvini (Günther). Female guarding her fry in Río Chacamax at Nuteton, Usumacinta drainage, Chiapas.

Given the confused state of taxonomy, the "Mojarra pico de gallo" (as it is known in Veracruz, México) will have to wait for further studies to be carried out for its proper generic placement. In this article, however, and until such studies are carried out, I will adopt Kullander's suggestion (Kullander, 1996) to designate previous Cichlasomines (now Heroines) without a genus assigned yet with quotation marks: "Cichlasoma."

Distribution

The type locality of "Cichlasoma" *salvini* is Río de Santa Isabel and Lake Petén, Guatemala, however, it has a wide distribution in the Atlantic drainage rivers and lakes of México, Belize, Guatemala, and even into northern Honduras, from sea level to around 500 metres above sea level. The northernmost location where I have found them is the Otapa River in the Mexican state of Veracruz (19° N.L. 96°30' W.L.), the range extends to the south to the rivers and lakes south of the Yucatán peninsula in México, north Guatemala and Belize. It has been also recorded from rivers flowing into the Amatique Bay in the Olancho state in northern Honduras (88° C.L.). However it is absent in the northern part of the Yucatán peninsula.

"Cichlasoma" *salvini* exhibits a great degree of variability in coloration within its range, with the most colourful individuals found in the central part of their distribution. Two particularly beautiful strains inhabit the upper Candelaria river system, where males and females are equally beautifully coloured, and the lakes around the city of Villahermosa in the lower Grijalva river system, both populations have intense red bellies.

Habitats

"C." *salvini* is found in jungle or tropical forest areas. Abundant vegetation and enormous trees provide shade at the edges of rivers and lagoons, where the bottom is commonly covered with tree branches and leaves. The water is usually of low visibility. In the dry season, however, clear water can be expected with visibility of up to five metres. Clear water is found in the headwater of some rivers within the fish's range. The Tabasco lagoons of the lower Grijalva and Usumacinta are completely murky. The abundant population of "C." *salvini* is found here which is one of the most colourful variants, a race more beautiful than those we regularly see in aquariums.

Water chemistry is always on the alkaline side, with pH measurements over 7.5 and values up to 8.0 or more not being unusual. Hardness shows the widest variation, from relatively soft waters (8° DH) to very hard waters (+350° DH). Temperature ranges from around 24°C to 30°C in some parts of the habitat, with 26°C commonly found in the dry season.

The "Mojarra pico de gallo" generally inhabits areas of abundant protection and cover, whether aquatic vegetation or driftwood. Juveniles of the species seem to

The Rio Grande, affluent of Coatzacoalcos river system under Puente Ajal, is a typical habitat of "Cichlasoma" salvini.

prefer the running water in rocky areas, while adult males establish their territories in slow-flowing water under plentiful cover. This is not surprising as the species' striking colours make this fish an easily spotted prey for fish eating birds.

Reproduction

During the dry season, between December and May, the water in the rivers and lagoons in the habitat of "C." salvini turns clearer and warmer. It is at this time that pairs form and look for a submerged tree or wooden surface, the more entangled the better, where they establish their breeding territory. In spite of their small size, "C." salvini shows an extraordinarily aggressiveness and pairs are able to defend a territory larger than two metres in diameter, even against larger cichlids. Nevertheless its gorgeous coloration is usually enough warning to dissuade other fish from getting too close to them.

The pair places and fertilises the eggs on a vertical wooden surface or in a cavity of a larger trunk. They clean the spawning surface with their mouths. During the 24 hours prior to spawning, their genital tubes extend downwards. After finishing the cleaning process, spawning takes place.

Under aquarium conditions, the spawning act takes a couple of hours. The female places hundreds of adhesive greenish or yellowish ovoid eggs on the spawning surface. Their size is close to two mm in length along the larger axis. Eggs are placed in curved rows slightly separated from each other with each pass of the female yielding about 10 eggs. The male follows closely and covers the eggs in a cloud of sperm. The process repeats until more than 500 eggs are laid.

Once the spawning act has finished, the male retreats and takes on his new role of fiercely defending the territory. The female stays close to the eggs and uses her pectoral fins to circulate water among them, I presume to keep them clean and well oxygenated. Damaged or unfertilised eggs turn white and are immediately eaten by the female. Apparently this is done to prevent spreading of the fungal infection to the healthy eggs. The female only leaves the eggs for short periods of time to seek for food. During this time the male takes her place. A flank flaring by the pair precedes the shift of responsibility.

A few days later (two days in aquarium conditions at 28°C), the eggs hatch and the wrigglers, still unable to swim due to a provision of egg yolk accumulated in the belly, are placed by mouth in a small pit or

NATURAL DIET

In its natural habitat this omnivorous cichlid feeds mainly on both aquatic organisms and small insects falling into the water. Gut examination of five individuals in northern Guatemala (Rios, Luis Estuardo, 1998) shows a good content of vegetable matter in the diet as well.

Cichlasoma salvini male from Rio Chacamax, Usumacinta river system in Chiapas, México.

cavity in the trunk. The female, under some circumstances, may move them several times until the wrigglers consume their yolk sac. The fry, after consuming their yolk, start swimming and looking for small edible food particles on the sediment. At this stage, the fry show an intense longitudinal black bar across the flanks. The pairs don't allow the fry to forage far from the entangled spawning area, where they shelter during the night.

When danger threatens

At any sight of danger the male faces it. If coping with the threat proves not to be feasible, he abandons the female until the danger is gone. In this respect, my experience is that males "*C.*" *salvini* are much braver than males of many other Central American cichlid species.

The female always remains close to the fry and guides them, together with the male, with spasmodic movements of the body and opening and closing of the fins. With these movements, the parents lead the babies to a less accessible area of the habitat among the tree trunks or vegetation. There, they stay hidden until danger is gone.

Fry care extends for over a month as estimated by the size of the fry observed. At the end of this time, the fry have reached close to 2cm in size. Juveniles, becoming more sparsely spaced with each passing day and driven by curiosity, eventually stop responding to the parents' calls and venture out alone, eventually abandoning their parents. Small juveniles then seek refuge in the shallower areas, normally entangled by driftwood and shaded by overhanging vegetation.

In an aquarium, fry can safely be left to be raised by their parents. Once they start swimming you need to decide whether to leave them with the parents or remove some of the fry to be raised in another aquarium. This can be accomplished with the help of a piece of air tubing, which is used for siphoning them out when they are still small enough. It is important to leave some fry with the parents or the reproductive cycle is broken and the male will want the female to spawn again immediately. Since this is an unlikely possibility, she may succumb to the male's aggression. In this case, as well as when a problem occurs during breeding, quick separation is the best approach.

Fry can be raised on Artemia nauplii, which turns out to be an excellent first food for this kind of fish. It is important to feed the fry at least twice each day. With this generous feeding regime and with frequent water changes, in two months your spawning the babies will have reached 2cm in total length.

"*C.*" *salvini* fry are fast growing taking less than a couple of years to contribute their share to the survival of the species. This period could also be shortened under aquarium conditions where food is readily available.

AQUARIUM KEEPING

The main consideration to take into account to successfully keep this species in the aquarium is the handling of their aggressiveness. This species shows a special animosity for individuals of their own species. You would hardly be able to keep more than one adult male in a home aquarium. The size of the tank is the main factor in minimising the aggressiveness resulting in the death of the subordinate individuals. My advice is to provide a group of juveniles an aquarium no less than 1.5m in length.

"C." salvini shows a great tolerance for fish that are too large to be eaten and ignores them outside breeding time. Having other cichlids, as well as other fast-swimming fishes, in the tank will help to calm aggression. An abundance of hiding places is also helpful. Temperatures below 24°C, however, should be avoided.

The "mojarra pico de gallo" is easily fed, but foods with high fat content could potentially cause digestive problems. Saltwater fish meat, raw shrimp and other kinds of seafood are excellent to condition the fish and get rapid growth. In addition, avoid overfeeding which creates large, fat and overgrown fish, because this can lead to low reproductive energy.

Given these conditions and with proper maintenance of the nitrogen cycle through partial water changes on a regular basis, it is difficult to keep "C." salvini from breeding. When pairs form in aquariums smaller than 2m in length, remove any other males of the species. Without doing this, it is almost certain that the dominant male will kill them. A couple or more females can be kept together in the tank as long as it is at least 1.8 m long and has plenty of cover. Otherwise it is better to remove them.

Generally "C." salvini doesn't have any problem establishing a breeding territory in aquariums, even in the presence of larger fish. Frequently, pairs will demand at least half the aquarium space and the other inhabitants will quickly learn not to mess with these little devils. If adequate space is not provided, the rest of the aquarium inhabitants will suffer serious injury and perhaps be killed by the pair.

Breeding pairs living in a community environment form stable relationships. Instability can occur when, for some reason, the spawning cycle is broken caused by sudden changes in temperature, inexperienced breeders or excessive stress. The pair should be separated when there is inadequate tank space and shelter to allow the female to escape the male's attacks. If the space is available and more than one female is present in the aquarium, the breeding cycle could restart with the alternate female, allowing the former partner to recover.

"Cichlasoma" salvini juvenile in a fast flowing area in Rio Ixtes Caleos, Veracruz, México.

Fish Hunting in Thailand

The Sra Kew habitat where Elephants swim with *Betta simplex*.

In the second part of his series on fish collecting in Thailand, **David Armitage** goes in search of northern bubblenesters and southern mouthbrooders.

ALL PICS BY DAVID ARMITAGE

After our brief sojourn in Bangkok we flew to Udon Thani in the north, apparently following more of the route of the 'Friendship Highway' which stretched from Singapore, through Malaysia and beyond.

Having booked into our splendid business hotel, the 'Ton Koon' we then walked down the street to visit a knowledgeable pet shop owner. The back of the shop was packed with hundreds of individual tanks for male Bettas but few were now occupied as we learned that the main fighting season was from April to September and it was now October. Nevertheless, we saw the *B.smaragdina* from the highlands of Laos, known as the 'guitar tail' because of the fret-board markings on the caudal fin. The old man bought fish from a variety of suppliers but always found out their location so they could be properly labelled.

Other Anabantids

The next morning, we returned to a site on the Nong Khai road, a canal and series of pools with a pleasant growth of lotus and

Along the Nong Khai road Dave found extra large and colourful specimens of *Trichopsis schalleri*.

This male *Betta simplex* from An Lok is brooding a mouth full of eggs.

...lines through a gateway lined with paper kites. In the canal, we immediately started catching *Dichopsis schalleri* and *T. vittatus*, both extraordinarily large and colourful. We also caught young Bettas, which we assumed to be *B. smaragdina*. Bettas seem to wriggle around the net when captured in contrast to the Croaking gouramis which flipped around wildly. The identification became unequivocal when the first mature male wriggled in my net, a flash of electric blue which will be hard to forget. The males seem to have found hide-outs in deeper holes in the bank but it was hard work stamping them out of the bankside grasses under the full sun. Other fish here included *Nandus nebulosus*, Anabas, Three-spot and Snakeskin gouramis. The last three could be seen in the centre of the canal as they came up to take a mouthful of air. By the time we were finished we were exhausted and were able to appreciate the circling clouds of 'dragon flies' that abounded at this habitat.

The afternoon saw us fishing the edge of another, less savoury habitat, a flooded rice filled ditch at the side of the road to Khao Kaen. Here we worked very hard indeed and found males elusive - in fact, I only caught two. A passing local informed us that mornings were the best time to catch the males.

We returned in the dusk to the busy carpark of our business hotel. This tended to become somewhat overcrowded in the evening due to the proximity of the large massage parlour next door but our minds were fixed on a spicy pot of Tom Yam, garlic shrimp, fresh-grilled fish and a choice of Chang (Elephant) and Leo beers. After a suitable period of gorging, we returned through the streets which were by now bustling with large scuttling cockroaches.

Phuket island

Two days later, we returned to Bangkok domestic terminal en-route to our next destination, Phuket island and then we sped off, heading north up the west coast to our overnight stop at Takua Pa.

We breakfasted early then headed north to Kapoe, stopping early to fill up with petrol. Just north of the town, we found the road signposted to 'Ba Na' which on the map appeared to be a dead-end road. Before long we saw some roadside pools and asked a passing lady about 'Pla Kats'. She indicated the pool behind her small hamlet of three huts. I found no Bettas in the deep water of the main pool but, as seems inevitable with the *B. splendens* species group, we fished the tangle of grasses under the hot sun. Before long we had several dozen juvenile Bettas although, as we always seem to find, adult males remained elusive.

Taking leave of our friends after being introduced to the skinned pangolin hanging in one of the huts, we then secured our overnight accommodation close to the Laem Sang National Park, at the 'Wasana resort', run by a Dutch / Thai couple. We turned off the road toward the coast and soon were running beside a mangrove swamp, with glimpses of Buffalo cavorting in the roadside pools and Egrets and Swamp hens idly watching us as they broke off from prospecting the shallow water for prey items. It was an unexpected bonus, when I came to shower, to find a Tree frog cheerfully perched on top of the showerhead.

A clear water habitat with mouthbrooders

As usual, we were away at 7 o'clock the next morning before breakfast but stopped early at a roadside coffee-shop to indulge in some sweet and savoury mixtures wrapped in leaves. We then headed north and then east across the range of hills toward Lang Suan. We were soon on the road to Surat Thani, noting the enticing Paper Bark swamp remnants to the east of the road. My attention was drawn to the small

This *Betta prima* came from a clear water habitat on the road to Surat Thani.

volcanoes of sand along the forest track which looked like ant-lion pits. I was convinced the black water was the place to look but then Dennis appeared with news of his capture. He had crossed the road to fish the clear water that fed into the swamp and found small mouthbrooding Bettas among the grass and beneath the pitchers of the small *Nepenthes*. *Betta pi*ma? It was much more pleasant fishing the mouthbrooders' habitat, than the bubblenesters' - deeper, cooler water with more shade.

We left our captures in their bottles in the shade of the culvert beneath the road while trucks rumbled above, and made our way to the nearby roadside stall for a much-needed bottle of coke. The family there invited us to use their small bathroom nearby and then, after exchanging farewells and showing them our captures, we were on our way. Soon we were travelling between the impressive limestone cliffs so characteristic of this area. Before long we were booking into our selected hotel in Krabi town, 'The Riverside' and then headed for the 'Floating restaurant' in the centre of town.

Fish and elephants!

Early in the morning, we located the type locality of *Betta simplex*, following signs off the Phangnga - Krabi road, 'The Palace' and then to 'The babe elephant show' and after a couple of miles bouncing along the unmade track past the tethered elephants awaiting the first influx of tourists, found ourselves looking at the emerald pool in the shade of limestone outcrops which was the habitat of our quarry at 'Sra Kew'. We noted large "T' barbs and Danios shoaling in the crystal clear water. Parking by the pool, we plunged into the pleasantly cool and shady waters. Tony soon caught juveniles from his usual vantage point at the side of the bank and Dennis was successful in the swampy shallow grassy areas between two pools. However, it was some time before I caught any specimens in my preferred fishing mode in chest-deep water. Eventually however, I began to catch pairs on the far side of the pool, close to the rocky outcrops, between roots and in the overhanging bankside grasses. It seemed that at this time of year, the rainy season, nearly all the adult males were mouthbrooding eggs. Tony shouted across that he was watching a pair spawning but rather heartlessly netted them before I could take a look!. I photoid the colourful *Channa gachua* we found here along with the Harlequin rasboras and Barbs, then watched while a couple of lady bathed their elephant not far from where we'd just been fishing.

From his previous visit, Dennis was able to inform us that *Betta imbellis* were to be found in the swamps by the palm plantation on the other side of the track from the alkaline pools. Here, in the flooded grasses, we found plenty young of this species, but only two mature blue metallic males. Contented with our catch, we packed up beneath the curious eyes of western tourists looking down from the backs of elephants.

On our last day together, we decided to explore the area of the Thonbok Koranee NP and headed to Ao Lok on the Phangnga road. A little later, passing under a limestone arch, with a limestone wall running on our left, we spotted a clear stream running downhill out of the scrub on our right. It was some time before we caught a fully coloured mouthbrooding male Betta and could see it was *B.simplex*. But this population was a rich rufous colour with a nicely marked tail. Here the stream was lined with limestone rocks and limestone gravel was the substrate although Dennis suspected this may have come off the road. Nearly all the males were mouthbrooding and we soon had enough so I was able to photograph representatives along with co-habiting species, a colourful *Channa lucia* and young Leopard Danios.

It was sad to break up the fishy fellowship early the next morning. Tony and I saw Dennis safely onto his minibus to Hoytai before we ourselves headed to the airport on our return leg via Bangkok.

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 rare 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 beautiful male *Betta imbellis* was one of only two mature males found at Sra Kew.

WATER PARAMETERS FROM KEY HABITATS IN THAILAND 2003.

	Mahachai	Udon Thani	Kapoe	Surat Thani	Krabi		Ao Lok
	Sp Mahachai	*smaragdina*	*splendens*	*prima*	*simplex*	*imbellis*	*simplex*
pH	7.8	7.2	6.4	8.4	7.6 - 8	6.8	8
KH		15 - 16	0.3	5 - 6	20	3	20
°C		28		25			27

INTERESTED IN LABYRINTHS?

For further information on labyrinth fish contact 'The Secretary, AAGB, 19 Chiltern Crescent Sprotborough, Doncaster, DN5 7PE or visit www.aagb.org

Guardian angels

While many fish simply scatter eggs and swim away, many others choose to look after them in one way or another. These egg guarders are the subject of **Kathy Jinkings** latest article in this series on breeding strategies.

Bristlenose catfish eggs that form a clump of orange tentacles

For many fish, simply spawning with gay abandon and then swimming off leaving the eggs to the care of the fates is not enough. One of the parents, usually the male, prepares the spawning site, either simply by selecting it or in some cases building a nest, and then charms the female into the selected site to spawn.

Territorial males

All these males are quite protective of their little spawning zone, especially against other males of the same species. After all, if you are going to invest all that time and effort preparing and guarding first a nest site and then the eggs that are laid there, you certainly don't want any suspicion that some fishy Casanova might have sneaked in and fertilised the eggs! This makes these fishes slightly less suitable for the community tank, and certainly not in groups of the same species.

Egg guarders are usually best kept as a pair, or a male and two females. While they are likely to take severe objection to any other male of the same species, they are rarely very aggressive towards fishes of other species except in the small nest zone. Most large communities have enough room to allow a few fishes that are so inclined to set up and guard their bolt hole; after all, we are not talking about a great deal of space, perhaps one corner for a bubblenest or a small cave. Although this behaviour limits the community aquarist to keeping only two or three of each of such species, they do have a great advantage for anyone who wants to rear the fry. If you do not happen to be present for the actual spawning, the fish will protect and care for his eggs until they hatch. This gives you plenty of time to set up a nursery tank for the little fish.

An ideal catfish

Bristlenose catfish, especially the common *Ancistrus temminckii*, are ideal fish in this group for a beginner. The males and females are easily told apart (the males are the ones with bristles) and provided they are fed a good diet will almost certainly spawn. Many a fishkeeper alarmed or surprised by the sudden appearance of a few black tadpole like creatures in his tank

'their spawning behaviour is usually noticeable and interesting'

survivors from an unnoticed Bristlenose spawn. The male guards his family (which may include eggs from more than one female) carefully and diligently. He remains with the eggs for the three or four days until they hatch, never leaving them even to eat. He continually fans the eggs to ensure a constant supply of new, oxygenated water, and continually works over the cluster (which looks a bit like an orange raspberry) to remove any damaged or fungused eggs that could spoil the whole brood. With this care, you may wonder as to why the surprised aquarists has only a few 20 Bristlenoses can easily lay over a hundred eggs. This is because although the eggs are cared for, the father rapidly loses interest in the fry. He will not harm them, but as one by one the little yolk sacks with tails escape the nest site, he ends up with an empty cave. Of course, the other fish in the tank enjoy nothing more than a tasty egg yolk, with a bonus little fish attached to make them even tastier. Ideally the egg cluster should be removed (moving the whole piece of décor or bogwood to which they are attached into a plastic bag full of water is a good way of transferring them, and quite often the male will remain in place and go

Male Dwarf gouramis often use a lot of plant material in their nests.

with them) to a waiting nursery tank, where often you can get a 100% survival rate.

Fortunately, most shops are delighted to receive little Bristlenoses, as these fish always sell well.

A group of young Bristlenose feeding on some vegetable matter.

Blowing bubbles

The Dwarf gourami (Colisa lalia) is another devoted father. He takes in air at the surface and blows it through his gills to produce mucus coated bubbles, which stack up at the surface in the chosen area. Sometimes he will augment the bubbles with carefully chosen bits of plant or debris, until he has a structure 5cm square and up to 3cm high. Once he has a bubble nest, he has two aims in life - to deter any of the other tank inhabitants from coming near it, and to convince a female Dwarf gourami to lay her eggs in his nest.

It is best to keep the fish in a fairly large tank with lots of hiding places for if a female is not ready to spawn the male becomes frustrated and may harm or even kill her. Plenty of live food usually ensures that the female is full of eggs, and when she is ready she moves underneath the bubbles with the male. The male curls his body around hers, and the two fish slowly sink together through the water, emitting eggs and sperm. When they reach the bottom they remain unmoving for a few seconds, and then the male chases the female away while he carefully gathers up all the eggs and spits them into his bubble nest. This mating may be repeated many times until the female has no more eggs. The male then patrols under the nest, performing repairs as necessary with new bubbles, and keeping away all the other fish who might eat them.

Held as they are in a mass of bubbles, the eggs have ample oxygen to hatch. After two or three days, inspection will show lots of →

tiny black strings hanging down from the nest. At this time, or even earlier, the whole nest can be scooped out in a bowl and transferred to a nursery tank. This is necessary, because once the male sees the little tails wriggling, he forgets all his careful parental efforts and starts to see that his offspring could be quite tasty... The little Gouramis do need some specialist care. As air breathers, they will need to breathe atmospheric air very early. This means that the water should be shallow, and the air above needs to be kept warm and moist, so as not to be too much of a shock for the little fish. Cling film is ideal for covering the tank, with an airline pushed through it powering a sponge filter. The fry are extremely small, so you will need lots of tiny food like Infusoria - the staple baby brine shrimp are far too big for a first food.

Good guy Gobies

Dragon gobies (*Rhinogobius wui*) are entertaining egg guarders for a small aquarium. The male establishes himself by digging a hole under a flat stone, and can then be seen showing off around the tank, throwing his head back to expose his red throat, and becoming darker. Then, one day, he is nowhere to be seen.... There is no cause for alarm. Having persuaded a female to produce some eggs for him, he has retreated into his hole and closed the entrance behind him. There in his little sealed cave, he cares for the eggs until the are ready to hatch. Unfortunately, he is not to be trusted with the fry, and removal of the stone to a nursery aquarium after three days gives the eggs little chance to fungus without the male, and ensures that they hatch safely in the nursery tank. The little Gobies are easy to raise - keep them stuffed with brine shrimp nauplii and they eat and grow rapaciously. The Goby family has many representatives, many of which represent far more of a challenge to the would be breeder.

Male Dragon gobies make excellent fathers.

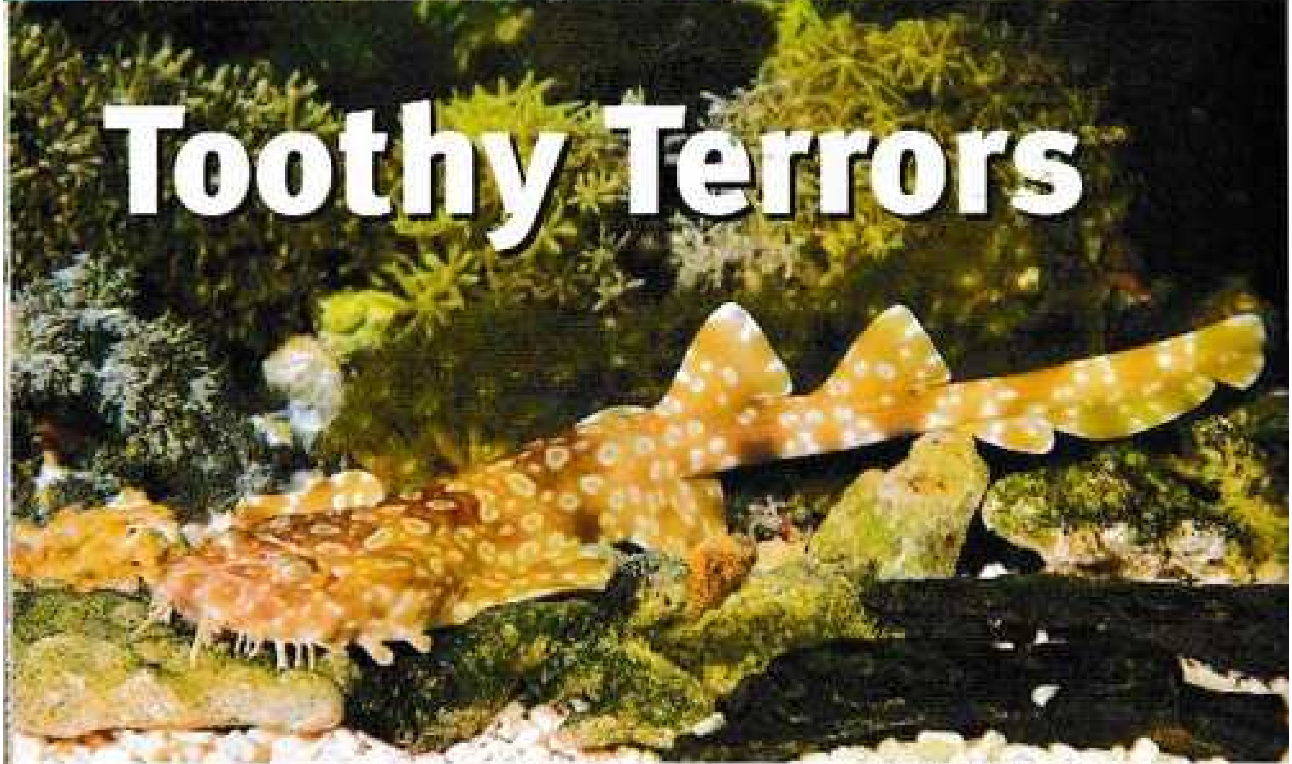
A splashing success

The Splashing tetra or Spraying characin, *Copella arnoldi*, has a unique problem when it comes to guarding its eggs. They are in no danger from other fishes, but are likely to dry out without constant attention! This is because this little tetra deposits its eggs on the undersides of leaves overhanging the water. The male and female position themselves carefully and then leap as much as 10cm into the air, turning upside down and adhering briefly to the underside of the leaf, where they deposit between 5 and 8 eggs. This process is repeated until the spawning is completed, with between 150 and 200 eggs produced. The female then goes her own way, but the male remains in attendance, splashing the eggs with water every minute. He even manages to correct the angle for the refraction of the water. As the eggs hatch, the fry drop down into the water. In the aquarium, of course, there aren't usually that many overhanging trees, but the undeterred Tetras will spawn on the underside of the aquarium lid or cover glass. These require acidic to neutral water, between 6 and 7 pH, and soft water with a dH between 5 and 12.

Egg guarders usually cause little trouble in the aquarium, and are the perfect group for the community keeper who would like to try rearing some spawn. As the male has to attract the female to the place of his choosing, their spawning behaviour is usually noticeable and interesting, as well as the subsequent care for the spawn. Most, however, will eat the fry once they have hatched, and lose interest in protecting them, so you still need to provide a safe haven for the fry if you hope to rear any to adulthood.

One of the more interesting egg guarders are Splashing tetras who lay their eggs right out of the water to protect them from predators.

Toothy Terrors



The Spotted Webbegong shark is a burrowing shark which should be tucked away in a quiet corner rather than sitting out in the open.

In part two of **Anthony Calfo's** series on keeping sharks in captivity, selection of healthy specimens and feeding regimes are discussed.

When selecting a healthy shark, there are fundamental aspects to look for common to all fishes, as well as a few unique symptoms to be aware of. To be able to accurately assess any specimen, you must first research and know its natural history, habits and behaviour to have an indication of what to expect with the species. The first criterion is simple demeanour. If the species you seek is a sedentary shark, does it appear instead to be stressed and "pacing" (swimming erratically as if trying to escape)? Panicked animals and those handled in undersized holding and transit vessels will sometimes exhibit raw and abraded snouts from repetitive contact with the walls of their confinement. Such wounds may heal quickly with good water quality, ample housing and perhaps waterproof ointments (antibiotics mixed in Titanium dioxide - UV sun block cream). There is still some risk of a dangerous infection developing in such clearly stressed animals, however.

Odd behaviour and panting

If your candidate is an active swimmer, does it appear to be lethargic or even resting as if fatigued? If you are shopping for a burrowing shark like the fantastic Orectolobid Wobbegong sharks, look to see if the animal has hidden itself discretely, or is it sitting unnaturally in the open. In a word, look to see that your candidate looks natural at ease. A healthy specimen will also demonstrate a slow and deliberate rate of respiration. If it looks like it's panting, there is a reason for it - be it water quality in holding, or worse... severe duress or an impending expiration. Normal gill respiration for most sharks in the trade is quite slow at one gill movement per two seconds or slower (less than 30 gmm - gill

Squid are often on a shark's menu in the wild and the thawed tentacles of a frozen one are top of the [illegible] ideal for getting a shark to feed.

movements per minute). Some species breathe as slowly as a mere 10 gpm.

For animals that have been held captive for more than a few weeks, there are a score of other symptoms and behaviours to screen for. Fishes that have been underfed or put off their feed will lose mass down the back along the base of the dorsal fin (a place of fatty reserve). A slender tummy is generally no indication of a nutritive deficiency. Only after a very prolonged period of neglect over many weeks will a hollow stomach be valid evidence of attrition or starvation. Around that time, a fateful sinking of the eyes will be apparent and sometimes indicates an animal that is beyond saving. Healthy sharks will generally respond to food stimuli... even if only to kill it in their territory. The tentacles of thawed frozen squid are irresistible to most elasmobranchs. Some may prefer a small live crustacean instead (*Palaemonetes* Ghost/Grass shrimp work well here). Find a natural food or substitute and see if you can elicit an expected response. Do not feed heavily though if the fish will be purchased that same day; the food may get regurgitated in the shipping bag and compromise transit.

Other common symptoms of stress or injury include sores or lesions on the underside for having been kept on inappropriate substrates. Alas, the ideal substrate is a catch-22 situation. Soft and fine sands are easily disturbed and ruin water clarity, not to mention wreak havoc on filtration aspects. Yet course sand and sharp rock can quickly injure an elasmobranch. Round grain sand at 2–3mm is a good size for keeping smaller shark species. Larger specimens can cope with coarser aggregates.

Nutrition

Sharks may not be algae grazers... but for some species, many of the animals that they eat are algae-grazers. As such, the incidental matter in commonly consumed prey can be a significant source of nutrition. The prey they consume in the wild is generally "gut-loaded". Fishes, echinoderms and other tasty shark fodder will have foraged upon the reef and gouged or predated many other nutritious plants and animals. Such matter is conveyed through prey to predator and makes up an important component of the end consumer's diet. It is largely for this reason that we do not want to offer prey items that have been processed, cleaned and/or gutted. A significant portion of the nutritive value of such foods will have been lost! Leave the heads and legs on shrimp and prawn. Do not gut or de-vein them either. Buy fish and squid unprocessed whenever possible from the fresh food market. Indeed, the phrase and form to describe all desirable prey items is "whole".

When offering live prey like fishes, crustaceans (*Palaemonetes* Ghost shrimp, Astacid crayfish, etc.) or other invertebrates, it is strongly recommended that you gut-load them with a variety of ingredients. Dense and nutritious dry foods (pellets and flakes), spirulina, or other thawed fresh-frozen matter (Mysid shrimp, krill, other plankton) can be soaked in HUFA rich supplements like Selcon and fed to prey for convenient carriage into your featured predators.

The diet of sharks at large tends to be rather indiscriminate. They can be observed devouring small fishes, crustaceans, various worms... even molluscs & echinoderms. A healthy shark will accept most meaty food items offered. Over time many can be trained to take food (watch your fingers!) from the surface, but all aquarium sharks are better "pole fed" using a wooden or plastic dowel with a notch fashioned into it for securing the food item.

Feeding regime

The less active species require several percent of their body weight in food on a weekly basis. The most active species may require 10%, 20% or even more food by weight relative to their size. Feeding frequency should begin with a minimum of three times weekly, and daily for the most active individuals (particularly the skates and rays). Be very mindful not to overfeed your animals though. It is only for small specimens (let's say less than a foot in length) that daily feedings are about the right interval. Larger specimens will fare better with a meal every other day... and not to the point that their sides are bulging. Your sharks will live much longer, healthier lives (and grow more slowly) being kept on restricted diets. Keep them semi-hungry with small frequent feedings, but do not fast them deliberately for extended periods of time. Fasting after a while can have very serious physiological ramifications with elasmobranches beyond the expected compromise to vigour and moss.

Freshwater Crayfish can be gut loaded prior to being fed to your shark, this way you give your predator the complete diet it needs for good health.

SENSITIVE SHARKS

A warning regarding the acute sensitivity of sharks to metals and stray voltage in aquariums. Elasmobranchs possess unique organs called the ampullae of Lorenzini (visible to aquarists as pores on the head) that can detect the slightest measures of electric impulse at mere fractions of a micro volt. They are also quite aware of the weak magnetic field of solid metals in the water. This remarkable sensitivity can present extraordinary challenges to the aquarist, starting with electric hardware components of the life support system. Water pumps, submersible heaters and power heads especially can impart stray voltage into the water, which may interfere with the sensory functions of sharks. Navigation and their very means to feed may be impaired to the point where the creature suffers. Grounding probes may be helpful, but minimising the amount of submersible electronic instruments used will be necessary. Employing a large, proper external pump for a water return from the sump to handle most or all circulation needs in the display is a much better plan, for example, than using many small power heads (with their non-polarized and non-grounded plug ends!). Soluble metals in the water can be quite dangerous too; copper being the most commonly utilised transgression. Due diligence to obey these concerns can be quite challenging for system engineering and husbandry.

Sharks use their many rows of teeth in part for the rendering and manipulation of prey by a violent rasping motion of repeated inhalations and expulsions.

The Menu

Higher protein fare is recommended and may include food fishes (fatty/oily varieties especially), Panarids (cocktail, table, Gulf shrimps), snails & bivalves (mussels, clams and the like), earthworms, jumbo krill (superbo plankton), scallops, crab & lobsters, and whole squid (the tentacles are a great stimulant to elicit a response in sluggish feeders). Very nutritious commercially prepared feeds are available from some industry folks like Ocean Nutrition's *Shark Formula*, and formulated vitamins for home-made recipes from Purina's TestDiet(r) Aquatic Mix: 5K93 - catalog # 49935

Freshwater Astacid crayfishes make a reasonable choice if you must use freshwater prey, for their functionality to help wear down teeth, serve as more natural prey, and have significant nutritive value in their chitinous shells. Be careful of large clawed individuals that may pose a threat to some smaller shark species. Uca fiddler crabs pose a similar threat as prey; disabling the large claws of formidable crustacean fodder may be necessary. ■

TIPS ON FEEDING SHARKS

1 Research a species natural prey and proffer suitable fare or substitutes. Live food may very well be necessary. Killed prey will need to be manipulated with a feeding stick to seem alive or more enticing. The tentacles of squid waved in the face of many elasmobranches is simply irresistible.

2 Whole food-grade table shrimp, like that which we commonly get from the Gulf of Mexico and fisheries, is a common staple for captive sharks. Purchase shrimp and all such prey with minimal processing. The head, legs, shell and guts are highly nutritious. Also be sure to avoid cooked or soaked (thawed in water) prey as they have been nutritively diminished.

3 Live crayfish (Astacids), Fiddler crabs (Uca), or Ghost shrimp (Palaemonetes) are generally much better choices among live foods than the categorically deficient freshwater feeder Goldfish that are regrettably popular as prey. Whichever you choose... be sure to gut-load these animals with nutritious matter like vitamin-soaked dry foods, spirulina and various meats of marine origin.

4 Meats of marine origin are the staple of a captive elasmobranch's diet. Seek whole foods whenever possible.

A founder of the industry

This month *Today's Fishkeeper* takes a close look at **SeAquariums Waterlife Centre** and the man behind the business.

All the tanks are spotlessly maintained and fish labelled up.

Despite being late in the season there were some nice healthy Koi for sale.

The dry goods side was packed out with products of all shapes and sizes.

We don't usually run two features on the same shop back-to-back like this but last month we concentrated on the new exotic pets shop and just skimmed over the main shop and the people behind it. Here we want to focus in on the original shop and tell you a little more about it and the man behind the company itself.

Graham Cox started keeping fish in 1941 but did not enter the aquatic industry until 1966. In 1971 he wrote a book on Tropical Marine Aquaria which was published by Hamlyn (remarkably this contained sections on Protein skimmers, Ozone and UV sterilisers!) and it is from the information about the author in this book that we learnt more of this extraordinary person.

Originally a Chemistry and Biology teacher both in the UK and Africa he went on to became director of the Brighton Aquarium and during his period there he established the procedure for the life support system of the aquariums first pair of Bottle-nosed Dolphins. Later he went on to develop a whole range of aquatic treatments which are produced by Waterlife as well as a range of equipment also sold under that brand name. For many years Graham was a regular contributor to *Aquarist and Pondkeeper* magazine (now called *Today's Fishkeeper*) and was responsible for dealing with thousands of marine questions during his tenure as our marine expert.

More laid back life style

Today Graham takes things a little more laid back with his son and daughter playing important roles in running this international business. At the shop level they employ a manager for the day to day running of the shop but the same knowledge and standards of excellence which have always inspired the business are maintained here.

That is why the tanks are always well maintained, the fish are in good health and the range of dry goods excellent. Things were in turmoil when we visited the shop and with the major refurbishment being undertaken at the moment it is likely the shop will look a little untidy for some months to come. A lot of the old tanks need to be replaced which will be an ongoing project this winter. Judging by the high standard of the new Exotic Plants and Pet Centre recently finished we are certain that once the refurbishment is complete the old shop will be bang up to date.

In the mean time don't forget to pop in from time to time. The range of fish on sale when we visited was great. Everything from Neon dwarf rainbowfish right through to Clarias catfish on the tropical side. Since Graham's first love is marines this side of the business is well represented and despite being at the end of the pond season there were some nice healthy Koi on sale as well.

Shop name SeAquariums Waterlife Centre, 476 Bath road, Longford, Middlesex, UB7 0EB. Tel: 01753 680698
Shop opening hours 10am–6pm, 7 days a week
Proprietors Graham Cox
Manager Martin Dunkling
Staff Nick Cook, Darren Hooley
Number of tanks 101
Vats & holding facilities 24
Specialities Seawater fish and Invertebrates, Tropical Freshwater and Coldwater fish including Koi and Aquatic and Pond Plants, Marginals etc.
Staff knowledge Over 50 years' experience
Brands stocked Waterlife, Tetra, Juwel, Hagen, Arcadia, Nishikoi, Trident, Dajo etc.
Which groups of fish do you sell? Tropical, Marine, Coldwater.
Additional services All Aquatic and Pond accessories, also now selling RO water, water testing service, disease diagnosis and general fish-keeping advice as well as recommendation of aquatic installation and maintenance companies.

Our verdict

A great shop for anyone with a passion for fish.

Graham's verdict on the manufacturers

Which manufacturer has the best range of products in your opinion? - Tetra (foods), Eheim (filters), Waterlife (treatments).

Which company gives your company the best service? - As above.

Eco-check test kits

Koi Vision are branching out into test kits for the aquarium market as well as the pond market.

Aquaria test number 1 – Ammonia only.

The exception is the ammonia test kit which is a little more complex but this is because of the nature of the chemistry behind ammonia testing. There are 5 tests in this box and the resolution on the chart is 0.0, 0.2, 0.5, 0.75, 1.0, 2.0, and 4.0, which is fine for most aquarium and pond situations. If it goes above the top reading then chances are all your fish will be dead anyway!

Aquaria test number 3 – Nitrite, pH and Total Alkalinity

These are three of the more important tests an aquarist can do, so putting them all together on one stick makes good sense. There are 50 sticks in the pack and the resolutions for each of the tests are as follows :- Nitrite 0, 0.5, 1.0, 3.0, 5.0, and 10.0. pH 6.0, 6.5, 7.0, 7.5, 8.0, 8.5, and 9.0. Total Alkalinity 0.0 (0), 1.0 (600ppm), 2.5 (1250ppm), 3.5 (1800ppm), 4.8 (2400ppm), 7.2 (3600ppm).

Aquaria test number 4 – Nitrite, pH, Total Alkalinity and Total Hardness

These sticks have the added advantage of a test for Total Hardness. All the other tests have the same resolution as in number 3 and the Total Hardness test has the following resolution :- 0 (0ppm), 3 (500ppm), 7 (1200ppm), 11 (1800ppm), 15 (2500ppm), 25 (4250ppm). This should be fine for most aquarium water conditions but the water up at our editorial office is even harder than 25! Fortunately that is not the case in most parts of the country and once above this figure you really don't need to know how much harder it is because you need a drill to break it up!

Eco-check – Nitrite, Nitrate, pH, Total Alkalinity and Total Hardness

Most of this new range of test kits employ the simple dip and read system which is so easy to use and yet reasonably accurate for most aquatic needs. Obviously you need to follow the instructions carefully as with all test kits, but with only a minimum of skill a good reading can be obtained. This one is a little different from the other tests. There are five tests on the strip and 25 strips in the package. The resolutions are similar to the Aquaria tests but the ranges are not quite the same. pH goes from 5.5 up to 9.5 which should be fine for virtually any aquatic need. Total Alkalinity is the same as before, Total Hardness goes from 0 - 2000 ppm which is a broader range than in the Aquaria tests, and nitrite also has a wider range reaching 30 at it peak. It is particularly good to see nitrate included on these sticks. This poison tends to be ignored by many aquarists yet given time it will build up to dangerous levels in an aquarium with minimal planting or where water changes are few and far between. So having a test strip which automatically checks this level when all the others are being tested for is very useful indeed.

As with all test kits you need to follow the trends rather than worry about the minutiae of the results you obtain. Also make sure you get in the habit of testing your water at a specific time and on a specific day of the week. Readings change dramatically during the course of a 24 hour period (particularly pH) so you want your "snapshot" of the water conditions to be taken at the same time of the day each time. Then you can see if there is an underlying change other than just the normal swings which take place every day.

Ideally all aquarists should check their water weekly (before the weekly water change is ideal) and you should also check your replacement water to make sure it is not vastly different from that in your aquarium. High levels of nitrate have been reported in some areas of the country so by doing this test every week you will have an early warning of a problem building up in your tap water supply.

MORE INFORMATION

For your local stockist contact Koi Vision on 0208 893 2513 or see the advert elsewhere in the magazine.

Final product review

We give Hagen's Fluval Duo 800 complete tank set-up its final product review.

Pretty as a picture, how the Fluval Duo 800 looks once it is up and running.

In May last year we featured the new Fluval Duo 800 from Hagen. Not only does this set-up come complete with all the equipment but the package also includes a selection of artificial plants. The tank size is 80 X 35 X 40cm and the canopy contains 2 bulbs. Over the last eighteen months we have monitored the progress of several of these tanks and given several of them away as prizes. So how have they fared and what sort of feedback have we had from people who actually own them?

All in all the results have been very good. Our team is now quite adept at putting the cabinets together, despite not professing to be very practically minded. Of course Alexis Towers of Keighley, West Yorkshire put the adults to shame when he fitted the unit

Alexis's tank took just a couple of hours to set up from scratch - not bad considering the water had to be carted up a flight of stairs.

together in half the time.

Once the cabinet is put together, the rest is a simple job of fitting all the equipment in place and sorting out your own substrate, rocks and other decor. The basic kit contains everything you need to start you off on the road to being a successful fishkeeper. It has a basic booklet on fish keeping which will steer you in the right direction.

The canopy is easy to take on and off and unlike many complete set ups the lights supplied with the basic kit are designed to enhance the colours of your fish and help your plants grow. Results with these tubes have been good with lush plant growth reported from almost day one in some tanks. Obviously if you want to grow plants to their full potential then a special plant growing substrate will be needed but since no substrate is supplied with these kits the choice is up to you.

As part of the package Hagen do include a pack of Green X which is a phosphate remover. This will reduce phosphate levels in the water and if used from day one will prevent the algae blooms so many aquarists have problems with in their early days.

Another nice touch is the inclusion of some plastic and silk plants. They are not enough to make the aquarium look like a beautiful aquatic garden but they do create a few quiet spots for new introductions to tuck themselves out of sight behind. Obviously real plants should also be added and you can add to your starter pack with some more artificial plants if you want to.

WHAT THE FLUVAL DUO 800 CONTAINS

- Aquarium
- Canopy
- Fluval 2 Plus
- Aqua Glo
- Sun Glo
- Tronic Heater
- Digital thermometer
- 12g Nutrafin Max
- Nutrafin 3 pack
- Green-X
- Bulk Carbon pad
- Bulk Polyester pad
- New Aquarium guide
- 20cm Jungle vallisneria - plastic
- 17.5cm Red ludwigia - plastic
- 10cm Dwarf anubias - silk
- Echinodorus (3 pack) - plastic
- 12.5cm Dwarf Hairgrass

WHAT WE THOUGHT OVERALL

An excellent kit that takes the guesswork out of buying a new set-up. Ideal for all beginners, but also a great piece of kit for those of us who don't want to compare every heaterstat, filter and lighting unit to find the "best buy". To sum up these kits make fish keeping easy.

MORE INFORMATION

For details of your local stockist, contact Rolf C. Hagen (UK) Ltd. Castleford, W.Yorks. Tel 01977 556627.

What a winner

The winner of "best new product" at GLEE this year was D-D Aquarium Solutions for their new Dusk till Dawn lighting system.

David Saxby, on the left, seen here at the WYMAG meeting at which Alf Nilsen (one of Today's Fishkeeper's regular marine columnists) was giving a lecture.

GLEE is the largest trade show for the UK aquatics industry, so competition for the prize of "best new product" is always hard fought. In the past a few of the judging decisions have left us more than a little open mouthed but this year, we are pleased to say, we can see where they are coming from and have no problem endorsing their choice.

Impact on the market

In just a couple of years D-D Aquarium Solutions have certainly stirred up the market place. The man behind the company, David Saxby, was already a well known figure in the marine hobby before he acquired the rights to distribute Deltec's specialist marine equipment. With his usual drive and enthusiasm David then set out on a crusade to bring this high quality, high tech, equipment to UK marinists. As part of his company's strategy he also started to look around for other products which would fit in to his portfolio. With the advent of T5 lighting D-D Aquarium Solutions were in a position to bring the latest high tech lighting systems to the UK market.

The new system, which was only launched a couple of months ago, is called the Dusk till Dawn lighting system and contains a special chip which allows the lighting to follow the natural light cycles seen in nature. Not only can sunrise and sunset be simulated but also the lunar cycle (so important to many corals). Just to take it one step further and really recreate nature in your living room there is even a way to programme in short dimming periods to simulate clouds passing over the reef.

These new lighting units really are smart cookies!

The unique shape of the reflector helps reflect light around the tube, not through it so increasing the output.

Before these chips were available you would need a separate computer system to control your lighting to this sort of accuracy. Now all you have to do is order it when you purchase your new T5 lighting system from D-D Aquarium Solutions. For those marinists who prefer to use a T5/Metal Halide combination there is also a chip tucked away in these new units as well.

MORE INFORMATION

For more information check out the D-D Aquarium Solutions website at www.d-daquariumsolutions.com

TUNZE launches new measuring instruments

Forty years ago, *TUNZE* launched the first electronic measuring instruments for aquariums. Still at the forefront in this technology *TUNZE* have now upgraded their range.

The new range of equipment from *TUNZE*.

Today, there is a completely new line of *TUNZE* testing equipment with four types of instruments and the corresponding variants used to measure and regulate important water parameters in the aquarium. The new digital *TUNZE* measuring instruments have been developed for use in aquaria in particular. The instruments have been provided with electrodes which operate at a high accuracy and are comparable with the quality of laboratory instruments. The clearly arranged control panel provided with a membrane keypad and adjustment buttons for calibration ensures fast and practical operation. All measuring instruments are supplied with two types of wall mounts and a universal electrode holder.

pH controllers

pH controller set 7074/2 consists of a handy, inexpensive measuring instrument supplied with a long-life laboratory electrode and a high-quality CO_2 valve as well as a 12 Volt power supply unit. The adjustable time interval metre permits the gentle distribution of CO_2, preventing excessive doses.

pH controller set 7075/2 consists of a measuring instrument supplied with a long-life laboratory electrode and a switched socket outlet with an output of 1,800 W (ohmic load) for ozone regulation. Along with the power supply of the switched socket outlet, the controller then operates as a power supply unit.

Temperature and conductivity controllers

Temperature controller set 7028/3 (°Celsius): This controller set is a measuring and control station used for heating or cooling, rendering an output of 1,800 W (ohmic load). The unit can also be used as a precise temperature measuring instrument.

Conductivity metre 7032/2 is used for precise determination of the value in fresh, brackish and salt water. In salt water this conductivity meter displays the salt content through conductivity which is several times more accurate and simpler than an aerometer. The measuring probe comprises robust hard carbon electrodes and a temperature probe for automatic temperature compensation.

MORE INFORMATION

For more information check out www.tunze.com

SUCCESS AT GLEE FOR TETRA

Following its attendance at GLEE earlier this month, Tetra, a leading fish food supplier in the UK, reports on record orders taken at the three day event earlier this week. Chris Hickson, Marketing Manager at Tetra comments: *"Our attendance at GLEE this year has yet again proved to be a great success as we have taken more orders than ever before, have seen plenty of international buyers and made some excellent contacts. We have received a fantastic response to a whole range of products launched at the show from visitors, in particular, the new Tetra pond range, which will be available from January 2004." "The show proved to be invaluable and we were delighted to meet with old and new faces within the industry and look forward to the next show."* More news about the new Tetra pond range will be featured in a future *Today's Fishkeeper* magazine.

Tetra's stand was larger this year to accommodate a wider range of product displays.

Our readers Write

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

Could Fish be Deep Thinkers?

Fish do not deserve their reputation as dim-wits, say scientists. Far from being instinct-driven dunces with a three-second memory, fish are cunning, manipulative and socially aware. They have also been observed using tools in the construction of complex nests, and exhibit impressive long-term memories. Biologist Calum Brown and colleagues from the Universities of Edinburgh and St Andrew's, and the University of Leeds, wrote in the journal 'Fish and Fisheries' that perceptions of fish had undergone a "sea change".

Excuse me, I'm not as stupid as some people think!

Brain food

Fish have been in the news quite a bit lately, the latest being that the regular ingestion of fish - especially salmon - is more than good for you, brain-power wise. Makes you wonder why more British Columbian and Alaskans aren't featured on "Who Wants to be a Millionaire?"

Of all the activities involved in fishkeeping, the one that gives the most pleasure (and perhaps reflects best on the fishkeeper's prowess) is breeding. As more and more emphasis is placed on 'captive breeding' rather than denuding nature's own wild stocks, it might be pertinent to ask 'is raising fry getting easier than in the early days?' I ask, because of a query I received by email from Bert Fisher who is wondering whether micro-eels (vinegar eels?) are still used for initial food for the tiniest of fry and, if so, where can he get some?

Wrong purchase?

However, there are aquatic dealers who are prepared to see both sides of an argument although that doesn't stop them from defending their own, often different, opinions. Take Paul Hughes, from Home Marine who writes: " *I was shocked by the extreme one-sided view portrayed in your Marine Answers pages relating to the title 'wrong purchase.' Although the species mentioned are somewhat difficult to keep, that does not mean that they are impossible.*

Ten years ago people said that Acropora were impossible to keep in captivity; similarly, Pulse corals, Seahorses and Pipefish for long periods of time, Sponges, Moorish Idols etc etc, all of which I could give examples of success. What's even more astonishing is that the 'size' thing was mentioned again. Well, although we tend to steer away from larger species (as most shops do), we do have some clients who have aquariums that are extremely large - 10 ft plus - so who is to judge whether a fish

Paul has a customer who has been successful with this type of pink Nudibranch.

THE BASIL FAWLTY OF FISHKEEPING RETAILERS

A dubious Spirit of Christmas (Scrooge-style – Bah! Humbug!) is here early, according to an email received from Marilyn, or has she uncovered the Basil Fawlty of fishkeeping retailers? She asks "Have you ever thought of doing a survey on the worst shop, instead of the best?

I know there are some shops out there where the owners have really bad attitudes and don't deserve people's custom. I have an instance where a local tropical fish shop owner really cuts his nose off to spite his face. One customer used to buy his plants from him and, after an absence of several months, called in for some and was told to go where he had been getting them from the last few months!

Another instance: my partner and this particular shopkeeper didn't hit it off after he refused point blank to advertise the local fish club in the area, on the grounds that it would introduce his customers to the Internet and other places for their fish and supplies. We used to get our Brine Shrimp eggs from him for our fry (he is the only seller locally for these) and after purchasing a pack he asked my partner to do him a favour. Of course Paul said he would if he could, but the favour demanded was 'to leave the shop and never come back'.

Astounded, Paul left the shop laughing because he couldn't believe what he had heard and came to the car to tell me he had just been barred from the shop. My sister went in for the eggs for us, only to be refused point blank saying he didn't stock them any more. Same with a neighbour. Lastly, a friend who shopped there regularly went in and asked for some. She was told he didn't have any and wasn't keeping stock of them any more as a certain person (meaning Paul) was trying to get hold of them.

I bet he asked her where she had been getting her fish from as he hadn't seen her for a few weeks. Putting him in his place, she said she went all over everywhere looking at fish, as many of us fish addicts do, and that it was nothing to do with him where she chose to shop. Needless to say she doesn't shop there any more either."

MAN ON A MISSION

Here's a plea for help from Hull. Mr Ward Swift is a man on a continuing mission and writes:

"One reads many times about Bitterling and what a nice fish it is, even how to reproduce them. I have been trying to purchase a couple of the European type for four years now, but no-one seems to know where or who from. Can you please help? I have the necessary DEFRA licence."

This is perhaps an instance where, regrettably, legislation for the best possible reason has caused a shortage of desirable species, as far as the hobbyists is concerned. It is probably a case of prudence by law-abiding, licence-holding dealers who are naturally unwilling to stock any "listed" coldwater species unless they have good assurances that they will be readily bought by people who, in turn, will have also obtained the necessary DEFRA paperwork to enable them to keep these fishes. As someone who has become caught in the middle, we can only sympathise with Mr Ward-Swift and hope that someone gallops to his rescue. Possibly a Coldwater society member could provide the answer to his problem.

All Bitterling have become hard to find since the new legislation

should or should not be sold? I agree warnings should be made from the retailer about the potential size of fish species that grow over "25cm" but it is also the duty of the buying public to research and not to buy on impulse.

I have a client who specifically kept Nudibranchs - successfully. Apparently according to J.Sprung, they don't live very long in their natural habitat (3 - 4 months) and must feed on species of sponge. I have personally known the particular pink Chromodoris to live as long as 6 months in my client's aquarium and she has had other 'slugs' for even longer.

Another problem is the one concerning Goniopora sp. There are genuine success stories. The red species proving to be quite as hardy as some of the branching varieties. I have personally owned one of these from a tiny polyp ball that I took home from the shop, and have now grown this to a sizeable piece in 3 years. I again have many clients now successful with this family.

True, there are disasters and many beginners try to take on more than they can chew, but nothing in reason is impossible! It depends on your personal knowledge and expertise - By the way, this has just been my two pennyworth and not necessarily Home marine's opinion."

OK, so we will all agree to differ from time to time, that's what makes life interesting - especially if you make our readers aware of the subject matter in contention.

Finally, it's been GLEE time again with all the diverse variety of aquatic products on display at the National Exhibition Centre. Coming as it did at the end of the wonderful hot summer season, it came as no surprise to see chilling equipment well to the fore. When we're faced with our useful climatic conditions once again, one might muse upon what use such equipment could be put to: the answer was spotted on one enterprising stand (no names, no six-pack grill) where this most efficient piece of equipment was keeping bottles of beer cool, never mind the fish! That's what I like - lateral thinking!

See you next month - uh, and by the way, what's on your "wish list" (aquatically speaking) for Christmas?

Contact
Points of view

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

Coral trout

Cephalopholis miniata

Copy for Today's Diary Dates

Copy for Today's Diary Dates should be sent to Today's Fishkeeper, Winchester Court, 1 Forum Place, Hatfield, Hertfordshire, AL10 0RN. Telephone 01707 285353, fax 01707 285355 or e-mail [illegible] with Diary Dates in the subject line. Copy deadline 8 weeks before publication date.

today's fishworld

November's show, auction and club meeting dates.

Sat 1st	
Sun 2nd	Champion of Champions Exhibition and Specialist fish auction. Contact 01673 885352
Mon 3rd	Kirkcaldy A.S. meeting. Contact 01738 634689 or 01592 205565
	Solway A.S. meeting. Contact 01387 750606
	St Helens A.S. meeting. Contact 01942 671463
	Ayrshire Fishkeepers Association meeting. Contact 01294 605272
	Reigate & Redhill A.S. Contact 01293 781282
	Merseyside Aquarist Society meeting. Contact 0151 260 3664
	Warrington A.S. Contact 01925 483979
	Port Talbot & District Aquarist Society Meeting. Contact 01639 770736.
Tues 4th	Southend Leigh & D.A.S. Contact 01702 305740
	York & District A.S. meeting. Contact 01904 414272
	The Irish Tropical Fish Society meeting. Contact 01 4502836
	Halton A.S. meeting. Contact 0151 2898190
	North Bucks A.S. meeting. Contact 01908 377333
	Oldham A.S. meeting. Contact 0161 281 3725
	Preston A.S. meeting. Contact 01772 321145
	Lang Toun Aquarists and Pondkeepers Group meeting. Contact 01592 595825
	Wyke A.S. meeting. Contact 01482 445543
Wed 5th	Corby & D.A.S. meeting. Contact 01536 790932
	Oasis Fish Club (Sunderland) meeting. Contact 0191 3841433
	Perth A.S. meeting. Contact 01 738 621704 or 01506 510558
	Clacton Fish Keeping Club meeting. Contact 01255 428065
	Portsmouth A.S. meeting. Contact Gill Utting, 9 Inverness Rd., Gosport, Hants.
	Bracknell A.S. meeting. Contact 01189 732874
	Ryedale A.S. meeting. Contact sdinershall@lineone.net
	Tameside A.S. meeting. Contact 0161 339 6593
Thurs 6th	Glenrothes meeting. Contact D. Smart, 4 Lochty Ave., Kinglassie, Fife.
	Fairclty A.S. meeting. Contact 01738 561291 or 07714 188507
	Sandgrounders A.S. meeting. Contact 01704 542177
Fri 7th	Basingstoke A.S. BBQ. Contact 0118 970 1461
	West Cornwall Fishkeepers meeting. Contact 07799401248 or 01209 614518
	North West Cichlid Group meeting. Contact 019422 707593
Sat 8th	
Sun 9th	Bradford A.S. Open show & Auction. Contact 07768 666057
Mon 10th	Kirkcaldy A.S. meeting. Contact 01738 634689 or 01592 205565
	Port Talbot & District Aquarist Society Meeting. Contact 01639 770736.
	Ilford &D A&P Society Auction. Contact 020 85507329
Tues 11th	Darwin A.S. meeting. Contact 01254 703925
	Northwich A.S. meeting. Contact 01606 882966
	Caer Urfa A.S. meeting. Contact 0191 5273684
	Telford & D.A.S. meeting. Contact 01952 626420
	Lang Toun Aquarists and Pondkeepers Group meeting. Contact 01592 595825
	Northern Goldfish and Pondkeepers meeting. Contact 0161 9697567
	Greenock D.A.S. Meeting. Contact 01475 704219
	Bangor Aquarists & Breeders Society. Contact 028 9087 3539
	Clyde Aquarist Society meeting. Contact john@larnant.freeserve.co.uk
	Hull A.S. meeting. Contact 01964 562387
	Strood & D.A.S. meeting. Contact 01634 221291
	Dunstable & D.A.S. meeting. Contact 01582 707280
	Oldham A.S. meeting. Contact 0161 281 3725
Wed 12th	Lin0lithgow Aquarist Society meeting. Contact 01506 510558
	Halifax A.S. meeting. Contact 01274 880471
	Bradford A.S. meeting. Contact 07768 666057
	Hounslow D.A.S. meeting. Contact 020 8890 6933
Thurs 13th	Mid Sussex A.S. meeting. Contact 01924 602407
	Kings Lynn Fish Club meeting. Contact 01553 769522 or 01553 763743
	Fairclty A.S. meeting. Contact 01738 561291 or 07714 188507
	Isle of Wight meeting. Contact 01983 721246
Fri 14th	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 0118 970 1461
Sat 15th	
Sun 16th	ASAS Convention and Open show. Contact 01673 885352
Mon 17th	Kirkcaldy A.S.meeting Contact 01738 634689 or 01592 205565
	Bristol Aquarist Society (Goldfish) meeting. Contact 01792 207467
	Grimsby & Cleethorpes meeting. Contact 01472 349178
	St Helens A.S.meeting. Contact 01942 671463
	Otley A.S. meeting. Contact 01274 531418
	Robin Hood A.S. meeting. Contact mdtalbot@coryderas.freeserve.co.uk
	Port Talbot & District Aquarist Society Meeting. Contact 01639 770736.
Tues 18th	Southend Leigh & Dist A.S.Auction. Contact 01702 305740
	Greater Manchester Cichlid Society meeting. Contact 01706 810284, 01706 353363, 0161 766 4457 or 01422 942 155
	Midlands Marine Aquarists Society. Contact 0121 359 4469
	Lang Toun Aquarists and Pondkeepers Group meeting. Contact 01592 595825
	Wyke A.S. meeting. Contact 01482 445543
	South Park Aquatic Study Society. Contact Eric 0208 6792680
Wed 19th	West Yorkshire Marine Aquarist Group meeting. Contact 01924 420001
	Clacton Fish Keeping Club meeting. Contact 01255 428065
	Tongham Aquarists Society meeting. Contact 01252 25686
	Portsmouth A.S. meeting. Contact Gill Utting, 9 Inverness Rd., Gosport, Hants.
	Perth A.S. meeting. Contact 01 738 621704 or 01506 510558
	Bracknell A.S. meeting. Contact 01189 732874
	Workington A.S. meeting. Contact 01900 67951
	Tameside A.S. meeting. Contact 0161 339 6593
Thurs 20th	**December 2003 *Today's Fishkeeper* on sale**
	Glenrothes meeting. Contact D. Smart, 4 Lochty Ave., Kinglassie, Fife.
	Bristol Tropical Fish Club meeting. Contact 0117 973 2145
	Sandgrounders A.S. Contact 01704 542177
	Fairclty A.S. meeting. Contact 01738 561291 or 07714 188507
Fri 21st	Discus Ireland meeting. Contact (061) 318593
	West Cornwall Fishkeepers meeting. Contact 07799401248 or 01209 614518
Sat 22nd	
Sun 23rd	
Mon 24th	Kirkcaldy A.S meeting. Contact 01738 634689 or 01592 205565
	Thorpe & D.A.S. meeting. Contact 01953 605394
	Solway A.S. meeting. Contact 01387 750606
	Merseyside Aquarist Society meeting. Contact 0151 260 3664
	Ayrshire Fishkeepers Association meeting. Contact 01294 605272
Tues 25th	Northwich A.S. meeting. Contact 01606 882966
	Lang Toun Aquarists and Pondkeepers Group meeting. Contact 01592 595825
	Greenock D.A.S. meeting. Contact 01475 704219
	Croydon Aquarist Society meeting. Contact 020 8654 0984
	Strood & D.A.S. meeting. Contact 01634 221291
	Oldham A.S. meeting. Contact 0161 281 3725
Wed 26th	Hounslow D.A.S. meeting. Contact 020 8890 6933
	Halifax A.S. meeting. Contact 01274 880471
	Workington A.S. Contact 01900 67951
Thurs 27th	Mid Sussex A.S. meeting. Contact 01273 602407
Fri 28th	Eastbourne & District Pondkeeping. Contact 01323 7731369
Sat 29th	
Sun 30th	

Champion of Champions exhibition

All the news from around the club scene.

Mr & Mrs Mogford have won the Champion of Champions on several occasions, but will they take the top prize this year?

The Chesterfield hotel has a number of seating areas outside of the main rooms so visitors will be able to sit and talk fish if they don't want to do some bargain hunting in the auction or watch the judges decide which is the best show fish in the country.

When we announced that the Champion of Champions competition was going to be held at a new venue and to a slightly different format than in recent years, we had no idea of how it was going to grab the fish keeping community's interest. Exhibitors from all over the country have been making contact and booking in their fish for the competition. All the Federations we have heard from have agreed to supply a judge so the result will truly reflect which fish is the best show fish in the country. A number of specialist societies have also agreed to come along and put on a display or supply fish for the auction and we are indebted to our friends in the British livebearer organisation - Vivaparous who will be running the specialist fish auction on the day.

Trade support

Apart from the hobby groups which are involved with this year's exhibition, we have also had tremendous support from many of the UK's top aquatic companies who will be supplying some equipment displays for this exhibition. Hiding behind many of the glossy adverts are companies which really do care about the aquatic hobby as a whole and work tirelessly in the background to support clubs and associations of all types. Obviously we are very grateful for their support for this year's exhibition.

The future

Originally when we launched the Champions of Champions competition a certificate and form for "Best Fish in Show" was given to every show in the country. The form was filled in by the show secretary and sent back to the magazine so the winner would receive an invitation to take part in the Champion of Champions and the certificate was awarded to the "Best Fish in Show" winner. It is our intention to restart that aspect of the competition. Since this year's Champion of Champions is being run on the first weekend in November, any shows after that date will be eligible for the new award. This year Bradford (9th November) and ASAS (16th November) will be the first recipients of the certificates, then every show up until the last weekend in October 2004.

DONT MISS THE C OF C EXHIBITION

Sunday 2nd November, Chesterfield Hotel, in Chesterfield.

The hall opens at 11am and the auction will kick off at 1pm. Apart from a display of some of the UK's top show fish there will be manufacturers' equipment displays (including Aquarian, Aquarium Pharmaceuticals, Hagen, Interpet, King British, Rena, Tetra, and Waterlife Research) and specialist society stands giving help and advice on a wide range of fish.

THE AUCTION

At 1pm we will start the auction. This will comprise of many rare and unusual fish rarely seen for sale in normal aquatic outlets. These are being sold by members of various specialist societies but will certainly include Anabantoid, Catfish, Killifish, Livebearers and Cichlids. Apart from these fish we will also be auctioning off a range of ex-display equipment.

THE PRIZES

The first prize winner will receive the new perpetual trophy to hold for a year, as well as a keepsake trophy. They will also receive £100 in cash and a certificate to show they have won the most prestigious award for an individual fish in the aquatic hobby. Second and third places will also receive keepsake trophies and certificates. All exhibits will receive a certificate for entering and additional prizes as available on the day.

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,
"Nutshide"
Spridlington Rd.,
Faldingworth,
Market Rasen,
Lincs.
LN8 3SQ
E-mail :- white.shark@btinternet.com

Or phone Derek Lambert on 01673 885352 during office hours.

Don't forget the National show league

K & A Tyson with their trophies and bucket of Aquarian flake food. Dr Peter Burgess of the Aquarian advisory service kindly presented the awards for 2001

Brian & Steve Critch and Ian Wright receiving their award from Dr David Ford of Aquarian for the 2002 show season.

Now in its third year, the *Today's Fishkeeper* National Show League is becoming ever more popular with more people entering their results than ever before. This award is not like the Champion of Champions where the single best show fish in the country is the winner. Instead it reflects all the hard work the major exhibitors put in throughout the year and which one of them is the most successful exhibitor that year.

The first name on the trophy was that of K & A Tyson who managed to amass 870 points during the 2001 show season. Worthy winners and well known exhibitors throughout the south and central part of the country. 2002 saw the mighty show team of B. & S. Critch and I. Wright take the award with 1604 points. A huge total built up by attending over 25 shows from Scotland to southern England. They said they wouldn't be doing so many shows this year so the field would be a little more open. I have to say there has been little evidence of them winding down this year, however, so the race is on.

Last year Roy Chapman slipped quietly into 3rd place with a comfortable 442 points gained exclusively from southern RAS shows. That is not the way you win this sort of show league! You need to travel and exhibit at shows right across the various Federation boundaries. This year Roy has done just that. Indeed he completely shocked the competition by turning up at Otley Open show in September. Having tried his fish at a Y.A.A.S. show for the first time Roy said that *"Although it was a little different from what he was used to, the booking in was so easy compared to southern shows and the people so warm and welcoming, he would certainly be showing "up north" again."* Then, of course, there is the small matter of the *Today's Fishkeeper* National Show League.

So, what is the current state of play? Well, to be honest, we really don't know! None of the main contenders are being totally honest with each other, and none of them are saying anything very much to us except that they are not really trying this year (come off it fellas!).

At a rough guess I would say there are potentially 4 winners this year, if you include a couple of dark horses who have not entered the fray yet. Certainly last year's winners are right up there again but Roy is giving them a good run for their money.

WANT TO TAKE PART IN 2003?

To register your points (3 for a 1st, 2 for a 2nd and 1 for a 3rd) send a photocopy of your certificates or other proof of your awards to: Today's Fishkeeper, National Aquatic Show League, Winchester Court, 1, Forum Place, Hatfield, Herts, AL10 0RN. Joint exhibitors are allowed to enter providing that they keep their fish together. For further details contact the editorial office on 01973 885382.

Cutting edge

Erwin Schraml searches through some more recent imports for interesting fish.

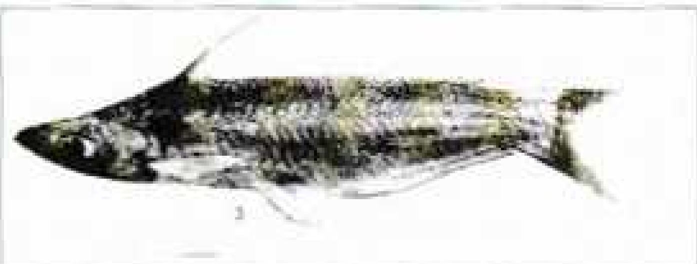
PHOTOS: ERWIN SCHRAML

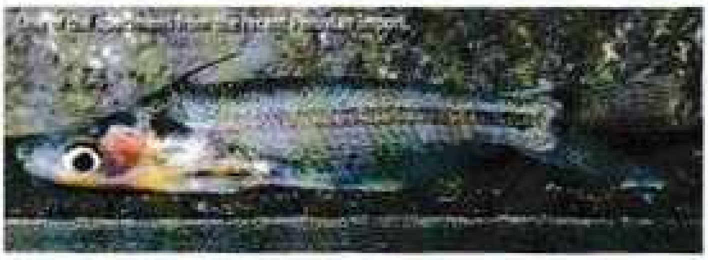
Peruvian catfish

During my last visit to Aquarium Glaser, my attention was directed to a small catfish imported from Peru, which was unknown to me. The label on the tank read "*Ageneiosus piperatus*". This species was described in the genus *Tympanopleura* by Eigenmann (1912) from the Crab Falls of the Essequibo River in British Guiana (now Guyana). None of the six animals that were available to Eigenmann for the description, measured more than 6.4cm (probably in total length), so he assumed that they represented juveniles. In the description, he writes: "*This is evidently a young fish. To what extent the large, protruding airbladder and the large pseudo-tympanum are characters of immaturity I am unable to say. The short snout very probably is due to the age of the specimen.*" However no larger animals have been found to date, and according to FishBase this species remains small. The photographed specimen measured only about 4.5 cm. A picture of the fish (evidently modified from a photograph) given in Eigenmann is also produced here.

As one can see from the pictures, the close similarity of the fish in Eigenmann's picture with those of the recent imports leaves no doubt as to the identification of the fish. According to FishBase the species is also found in Brazil (upper Rio Negro close to the confluence with the Rio Branco). Given this, the species is most likely also found in Peru, and these imports lend evidence to this supposition.

The species was reassigned to *Ageneiosus* by Burgess & Finley (1996), but the basis of this switch is unknown. The generic placement has also not been investigated closely in Eschmeyer's Catalog of Fishes, so at present the scientific name is *Ageneiosus piperatus* (Eigenmann, 1912).





One of the specimens from the recent Peruvian import.

This close-up shows the protruding airbladder of this species.

References

Burgess, W. E. and L. Finley (1996):
An atlas of freshwater and marine catfishes: Update. Trop. Fish Hobby. Oct. 1996: 163-174.

Eigenmann, C. H. (1912): The freshwater fishes of British Guiana, including a study of the ecological grouping of species, and the relation of the fauna of the plateau to that of the lowlands. Mem. Carnegie Mus. v. 5 (no. 1): i-xxii + 1-578, Pls. 1-103.

At first glance one could believe, that both these species have been dyed artificially. However they are not! Such colours also occur in nature.

Neon coloured Rasboras

Sundadanio sp. "Red"

Until the present time this Rasbora has rarely been introduced. Hieronimus believes, the reason for this is the high mortality after capture, because the exporters are used to putting salt into their aquaria to help prevent disease. However, these fish cannot tolerate salt in their water at all. Occasionally these Rasboras are confused with *Sundadanio axelrodi* and are often treated as a red colour morph of this species. In my opinion, however, this is a different species which has not yet been described by science. It originates from Anjungan in Western-Borneo. Soft and acidic water should be used for housing and breeding all Sundadanio species. Hieronimus reported about the breeding of these fish (as *Rasbora axelrodi*). According to his report mainly rainwater was used for the attempt, which was also made acidic by using peat extract. In this way a pH value of 4 was achieved (the fish were even happy at a pH of 3.5). The conductivity was also very low due to frequent water changes. Some time later about 20 baby fishes could be seen. These were all swimming at the surface of the water during the first days. The aquarium was planted with a large clump of Java Moss. The parents were left in the aquarium and the fry grew up with them without any problems. This colony breeding technique has also been used with other pygmy Rasboras and providing enough food is available, and the pH and hardness are correct, a colony can easily be established.

Microrasbora kubotai make a beautiful addition to a small fish community.

Microrasbora kubotai Kottelat & Witte, 1999

This species originates from Northern Thailand in the Ranong province. Here it is found near Khlong Phrae Sai at Ban Krasi. Some of these habitats are not far from the well known holiday resort of Phuket. These wonderful, greenish yellow, luminous fish grow to just 3 cm long and prefer aquaria with a gentle current. Here they settle in the upper third of the water column over planted areas, so they have sufficient space for swimming. All these jewels can be fed with fine dry food, cyclops, Artemia-Nauplii and bosmids. This diet can be fed either alive or frozen. It is important to look at the fish before you buy them since they are sometimes imported very emaciated and may not recover. Housing them at a temperature of around 24°C is sufficient, because their home-waters are shaded.

References

Hieronimus, H. (1996): Manche mögen's sauer: Haltung und Zucht von Rasbora axelrodi. (Aqua. akt., 4: 52-53)

Witte, K.-E. (2000): Die Gattung Microrasbora. Glasperlen oder Edelsteine? (Aq.akt., 1-2: 16-20)

Two more Loricariids


This is one of the *Dolichancistrus* from Aquarium Glaser.


Pseudancistrus pediculatus, paratype (ZMA 102.136)

A loricariid, which turned out to be a species of *Dolichancistrus* ISBRÜCKER, 1980, was recently imported by Aquarium Glaser from Colombia. There are six nominal species described, five of which, viz. *Pseudancistrus anatoensis* DAHL, 1960, *P. carnegiei* EIGENMANN, 1916, *Ancistrus fuessli* STEINDACHNER, 1911, *P. pediculatus* EIGENMANN, 1917 and *Chaetostomus setosus* BOULENGER, 1887, were described from Colombia. This makes it difficult to ascertain the identity of the import.

I took pictures of the types of two of the nominal species some time ago. Although such a comparison may not be useful for distinguishing between very similar species, it may still be possible to exclude distinctly different ones this way.

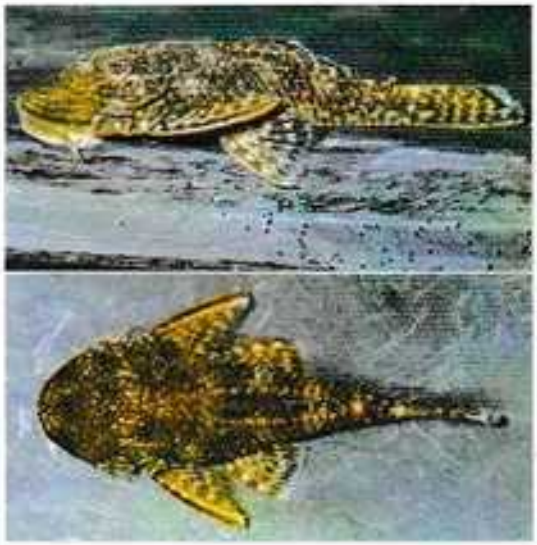
Looking at these preserved specimens, it is apparent that there is a great amount of intraspecific variation that makes it difficult to ascribe a single morphotype to the species. Nevertheless, both specimens show a more rounded snout that suggest that the imports are not conspecific with *D. pediculatus*.

The shape of the snout in *D. fuessli* is very similar to that of the imports, but not the size of the eyes (very small in *D. fuessli*). This eliminates the possibility that the imports are *D. fuessli*. Though I have not seen the types of the remaining three Colombian species, there is a drawing of *Chaetostomus setosus* from Regan (1904). If the drawing is accurate, *D. setosus* also possesses smaller eyes, a shorter, more truncate snout, and longer fimbriae surrounding the snout. However, such a comparison may not be meaningful.

The original descriptions of the two remaining Colombian species are not available to me, making it impossible for comparison. *Dolichancistrus cobrensis*, a Venezuelan species, possesses equally large eyes and a similar snout shape, but an altogether clearly shorter snout. This is evident if the picture of *D. cobrensis* in John Armbruster's website is downloaded, and placed next to the picture of the import.

The new import is tentatively named *Dolichancistrus* sp. "Colombia", for which an L- or LDA- number may already has been assigned.

Cordylancistrus sp. "Colombia"



Aquarium Glaser also received another import, which is probably a species of *Cordylancistrus* ISBRÜCKER, 1980. There are five nominal species presently assigned to this genus, two of which *Hemiancistrus daguae* EIGENMANN, 1912 and *H. platyrhynchus* FOWLER, 1943) have been described from Colombia. The latter nominal species was assigned to the genus *Peckoltia* until recently. This name had been associated with L 121 (= L 135, = L 305) of the aquarium trade. However, L 121 is unambiguously a species of *Peckoltia* recently considered conspecific with *Peckoltia brauni* (EIGENMANN, 1912).

Upon further investigation, it was found that the imports are not so new after all. This species had been introduced at least once a few years ago, and had L 225 assigned to it. At that time, the fish was thought to be a member of *Chaetostoma*, because only younger animals (or females?) had evidently been introduced. The males of *Cordylancistrus* can be easily distinguished from those of *Chaetostoma* by elongated odontodes around the margin of the head and snout.

Reference

Regan, C.T. (1904): A Monograph of the Fishes of the Family Loricariidae. Trans. Zool. Soc. Lond. v. 17 (pt 3, no. 1): 191-350, Pls. 9-21.

A heavily pregnant male seahorse. In a couple more days he will give birth to anything up to one hundred "seahorses".

The Marrying Kind

Brian Begg visits one of the world's largest public aquaria, Atlantis in the Bahamas, to see their new Seahorse display.

It's a good thing that fish don't have lawyers. The most appalling legislative tangles would arise in the matter of paternity suits, for example, especially when species such as the extraordinary but ever-popular seahorses are concerned. The attractive little fish, seldom more than 20cm high or long, depending on how you see them, lead a sophisticated lifestyle which is as unusual as it is endearingly romantic.

A great love story

The love story begins usually at the time of a full moon when, following a mating ritual, the female deposits her eggs in a kind of pouch located on the front of the male in the area of his abdumen. It is he who gives birth, after fertilising the eggs some fourteen days before hatching, when anything up to one hundred fully equipped baby seahorses, better call them miniature seaponies, will emerge. Each of them measures up to one centimetre in length, and as any fish lawyer might care to argue, the male is believed to experience actual birth pains during delivery.

Continuing the romantic thread, the lucky parents will stay together for the rest of their lives, rather in the manner of a pair of swans, the male usually becoming pregnant again immediately after giving birth. Part of the courtship ritual, and not a little of the fascination of this attractive small species, lies in the colour changes and synchronised swimming of the loving pair prior to the exchange of eggs.

Atlantis

Much of this unique story was given to me by Natasha Christie, an attractive 32-year old Bahamian-born marine biologist responsible for a new seahorse exhibit at my favourite aquarium - the fifty million litre, 50,000 fish complex known as Atlantis which is located on Paradise Island adjoining Nassau in the Bahamas.

The aquarium, reputed to be the largest in the world, acquired some seventy seahorses just before Christmas from a supplier in Florida's Key West. It took less than a day to ship the precious little creatures of the species known as *Hippocampus reidi* to Atlantis. Each seahorse was transported in a separate plastic bag, fully oxygenated for the journey to the Bahamas, and the quarantine tanks of the aquarium. Once there, Natasha and her colleague aquarists set about the business of designing the most attractive display for the new arrivals.

Eye catching display

To illustrate the extraordinary ability of a seahorse to change colour in the blink of an eye and thus camouflage itself against most predators, the team of biologists led by aquarist Crispin Smith planted in the display tank a variety of different coloured sponges, some orange, some red, others purple or yellow. Set against the grey and brown

Seahorses have the amazing ability to change colour to blend in with their background. Given time this yellow seahorse will become more reddish to match the coral it is holding on to

stonework of artificial Mayan relics lining the tank, and with the addition of the graceful multi-coloured fish, the whole display adds up to an eye catching and mesmeric item for all visitors to the aquarium.

The wide range of characteristics of the unique seahorse species make it appear that the little chaps must have been designed originally by a committee, way back in the dark ages. They combine the head of a horse with the snout of an Aadvark; the eyes of a Lizard (one looking left, the other right) with the pouch of a Kangaroo, a chameleon like ability to change colour instantly with the spines of a Puffer fish, and an armour plated body with a tail like a monkey! This tail acts as a prehensile device able to wrap around and cling to all manner of sea grasses and reef twigs that lie in the mangrove swamps and tropical coastal waters that form the habitat of seahorses across the world. Often they are to be seen swimming tail round tail in the manner of small children walking hand-in hand to school.

Dead or alive?

Sadly,there has to be a downside to all the intriguing variants that make up the species. For years, in a dried and powdered form, seahorses have been used as a basic ingredient to traditional medicinal treatments in China, as well as in the Central Philippines and Indonesia. They are said to be markedly beneficial in treatments for asthma, thyroid disorders, skin ailments, bone fractures and heart diseases, among others.

Conservationists should be aware that some thirty nine countries around the world are said to be involved in "trading" supplies of dried seahorses for medicinal purposes. Best quality dried seahorses sell in Hong Kong for $550 per pound, accounting for an estimated total of twenty million of the wondrous little creatures each year. If that is the value of dead seahorses,what sort of costings are involved in the purchase of live seahorses for aquaria across the world?

Natasha Christie, a graduate of Florida State University and my Atlantis guide, pointed out that pet suppliers will retail the most common variety at $15 to$20 each. Among the forty or so different varieties of the species, however, there are others that are able to command much more serious price tags.Leafy Seadragons or Weedy Seadragons, found only in certain areas of Australia, range from two to five thousand dollars each.

FEEDING SEAHORSES

Feeding the collection seems to present few problems, the daily rations featuring prepared frozen krill, live Mysis shrimp and brine shrimp. The latter are collected from the shores around Atlantis, a daily chore soon to be replaced by a supply of shrimp specially cultured in the aquarium's quarantine tanks. There is evidence to suggest that just like some human beings, the idea of frozen food is not particularly acceptable to certain seahorses. A toothless species, they swallow their food whole, the snout being designed to suck up microscopic seafood animals. Either that, or simply to consume them by the rapid snapping of upper and lower jaws, an astonishing strategy employed on any small shrimp that dares to swim too near!

This eye catching display at Atlantis is proving to be hugely popular with members of the public.

Sea view

Andrew Caine explains how to feed continuously in the modern marine aquarium.

Prior to adopting this continuous feeding regime Featherstars like this *Comaster nobilis* would have been almost impossible to keep in captivity.

In the article published in the April 2003 edition of *Today's Fishkeeper* we first described the continuous feeding theory and utilised state of the art computers and equipment. Over the last few months we have been making great strides in the success of countless marine aquariums in the North West, and costing very little money as well. All have been incorporating feeding continuously in these aquariums with stock showing great improvements and water quality also improving. Here I will describe how to adopt this method at home in the 'normal' marine aquarium.

First and foremost we will not put any aquarium in danger here as we will not be asking anyone to increase the total amount of food input with the exception of phytoplankton. So we will be describing a continuous feeding regime which if adopted will show positive results within three weeks.

First we will have to separate our foods into three categories, that is live phytoplankton, liquid coral food and solid food. If you do not add live phytoplankton then start to do so, it is a totally harmless source of food and will pass through all your filters, the skimmer and remain in the system until it is consumed. It will also improve your water quality by eating nitrates whilst it is present, totally harmless if you overdose, so a very safe addition to your feeding.

Live Phytoplankton Feeding

Simply take a 500ml bottle and drill an 8mm hole in the base, drill a 6mm hole in the lid and through this pass a small section of airline. Attach the airline with aquarium silicone and fit an airline tap onto the end outside the bottle. Using a clip you will then be able to attach the bottle to the side of the aquarium or sump. Covering the hole in the base with a finger, add your live phytoplankton, say 30 ml. Then fill with aquarium water, turn over the bottle and attach it to the clip. You then open the valve slightly to allow the mixture to drip in, the longer it takes to empty the bottle the better, but it should not last over 24 hours, then repeat daily. Very shortly, a phytoplankton continues feeder. **You must never use preserved foods in this way only live phytoplankton.**

Liquid coral foods and solid foods (including flake or pellets)

Simply take a large glass tumbler and put in all the food you feed in one day. For example, if you feed 2 cubes of frozen and 5 ml of coral food, add this all together with a few drops of liquid vitamins, top up with aquarium water and leave to stand. After 30 minutes you may start to feed, simply stir up the mix and tip in a very small amount, and then do it again and again and again. People pull faces at me when I describe this as if it is an effort. It is a joy to feed your fish as they are all waiting for you, if it is an effort then you are in the wrong hobby. When watching TV, you can feed when the adverts are on ,it's as simple as that. The best results are when you give the daily allocation in 10 feeds. Start first thing in the morning and finish last thing at night. Within 3 weeks you will see a positive difference in the health of your aquarium.

When you start to feed in this way you will soon see just how little food you have been giving your aquarium. Only when you are happy, start to increase the food you give, and by 0.5 of a frozen cube at a time. If you increase your food, you must monitor your water quality every few days. If you start to see a rise in nitrates or a drop in pH then reduce the food you are giving for you have reached your limit, but keep adding many times a day.

By following this method you will improve every aspect of the aquarium. We have proved this beyond doubt in the north west as we now have countless marine aquariums making great strides and improvements. Featherstars, sponges, and even filter feeding shellfish are now not only existing but growing. These animals were previously known to have a very short life span in the home aquarium. These great results are not as a result of heavy investment but the results of a little bit of effort and a few pounds. Everyone can share these results, just feed differently.

WARTY FROGFISH (*ANTENNARIUS MACULATUS*)

They say that beauty is in the eye of the beholder, however, whether you love it or hate it, the one thing everyone has to admit is that it is one weird looking beast indeed. It may indeed be an acquired taste but it is also one of the weirdest fish that anyone can house in a reef aquarium. Hold on, did I say a reef aquarium? This predator in a reef? In fact, it is not really for the fish only aquarium due to its small size. Bigger, aggressive fish will not eat it but an inquisitive bite will finish it off, so peaceful fish are the rule for this one.

Looking at the skin we will see how the common name was given but warts they are not, only skin protrusions to add to the camouflage. When did you ever see a totally flat piece of livestock? This is a marine chameleon due to its amazing ability to change colour, so if you like this animal and see one for sale but don't like the coloration buy it because it may well change colour in its new habitat that you have waiting for it.

The pectoral fins have been modified into 'feet', in fact they are used to stabilise the fish, to keep the fish upright on a rock surface. If you are not hooked yet here is the cream on the pudding. Located just above the mouth there is an esca, or lure, which is extremely large relative to its body size and seeing this in action is behaviour at its best.

This fish needs a good reef with plenty of perching spaces. It can sit on corals which will be unharmed, corals are sat on all the time in the wild. You must remember that this small fish can ingest fish longer than itself but only if they are slender species, so make sure that you house it with fat fish, smaller shrimps may also disappear. Feed it two to three times a week, as no energy is utilised in swimming as with most fish. Feed on vitamin enriched, meaty foods such as lance fish or krill. This beast will bring you years of joy if you have acquired a taste for the species.

PROFILE

Family:
Antennariidae

Name:
Antennarius maculatus

Location:
Indo-West-Pacific

Feeding:
Meaty, vitamin enriched foods

Reef Compatibility:
Great reef fish, if housed with bigger fish

Size:
30 cm

An invertebrate for you

TREE OR FINGER SPONGE (*PTILOCAULIS SP*)

Mainly due to the technological advancements in the hobby, we are keeping many more species alive. One of the biggest moves forward has been the realisation that we starved many animals to death in the past. We now know how to feed such animals correctly, which means we not only keep these animals but also grow them to larger sizes. One such group of animals are the non photosynthetic sponges which require dissolved organics and small particle food present in the water all of the time. Previously this was not possible due to failing water quality.

However, if you want colour then look no further than the Tree or Finger sponge, the body form of this sponge allows swords of brightly coloured flesh to pierce the water column, giving another dimension to an already dynamic scene. In terms of marine animals they are relatively inexpensive, expect to pay between £15 - £20 for such beauty.

They are filter feeders which basically pump water into the body via millions of cells called porocytes, each having a tunnel running right through it allowing the passage of water. Once in, the water passes through many tunnels until they meet a large central exhalent tunnel. Along the tunnel walls millions of cells live, each with a beating flagellum (whip like hair). Around the base of the flagellum is a collar of microvilli, hence the term collar cells. The beating action draws water in from the sea, microscopic detritus particles and dissolved organics are assimilated into the cells by the microvilli, food lovely food.

To feed these you must drip in live phytoplankton 24 hours a day and also add coral food at least 10 times per day in small amounts. This will provide your new inhabitant with the food it requires all of the time. Carefully monitor your water quality when you start using this feeding method. Do not increase the amount of food you give to start with but spread it out over time.

The identification of many sponges can be difficult. This one was photographed on a dive in the Caribbean by Max Gibbs.

PROFILE

Phylum :
Porifera

Name :
Ptilocaulis sp.

Location :
Caribbean

Feeding :
Filter feeding liquid foods and live phytoplankton

Size :
In wild over 100cm

Lighting :
None required

Difficulty :
For the experienced, due to feeding requirements

Ponderings

PHOTOS: DAVE BEVAN

Dave Bevan takes a look at life in the pond as winter draws in.

Toads will find many places to hibernate.

Whilst our pond fish slow down, stop feeding and huddle together on the bottom of the pond during the colder months, some of our pond creatures, particularly the amphibians, go a step further and actually go to sleep.

Newts, toads and frogs find a nice, dry and most importantly frost free place either actually in the ground or under a rotting log. Around the garden, piles of old rubble in a potting shed are favourites and one resourceful toad even crawled inside an old door left in the shed.

They remain motionless in their hibernation den and as the ambient temperature drops so does their own body temperature and they become torpid. As long as they have chosen wisely, their temperature rises as the ambient temperature rises and come spring they will wake and move back to the pond.

Some male frogs have really got the job sussed. They don't waste any energy looking for a place to hibernate and join the annual spring migration to the pond in spring! When autumn arrives they simply sink to the bottom of the pond and bury themselves in the mud. When spring arrives they are ready and waiting to greet the first females to arrive at the pond for spawning.

COMET FACTFILE

SPECIES	Comet
OTHER NAMES	None
OTHER FORMS	None
SIZE	Can grow to 30cms.
WEIGHT	Up to 1 kg.
AVAILABILITY	A very popular form of Goldfish available from most aquatic outlets.
HABITAT	Like the Goldfish it prefers still or slow moving water.
IDENTIFICATION	Characterised by its flowing fins and tail, the body depth is about one third of its length and can be nearly doubled by its long flowing tail. The fins are pointed giving the fish a streamlined appearance and the ability to move quickly through the water. This metallic scaled fish is available in combinations of red and yellow with white.
HABITS	Sociable fish coming to hand if fed regularly at the same time and place. Mixes well with other fish of all sizes and are at home in most ponds where they will coexist with the plant life. They will eat other forms of pond life but their diet should include a proprietary fish food. Feed up to three times a day in summer but they usually stop eating when the temperature drops below 8 degrees C. Frequently breed at around four years laying their eggs on the aquatic vegetation. Few reach maturity as eggs are eaten by other fish.
POND FISH VALUE	One of the best fish for the pond. Does little damage to plant life.

Group of Comet goldfish. The tails on these fish are not as long as they can be.

DIPPING DEEPER

If you want water snails in your pond then the Ramshorn is probably the best as they tend to eat algae and some rotting material rather than chewing their way through your growing plants. Although there are fourteen species in this country, the larger Great ramshorn (*Planorbis corneus*) is the most popular reaching around 25mm in diameter with an attractive brown coiled shell.

They are most at home in alkaline, calcareous still or slow moving water containing plenty of weed with a film of algae. Ramshorn snails are hermaphrodites possessing both male and female sex organs. They lay their eggs in circular gelatinous capsules attached to stones or plants.

Sometimes they are offered for sale through aquatic outlets and are a better bet for your money than the larger common pond snail. If your pond offers the right habitat and water conditions then small snails or eggs may turn up attached to pond plants or be introduced by visiting water birds.

Ramshorn snails are probably one of the best snails to introduce to a pond.

EQUIPMENT CORNER

As the pond season draws to a close and things quieten down, now is the time to take stock. Review the highs and lows of the season and make plans for the future. Time spent on your pond equipment could be time well spent and whilst the pump and filter visually get the once over, what about some of those items which are often taken for granted.

Top of this list I would put the humble fishing net, vital when a fish needs to be examined closely or removed from the pond for treatment. How often does this vital piece of equipment fail just when it is needed most? Now is a good time to give it the once over - if you can find it! They do have a tendency to transport themselves to the local fishing lake or disappear into the long grass after a pond dipping session!

Firstly, is it fit for its purpose? If it was purchased several years ago will it be robust enough to handle your largest fish, or will it break under the weight causing the fish to be damaged against the side of the pond?

Secondly, is the pole long enough to allow you to reach all parts of the pond - ponds have a tendency to get larger over the years! If it has a retractable pole does it need freeing up?

Thirdly, is the mesh still in good condition? With time it can rot, particularly where it is in contact with the metal hoop.

If it passes all three tests then make sure it is stored in a dry place for the winter and pray that the rats don't decide it will make a good nest. If it does not, then take a trip to the local aquarist shop as you may get a good deal since he may be keen to reduce stocks over the winter.

Is your net up to the job or has it passed its sell by date?

HERON CONTROL

With my recent losses in mind and as winter draws ever closer the chances of a visit from that expert fisherman, the heron, increases. Here are some ways in which you can help to protect your fish immediately.

I. Netting covering the pond and supported at least 300mm above the water.
II. Thin wires fixed about 300mm above the ground both round the perimeter and over the Surface.
III. Encircle the pond with electric fencing connected to a 12 volt battery.
IV. Provide underwater cover in the form of drain pipes and/or surface cover with floating polystyrene.
V. Plant a look alike plastic heron close to the pond.
VI. Install a moving scarecrow or predator silhouette.
VII. Install a movement activated scarcer which generates sound or a water jet.

This electric wire heron deterrent is a very effective way to keep herons away from your pond.

With time and planning some more ambitious (and expensive) alternatives are available.

I. Build a permanent cover over the pond like a pergola.
II. Plant the garden with a view to obstructing flight paths.
III. Install an underwater screen.

And if all else fails then "do it yourself", regular visits to the pond in early morning and late evening soon result in the heron getting the message.

POND PROBLEM

Dave's poor Golden orfe was a victim of his local heron on an uncharacteristic late season rampage.

He can strike at any time of the year but my heron is definitely seasonal arriving with the Marsh marigolds and departing before the Water lilies flower. This probably coincides with the period when the young are in the nest. Two years ago he was fairly successful, catching and taking at least four fish before the deterrent devices were installed.

Last year, despite many visits, my combination of strings and wires proved more than a match for him and he left empty handed. This year I became suspicious when the latest addition to the pond, a 30cm Diamond back starlet, appeared to be missing although they are difficult to spot on the bottom and he may have found his way into the filter system.

Then two days later the largest of my Golden orfe was found floating on its side during my early morning visit. Closer examination showed a 10mm diameter hole which passed right through the fish just below the shoulder. The heron had struck again.

PLANT LORE

When over wintering tender plants select small plantlets rather than try to keep the whole plant.

Plants like Water lettuce, Water hyacinth and Water chestnut are popular pond plants often purchased in spring for their ability to add instant surface cover and colour to the pond. In a hot season they will divide regularly increasing their coverage and may even produce a few flowers. Sadly they are frost tender and if left to their own devices are unlikely to appear next year.

If, however, you have space in a well-lit conservatory where the temperature does not drop below 10 degrees C it is possible to over winter these plants, saving the expense of replacement each year.

Step 1 - Take a shallow tray and partially fill it with pond water (alternatively fill a tray with a moist sand/peat mixture).

Step 2 - Remove a plant from the pond.

Step 3 - Select small, blemish free plantlets and separate them from the parent plant using a sharp knife.

Step 4 - Place the plantlets in the tray of water or plant in the sand/peat mixture and keep on well lit shelf until spring ensuring the plantlets remain moist. Check water level for evaporation periodically.

FASCINATING FACT

Plants have developed many ways of ensuring the species survives from year to year and our native Frogbit, a delicate floating plant, produces winter buds (turions) which break away from the plant and sink to the bottom of the pond. Safe from frost they remain in the mud until spring when they float to the surface to produce the new season plants.

FISHY TALES

No matter how carefully you select your fish you can never be sure that they are disease free.The last thing you want to do is introduce disease into your heavily stocked pond,disease which will spread rapidly through your healthy stock. Adopting a simple quarantine procedure makes sound sense and all you need is a small pond or aquarium located in a cool place which, if kept plant free, will allow you to observe the fish at close quarters. If any disease is present then visible symptoms will become apparent over a three to four week period. The use of quarantine systems is second nature to many Koi keepers because an outbreak of disease could prove very expensive so they have to go to great lengths to protect their fish. Some have a covered facility, complete with filtration and heating, which is always ready and waiting should one of their fish become ill or a new fish arrival.

DISCUS PROBLEM SOLVER

Good advice from **Tony Sault.**

Discus can live in hard water if properly adapted but their eggs will not hatch unless the water is soft and acidic.

Do I need an RO unit or a water purifier?

I am setting up a tank for Discus and have decided to invest in a water purifier. Having said that, I can't decide whether I need a Reverse Osmosis unit or a cartridge type purifier. Can you tell me the difference? My tank will be approximately 600 lts with an external canister filter and will contain other fish as well as Discus, my water is pretty hard.

Peter Barker, Cambridgeshire

You are quite correct in your assumption that some kind of purification is essential. A triple cartridge water purifier targets the nasties in the tap water i.e., chemicals and metals, and leaves in the beneficial elements such as calcium. They retain everything that they remove from the water so at some stage in their lives they block and require a cartridge change. Reverse osmosis units strip everything out of the water and you have to add back the beneficial elements which come in powder form. In my opinion Reverse osmosis units are for breeders and water purifiers will do an excellent job for anyone wishing to keep Discus and just extend their lives. So if you do not intend to breed, a water purifier will be OK for you, but if you do intend to accept the challenge of breeding then with hard water you really need a Reverse osmosis unit as the eggs will not hatch.

Brine shrimp problem

I have been lucky enough to breed my first pair of Discus but I am having trouble hatching Brine shrimp eggs and they are also very expensive. In the books I have read this is always the food mentioned for feeding to fry, my question is, is there any alternative to the Brine shrimp?

Rob Elverton, Plymouth.

I know the feeling well. Some batches of Brine shrimp give a terrible hatch rate, although if you buy a good quality egg from a reliable supplier you should have a good hatch rate. The fry food has to be small because the fry are only tiny, so I make my own first food as follows:

1. Add a handful of granular food and a handful of good quality flake to an envelope

2. Then carefully atomise it with a hand plastic headed mallet.

When poured out into a container it is almost powder.

Alternatively there are several brands of powdered food available on the market that you could use if making your own does not appeal to you.

An experimental aquarium – part 2

The experimental aquarium on the 18th December 1996.

Last month **Alf Nilsen** presented the technical equipment installed in the "experimental aquarium" and gave an overview of the goals in the project. Now we move on to the biology.

The aquarium was filled with the local freshwater and a total of 12.7 kg of Aquarium Systems Instant Ocean™ sea salt was added. This gave a conductivity of 51.7 mS (at 25°C), equal to a salinity of about 34‰. This happened on the 25th November 1996, which was set as "day zero" in the project, and all technical equipment described earlier was in operation from this day on.

The first organic material was added to the aquarium at day seven, a week after the water was mixed. The decoration consisted of 50% live rocks brought in from another aquarium and 50% "fresh" live rock from the Red Sea. Various organisms were transferred from another aquarium. All animals, rocks and other decorating material were weighed and measured. The figures are given in tables 2 and 3.

The decoration was completed in the middle of December 96. The rocks were arranged in such a way that there were open spaces created between the boulders, which in some places nearly reached the surface. Most animals were introduced to the aquarium before the end of January 97, but a few smaller coral fragments were added as late as March -97. The growth of algae and the settlement of macro-organisms as well as the development of animal life from the rocks were recorded and photographed at regular intervals. The corals (as well as most of the other organisms) were measured volumetrically by sinking them in a measuring cylinder and they were also weighed on a digital scale before introducing them to the aquarium. The growth of the corals was measured at the end of the project and compared to the values recorded when they were introduced to the system.

During the project no water has been changed, nor has there been added any trace elements except those that followed with the fresh water used for mixing "saltwater". The fishes have been very sparsely fed, and a total of 85 grams of Tetra Bits has been the only food added.


This male *Centropyge resplendens* was possibly the last one in captivity until marine fish collecting from the Ascension island starts up again.

Some interesting animals.

Some of the organisms need more detailed comments. The rarest animal in the set-up is (or more sadly "was") a male Dwarf angel, *Centropyge resplendens*, endemic to the Ascension island in the Atlantic Ocean. The species used to be collected by US Marines, and brought to the States by them. In this way the species occasionally showed up in the trade. A group of 5 specimens were brought to Norway by Julian Sprung in February 1990 and all introduced to my previous reef aquarium. The rest instantly killed two specimens. The remaining group of three specimens (presumably 1 male and 2 females) lived on for two years when one more disappeared. The remaining couple lived for another three years when suddenly the male killed the female (perhaps due to a changing of sex in the female ?). The last survivor was transferred to the experimental aquarium in January -97 where it continued to live for almost exactly one year until it disappeared quietly in January -98. This was probably the very last captive *Centropyge resplendens* in the world (?), a specimen that had lived for nearly 8 years in my reef tanks. *C. resplendens* is an extraordinary good species for the reef aquarium. It forms pairs and mates regularly, usually during dusk. I never observed the fish to harm any invertebrates, except for the tiny ones that lived among the algae on which they fed the whole day long, and I certainly hope the species will again appear in the trade.


The tiny lobster *Palinurellus wieneckii* is an excellent animal for the small reef aquarium.

A great coral for the aquarium

Another species to mention is the stony coral *Acropora microphthalma*, which was introduced to the aquarium as a tiny fragment. The colony originates from a reef close to Suva, Fiji where Dr. Bruce Carlson (the director of the Waikiki Aquarium, Honolulu, Hawaii) collected the species in 1990. In the aquarium, *A. microphthalma* has proven to be a fast-growing species excellently suited for captivity. The species was brought to Norway in 1991 from Waikiki Aquarium, and has since then been established in many private reef tanks around the country. This particular colony is a fragment from a parent colony from a friend's aquarium, a colony that in turn originates from the parent colony from Hawaii kept in my previous reef tank. We have collected skeleton samples from all these colonies including samples from the area where the original parent colony grew (collected by Dr. Carlson in 1995). The various samples enable us to compare the composition of the skeleton from colonies grown in different captive habitats with that of the colony growing in the wild.

An interesting Crustacea is the small lobster *Palinurellus wieneckii*. It is a member of the family Palinuridae and is really an excellent lobster for the small reef aquarium. It is harmless, accepts all sorts of food and is very colourful. Kept in a big tank it mostly hides away and is seldom seen. To view this magnificent and rather rarely imported animal, keep it in a small aquarium. The species is widely distributed in Indo-Pacific, including in the Hawaiian Islands.

An interesting Polychaet is the beautiful *Bispira guinensis*. I obtained a group of 10 specimens from *Scandinavian Marine Import* in Esbjerg, Denmark and they have proven to be quite durable in the aquarium. The worm belongs to the family Sabellidae meaning that it builds a soft tube. The crown is bipartite and bright red and white in colour. In my aquarium the species prefers to dig in sand and raises the upper portion of the tube above the substratum. *B. guinensis* is regularly imported to the hobby, but not normally identified. The species is distributed from West Africa to Indonesia.

Growth of algae

A few days after the livestock was added, the growth of filamentous algae became →

Dictyota sp. and other algae growing on the front glass of the experimental aquarium during the break in period.

DIATOMS AND FLAGELLATES

Later on the mixed growth of flagellates and diatoms slowly covered the glass if these were not cleaned (such a growth is most common in all reef tanks). At least 4 species of Diatoms settled here, including *Licmophora* sp., *Rhizosolenia* sp. and a centric species, possibly *Biddulphia* sp. One species of green algae (so far unidentified) formed tiny patches on the front glass. A few Cyanobacteria were also mixed with the Diatoms and the patches of green algae.

A beautiful group of *Rising guineensis* in the front of the experimental aquarium.

intense. Two species of green algae dominated; *Bryopsis* sp. and *Derbesia* sp. The growth soon covered the sides of the aquarium and increased a lot during the first two weeks of January 97 (day 35-50). *Bryopsis* sp. was by far the dominant one and was established in the aquarium for the whole period. Examination of the growth of algae through a microscope also revealed Diatoms. Three or four species could easily be observed, probably belonging to the genera *Licmophora*, and *Rhizosolenia*. At least one species of single celled dinoflagellate was also common during this period. The mixed growth of filamentous algae that covered the aquarium glass of the tank disappeared totally during 23rd January 97 (day 58), but the growth of *Bryopsis* from some of the liverock increased.

Macro algae

By 30th March 97 (day 94) three species of macro algae had appeared and were growing well. These were *Dictyota* sp., *Lobophora* sp., and a big colony of *Turbinaria* sp. growing from a specific spot on one of the live rocks imported from the Red Sea. At the same time several turf algae appeared from the rocks that were placed in the semi-shade. The dominant genus here was *Ceramium*, which established beautiful populations. Turf algae is a varied assembly of several species of short, turf forming brown, green and red algae found on the shaded sides of boulders in shallow water and in between the corals and on rocks in medium water. The growth is essential to the reef community (see for instant Hillis-Colinvaux, 1988 and Borowitzka & al., 1988), and personally I believe that the turf algae also play an important role in the reef aquarium. Not only do they photosynthesise and fix nitrogen, but they also diversify the system and build an ecological platform for the many micro- and macro animals that have the potential to establish healthy populations in the tank.

During a period of 545 days a total of 1975 grams wet weight of algae was removed from the aquarium to prevent the corals from overgrowing, or because clumps of algae had loosened and were floating in the tank. Most of this amount was *Bryopsis* sp. but during the last 6 months *Turbinaria* sp., *Lobophyllia* sp. and *Dictyota* sp. were also removed. There have been no other attempts done to quantify the amount of algae growing in the aquarium. It is, however, clear that algae has been a dominant part of the system as long as it was running and that the genera mentioned here were those genera that dominated the algae flora of the experimental aquarium. ■

Today's Surgery

IN ASSOCIATION WITH
AQUARIUM PHARMACEUTICALS (UK) LTD

Our resident vet, **Lance Jepson,** tackles a case of a poorly Puffer.

The circular skin lesion is obvious. The Puffer was anaesthatised with MS222.

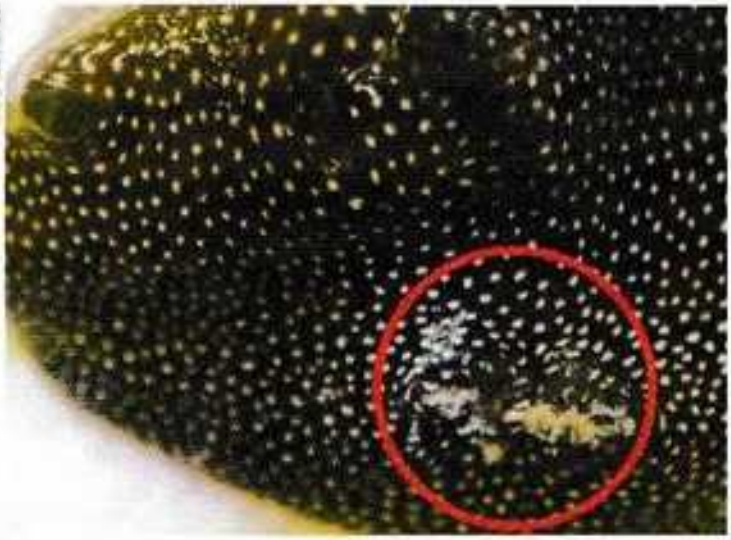
Most of my fish work consists of Koi, so it was a pleasant change to be asked to look at a Guineafowl puffer (Arothron meleagris). As a piece of background this pufferfish is naturally found in both the Indian and Pacific Oceans where it feeds on the tips of branching corals, as well as other invertebrates and algae. The Guineafowl puffer occurs as both a dark, white-spotted morph and as a less common golden yellow.

Raised circular lesion

I was asked to look at this fish as the owner was, not surprisingly, very taken with this particular fish. On examination in the aquarium, this particular puffer was of the commoner morph and was full of the excess of character that all puffers appear to have. Unfortunately it also had a prominent raised circular lesion on its left side that had failed to respond to the usual proprietary medications for both parasitic and bacterial infections. Water quality was optimal and the fish had a hearty appetite.

The lesion appeared raised and circular, and the central part was discoloured to a greyish appearance. It did not look reddened or inflamed like a typical bacterial ulcer. There were no other similar lumps or bumps visible. The owner reported that it had appeared to erupt out of the skin.

Possible causes of this problem included a bacterial infection, an encysted parasite of some description, a tumour or a granuloma (a thickened patch of inflammation) possibly from a cut, bite or some other trauma.



After surgical removal, the deficit was closed with sutures and a "false skin" spray.

Between the owner and myself we decided that the best way forward was to surgically remove the mass, and this was arranged for a few days later.

Surgery scheduled

When that day dawned the puffer arrived in a sealed bucket. Some of this water was decanted into a smaller container that we would use to anaesthetise him in. This container was also supplied with an airstone powered by a small air pump to keep the water well oxygenated. The puffer was netted and transferred into this smaller container, and to this water was added MS222 - a water soluble anaesthetic. Within a couple of minutes the fish was obviously losing his balance and was soon asleep.

We had also opted to X-ray him to look for any obvious problems of the skeleton such as you might get with serious invasive conditions such as fish tuberculosis. So out of the water came the sleeping puffer and on to our X-ray plate where he was kept asleep and oxygenated by our veterinary nurse springing MS222-water into his mouth and over the gills. Next he was transferred on to a wet towel on our operating table and the operation site sterilised with an anti-bacterial iodine scrub. This was my first real chance to have a good feel of the mass. It was firm and did not appear to be attached to the underlying tissues. I made an oval incision around the mass and detached it from the tissues beneath it.

The skin of fish serves many functions, the most important of which are that it acts as a barrier to invasion by harmful micro-organisms, and it is an osmotic barrier between the fish and the surrounding water. For these two reasons we need to make a good seal at the operation site. This was done by inserting a row of sutures that would eventually dissolve, and also by spraying a false "skin" over the wound. He was then given an antibiotic injection and returned to the water that did not contain any MS222. In total this puffer fish had been out of the water around twenty minutes, kept alive by the constant syringing of water across the gills, but within a few minutes he was righting himself and was even happy to feed later on that day. The mass was submitted to a veterinary laboratory for examination.

So what did we find with this puffer?

1. The X-rays appeared normal with no apparent abnormalities of the skeleton.
2. The laboratory reported that the mass contained many inflammatory cells and, crucially, there were "moderately numerous, rarely branching, septate fungal hyphae, confirming a localised mycotic dermatitis." It was a fungal infection of the skin, something that was not, as you may have noticed, on my original list of possibilities!

THE WAY FORWARD

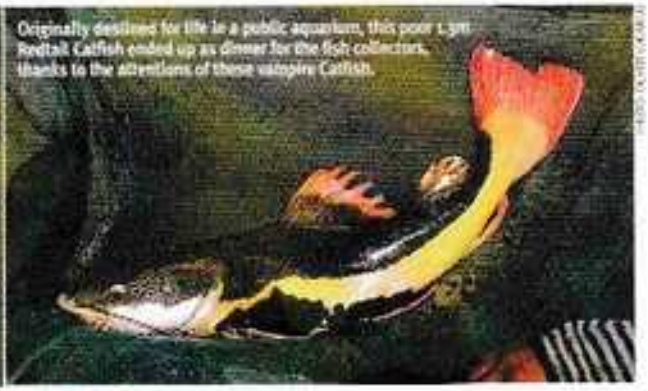
After discussion with the owner we have decided to monitor the situation and see if any more lesions crop up. I believe that the outlook for this pufferfish is reasonable if we work on the assumption that this was a localised infection, but there are some caveats:

1. We don't know which type or species of fungus is involved. There are many marine fungi that are opportunist infecters if their spores get in to cuts or abrasions. Unfortunately there are more sinister ones such as Ichthyophonus that can spread internally (or it's possible that in this case it has spread outward to the skin). The description that the laboratory gave is not typical of Ichthyophonus where there tend to be large accumulations of spores present but that doesn't mean that it cannot be. A definitive diagnosis can only be an laboratory growing of the fungus - a slow process and one not available to us as we had fixed all of the fungi with the lesion to formalin.
2. Treatment can be difficult. If it is a localised infection then surgical excision should be curative. If it has spread further then treatment does become problematical. I do not believe that proprietary anti-fungal preparations will work against a deep seated fungus, although I do have a possible treatment in mind. If I have to use it and it works, I'll let you know.

Vampires and Flesh eaters

Andy Stratton takes a look at some fish with bloodthirsty habits.

This tiny catfish (a member of the *Trichomycteridae* family) caused the death of a large Redtail catfish by feeding on its blood while in a holding net in the river.



Originally destined for life in a public aquarium, this poor 1.5m Redtail Catfish ended up as dinner for the fish collectors, thanks to the attentions of these vampire Catfish.

Although rarely kept by aquarists, catfish of the families *Trichomycteridae* and *Cetopsidae* are known because of their parasitic feeding habits and the reports of them entering the urogenital opening of mammals and humans. Fishes from both families are known as either Candiru or Carnero and many fishkeepers would probably think these fishes more closely related than they are because of their reported feeding habits.

Horror stories

Fishes of the sub families *Vandellinae* and *Stegophilinae* are reported to be the parasites of many stories. Both are members of *Trichomycteridae*. The *Vandellinae* are small, slender fishes with ventrally placed mouths. The upper jaw contains sharp, curved teeth. There is a single claw like tooth in each corner of the mouth which are probably used for clinging to the host. These slender fish are capable of considerable abdominal expansion when gouged with blood. They have been observed attacking fish by inserting their head into the gill chamber and gorging themselves with blood. They have also been collected with blood streaming from their mouths. Preserved specimens have been found to contain what appears to be coagulated blood.

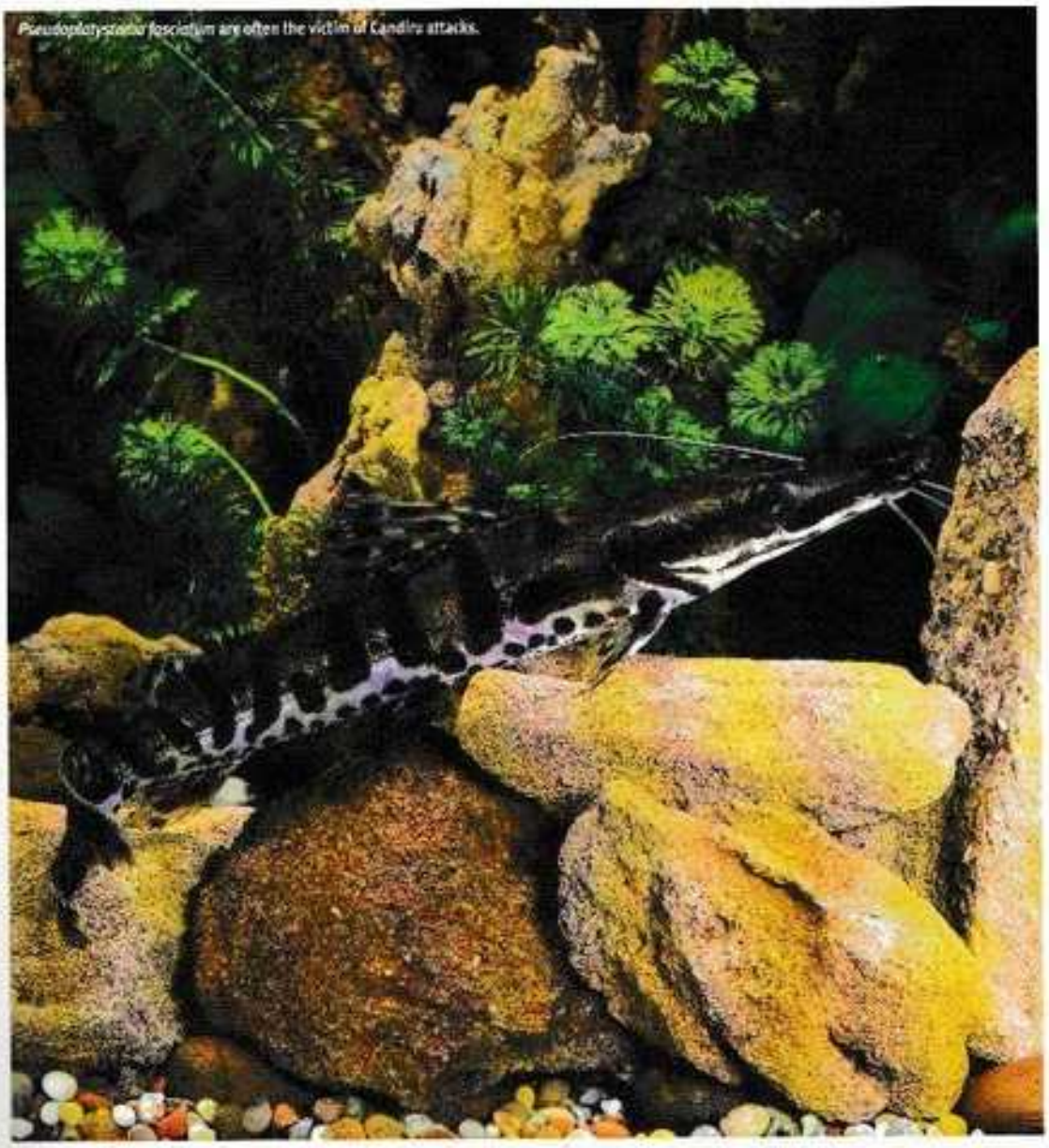
Fishes of the sub-family *Stegophilinae*, the other reported parasitic catfishes, have mostly sucker like mouths that have rows of needle-like teeth. These have been reported to have been taken from the gill chambers of fishes but the feeding of blood has not been confirmed. The stomachs of some examined fishes contained fish scales.

A Candiru collected from the river Huallaga by Amazonian explorer Gustav Wallis (1870) was said to inflict cupping glass like wounds, holding itself so tightly to the body with a bundle of needles that a painful operation was needed to free the fish from the body. Specimens of this fish were preserved in spirit and in 1891 were described and figured by Lutken under the name *Acanthopoma annectens*.

This fish was imported through normal trade outlets. It is a member of the *Cetopsis* genus.

Big cat victims

During his travels in Brazil Reinhardt heard reports of the large catfish 'Surubim'



Pseudoplatystoma fasciatum are often the victim of Candiru attacks.

(*Pseudoplatystoma fasciatum*) carrying its eggs and young in its mouth. Determined to try and prove this, he offered a reward to fishermen that would bring him a 'Sorubim' with young in its mouth. On February 27th 1832 a 'Sorubim' was brought to Reinhardt and on examination of the fish he found two small dead fish in the gill cavities. These two small fish looked so unlike the 'Sorubim' but reminded him of a 'Trichomycterus species he had collected before. The fact that the 'Sorubim' was a male led him to believe that he had been fooled.

During 1834 he returned to Brazil determined to discover the truth. Again he was shown a fish that the fisherman claimed had spat out young as it was pulled on board his boat. On examining the young left in the gill cavities he was surprised that these were the same as had been brought to him before. Reinhardt had named these first little fishes *Stegophilus insidiosus* (the insidious cover lover).

Human victims

One of the first reports of the fishes entering the body of humans comes from Martins 1829 *'with great violence it forces its way in, and desiring to eat flesh, it unfortunately brings danger to human life'* These little fishes were said to be attracted by the odour of urine and natives living alongside the river would not enter the river without protection.

R.H.Schomburgk (known to aquarists for his discovery and description of the jaguar catfish *Liosomadoras oncinus*) when travelling along the Rio Blanco was often warned to be cautious while bathing because of a small fish called Candiru

which was said to enter the urethra or rectum. Schomburgk was unable to find any eye-witnesses so began to doubt these stories. There was one person who did believe these stories, this was Dr Bach a physician with a practice in La plata on the Juruá. He sent data to Dr Boulenger, curator of fishes in the British Museum.

'These fishes called Candyru are dreaded by the natives of the Juruá district and they rarely enter the water without covering their genitalia'. This fish was said to be attracted by urine and once inside the urethra could not be pulled out because of the spines on the opercles as this would cause inflammation and ultimately death. In the case of men, amputation of the penis was called for. The fish in Dr Bach's report were *Vandellia cirrhosa*.

Dr Boulenger seems to have taken this and other reports seriously and in order to satisfy himself that a small fish could penetrate the human urethra he went with Professor C. Stewart to St Thomas's hospital where he introduced, without difficulty a 5 mm diameter number 12 catheter into the urethra of a male subject lying for a post mortem examination.

Which ever way you look at *Nemicetopsis candiru* they really are ugly!

Life style unknown

Like most other species of catfish, members of the *Vandellinae* and *Stegophilinae* probably spend the day time hidden away under logs, rocks etc. and may well burrow into sand banks where the water is too shallow for predators to find them. Whether these fish spend long periods of time living and feeding on their hosts, or leave once they have gorged themselves, is not well known, neither are the periods between gorging. Perhaps like the vampires of legend they leave their hideaways once every night to feed on blood, returning once the sun breaks over the horizon.

Fishes of the family *Cetopsidae* have a torpedo shaped body with a sub terminal mouth which contains chisel shaped teeth, these teeth are used to bite lumps of flesh from the body of large catfish and characins. A 20cm *Nemicetopsis* is said to leave a scar about 1.25cm in diameter. Their attacks on trapped fishes are well reported, these attacks turning their unfortunate victims into a bloaded mess within minutes. They are able to force themselves into their victim's body eating it away from the inside.

The stomach content of many Cetopsids have been found to be flying insects, beetles and ants so these fishes probably predate on anything they can overcome, making them a type of water Hyena, so they are not parasites in the true sense of the word.

***Nemicetopsis candiru* is one of the few parasitic species which has been imported. Unlike those members of the *Cetopsis* genus which are known as continuous swimmers, these fish just lay on the bottom of the aquarium.**

Footnote:

John Dawes in Close Encounters A&P December 2000 reports that it is common for large fish of other species caught by fishermen to contain one or more Cetopsids lodged inside the body cavity still voraciously feeding.

WOMAN IN TROUBLE

Paul le Cointe (1922) tells of three cases of penetration. In one case he operated on an Indian woman who was brought to him because a Candiru had penetrated into the vaginal cavity. All efforts by herself to remove the fish had failed due to the spines of the opercles being embedded in the flesh. He was able to push the fish forward releasing the spines, then turn the fish round so that it could be taken out head first. The unfortunate woman had lost a lot of blood but is said to have completely recovered after a month. (What happened to the fish is unknown).

BOY IN TROUBLE

John Dawes was given a newspaper report when at a Rio Negro conference. The headline being

'Doctor removes Candiru from a patient in Manaus'. A young boy swimming in a river 175 kilometres from Manaus removed his swimming trunks to urinate and he was attacked by a Candiru. Apparently there was no pain at first, just later. The catfish died and began to decompose inside the boy. The urologist Anoar Samad extracted the Candiru in an operation lasting two hours. A few days later the boy left hospital having learned a very painful lesson.

Local fishermen wear protection against the much feared Candiru.

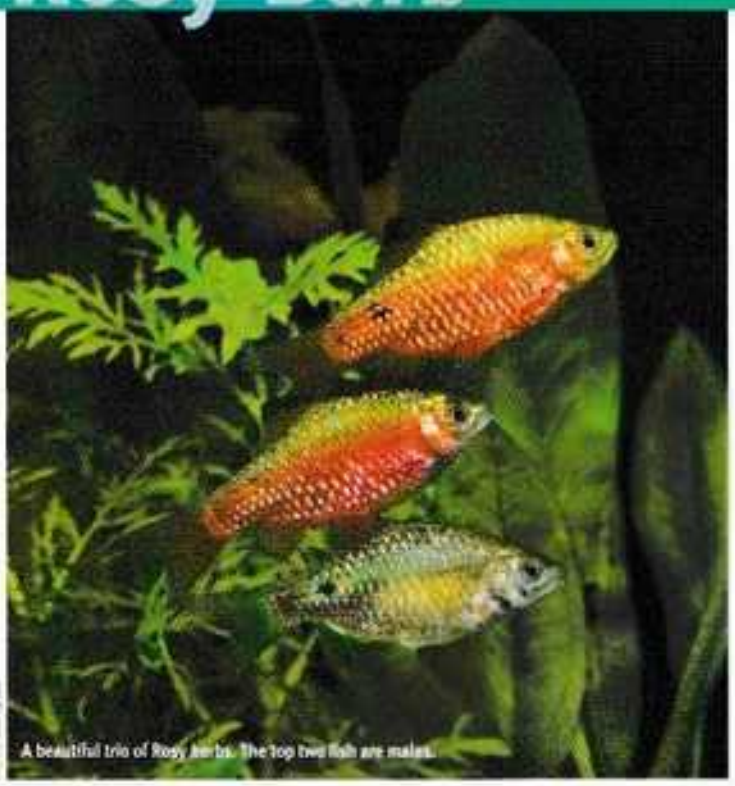
REFERENCES

Penetration of the human urethra by Amazonian catfish called Candiru
E.W.Goldger 1930
American Journal of Surgery Vol 111 No 2

Feeding of reportedly parasitic catfishes
I.N.Baskin et al 1980
Biotropica 12 (3) 182/188

Ecology of fishes in the Amazon and Congo basins
T.R.Roberts 1972
Bull.Mus Comp Zool 143(2) 117-147

Rosy Barb



A beautiful trio of Rosy barbs. The top two fish are males.

Pat Lambert profiles an ever popular golden oldie - the Rosy barb.

PROFILE

Name:
Rosy barb

Scientific name:
Puntius conchonius

Size:
10 cm

Aquarium type:
Community

Distribution:
Asia

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

Temperature:
15 - 25°C

The Rosy barb belongs to a great group of fishes coming from India. The genus *Puntius* are still commonly called Barbs and are distributed widely in South east Asia. *Puntius* species are found in almost every freshwater river and pond throughout India. Many of them are popular aquarium fish which do not grow too large for the home community aquarium. Some species are so similar that identification can be a little difficult. However, there's no mistaking this one.

A real prize winner

In a competition for the loveliest barb the Rosy barb would command a very high place. This fish comes highly recommended for its liveliness and its loveliness and is also highly recommended as a beginners fish. It has a very widespread distribution in Eastern India, Afghanistan, Pakistan, Nepal, and Bangladesh. Within this wide distribution there maybe some highly coloured fish, but the wild imports I have seen have had nowhere near the beautiful coloration of the ones in the trade. They are said to grow in the wild to 15cm, although I have never seen one that big, the largest I have had being some 8cm long from snout to caudal peduncle.

The male's beautiful coloration is a rosy red body below the lateral line, above which the body is shimmering green. His dorsal, anal and ventral fins are edged in black but when displaying these fins become a solid black and the caudal has a rosy hue. The female is very drab by comparison being greenish-yellow with no black in the finnage. A black spot can be seen towards the rear of the body in both sexes. The male, surprisingly enough, does not display his brightest garb when mating, this coloration is reserved for swirling and dancing around other males. A tank of males with fins fully extended will create a colourful sight almost beyond belief.

To see this coloration (at its best in good specimens) the tank should be spacious, length rather than height being the order of the day. This fish is an active, mid water swimmer. A school of about ten will make them happy and, although they are excellent community fish, a tank devoted to these beautiful fish will make a wonderful display.

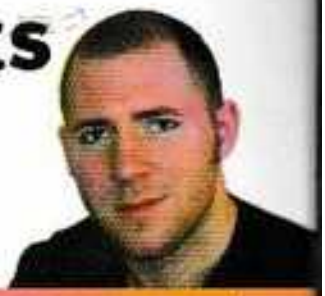
Rosy barbs are easy to keep and easy to breed. A breeding tank should be specially set up as like other barbs they consider their eggs delicious food and will eagerly devour them, so after spawning the parents should be removed. They are egg scatterers which spawn into thickets of plants and produce about 200 eggs which hatch in 24 hours with fry becoming free swimming in three days. First food should be newly hatched brine shrimp followed by specially prepared fry foods which will be accepted after the first week. I have had no trouble in spawning these in slightly acidic water (pH 6.8).

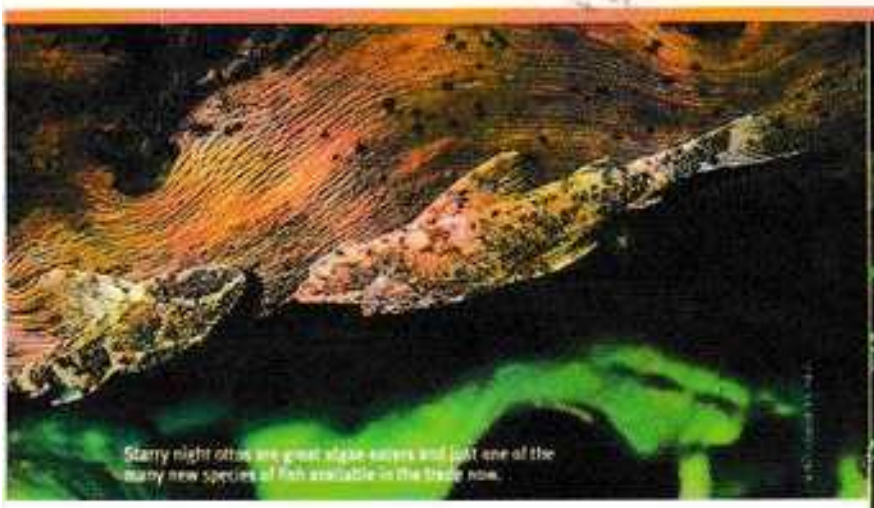
WOULD YOU BELIEVE IT?

In 1967 as part of an opening ceremony for a public aquarium many exotic tropical ornamental species were released into a river in Mexico. It is not known how many of these have become established, however Rosy barbs certainly have managed to establish a breeding population from this introduction. Feral populations are also known to exist in Puerto Rico, Australia, Singapore and Colombia.

Mixing fish and plants

Peter Hiscock has some tips on which fish you should keep for your plants' well being.





Starry night otos are great algae eaters and just one of the many new species of fish available in the trade now.

Cabomba is just one of several fine leafed plants that suffer if food or debris settle on their leaves. Corydoras or other scavengers help clear this debris before it becomes a problem.

Plants and fish live side by side in nature and in many cases depend on each other. Waste from fish provides a source of nutrients and in return plants provide shelter and for some fish, a source of food. In the aquarium the same situation applies but due to the enclosed environment of the aquarium conflicts of interest can occur. Choosing the right fish to live harmoniously with your plants and vice versa can be a little tricky. Depending on your priorities you should be either choosing fish to mix with your plants or choosing plants to mix with your fish. To begin with we will look at plants as the priority and fish that will benefit any mix of plants.

Cleaners, scavengers and predators

In a fully planted aquarium with many species of plants, a certain percentage of your fish should be chosen to provide a service to your plants and the aquarium. These fish can be considered as a 'maintenance crew' and consist of three groups: cleaners, scavengers and predators.

'Cleaners' are the algae-eating fish that will keep the leaves of plants free from algae, which may inhibit the amount of light the plant receives for photosynthesis. These fish will also remove algae from the aquarium glass and items of décor, minimising the need for human intervention. Algae eaters should be chosen with care, many species such as the far too popular 'Plecostomus' can grow to huge proportions and damage plants through sheer clumsiness. Most algae eaters that stay under 10cm such as Otocinclus (*Otocinclus* sp.), Dwarf plecs (Peckoltia sp.), Guppies and Mollies (*Poecilia* sp.) and for coldwater tanks, Hillstream loaches (*Gastromyzon* sp.) are careful enough to carry out their algae eating duties without causing harm or destruction. Some larger algae eaters including the Siamese flying fox (*Crossocheilus* sp.), Red tailed black shark and Ruby shark (*Epalzeorhynchus* sp.), Sucking loach (*Gyrinocheilus* sp.), Bristlenose catfish (*Ancistrus* sp.) and the Whiptail catfish (*Farlowella* sp., *Sturisoma* sp. and *Rineloricaria* sp.) are also suitable for larger aquaria. Shrimps also make excellent algae eaters and a small group of the aptly named Algae shrimp (*Caridina japonica*) can be more effective than most algae eating fish which tend to only eat certain types of algae.

Scavengers

'Scavengers' do exactly that; scavenge amongst the lower levels of the aquarium for bits of left over food, plant debris and organisms living within the substrate. As these fish carry out their scavenging activities they disturb debris build up,

Tetraodon duboisi is a Puffer from the Congo which could be used to predate on snails in a freshwater aquarium.

allowing it to be removed by the filter. They remove waste food which may otherwise rot and create an environment ripe for the introduction of bacterial infections, and turn over gravel, preventing algae growth and compaction. These functions are useful in any aquarium but particularly so when plants are concerned. Fine leafed plants such as grass like foreground plants and taller *Cabomba* or *Myriophyllum* sp., often suffer from debris trapped between the leaf branches which prevents the plant from utilising all the available light. Scavengers will literally shake this debris out of the plants leaves in their search for food. The most well known scavengers are the small Corydoras group of catfish, which are ideal additions to any aquarium. Some other small scavenging catfish will also perform the same function, as will many of the popular loach species. Loaches are in fact excellent scavengers, although some can become quite large and a little too boisterous for delicate plant species. Two excellent species are the Kuhli loach (*Pangio kuhli*) and the Horse-face loach (*Acanthopsis choirorhynchus*). Both of these species spend much of their time hidden and actively burrow into the substrate, so although you may not see them very often you can be assured that they are doing a useful job.

Predators

The final group are the 'predators'. These fish can be employed to remove snails from the aquarium, which in large numbers can damage plants and become unsightly. Even through the best efforts, it is very hard to avoid the introduction of snails with live plants. Some of the scavenging fish will also perform snail eating duties although they may avoid larger snails if other sources of food are readily available. A good addition would be one of the smaller freshwater Puffers that are becoming more common in aquatic retailers or the ever-popular Clown loach (*Botia macracanthus*).

For many fishkeepers, the fish are the first concern and it can sometimes be difficult to grow plants in aquaria with large, boisterous, or herbivorous species. If you are keeping fish of this type it is also likely that investing in dedicated equipment and additives to support extensive plant growth is not a high priority. There are few aquariums however, which are wholly unsuitable for all types of plant. Hardy, tough leafed varieties including *Anubias* sp., *Microsorium* sp., and *Crinum* sp., should be able to withstand the attentions of most fish and are also slow growing, thus requiring less nutrients and light. Of course there are always some fish that will simply destroy plants regardless of variety. Larger cichlids such as Oscars fall into this category and in these cases the fishkeeper may simply have to resort to artificial plants and other décor.

NEW-ZEALAND GRASSPLANT (*LILAEOPSIS NOVAE ZELANDIAE*)

This attractive foreground plant is one of the typical 'grass like' aquatic plant varieties. Like other 'grass' plants it requires strong lighting and a fine substrate to spread via leaves borne from runners. Without very strong lighting it will produce thinner leaves and lose its densely packed appearance. This plant can also be grown out of water in warm bog or marsh conditions and has few water quality requirements. The plant can be separated and replanted around the foreground of the aquarium, allowing the surrounding space to be grown into.

Once established the New Zealand grass plant will form a dense carpet across the aquarium floor.

AFRICAN FERN (*BOLBITIS HEUDELOTII*)

The African fern is an unusual plant that can be grown in a wide variety of situations. The plant prefers an area of flowing water and can be rooted on rocks or wood above or below the water. If planted fully submersed in the substrate the plant should cope well but will be limited in height to around 20cm. Its unusual leaf shape and dark green colour makes an excellent contrast to other aquatic plants. The plant has few requirements and should grow well in most aquariums.

African or Congo fern is something a little different for your aquarium.

ONION PLANT (*CRINUM THAIANUM*)

The onion plant forms a large onion-shaped bulb at its base that closes outwards and from which are borne long thick ribbon like leaves up to 45cm long and 7cm wide. At first glance when seen on sale this plant often looks unattractive and messy but given time in a large aquarium, it will grow to become a centre piece plant. The long leaves and tough nature of the plant make it ideal for large aquariums with little room low and fish such as large barbs, tanichthys fish or medium sized cichlids. Another variety 'Crinum latifolium' with a crinkled leaf appearance is also available.

The Onion plant will become a centre piece for a large aquarium.

Koi world

Bernice Brewster has some handy hints about dealing with parasites.

There can be few Koi keepers who have not at some stage had to treat their fish for a parasite infection, but have you ever wondered why parasites can be such a problem? In reality, we are stocking Koi at a much higher density than carp would normally live in the wild, which has a number of impacts on the spread of any parasites through a population. A number of parasites such as flukes and even the single celled types such as Trichodina, costia and Chilodonella sp, can easily be spread through contact. As the Koi rush towards us to be fed, then it is very easy for these parasites to be transferred from one fish to another.

White spot

Some parasites such as White spot have quite a complex life cycle, involving free living stages as well as those where the parasite is visible as a peppering of tiny white pimples on the skin of the Koi. Once the Koi has become infected with white spot, the parasite has three alternatives, it can burrow under the skin of the Koi and enter a dormant phase, it can mature to continue the life cycle or the Koi can mount an immune response and in which case the white spot hastily leaves the fish before it is killed. Interestingly, we still don't really understand very much about what happens to the dormant white spot such as how long it is in this state or even what might trigger it into activity. However, we do know a great deal about its active phase.

White spot actually lives underneath the skin and this is why any treatment is actually effective against the free living stage. If any chemical was strong enough to penetrate the skin and kill white spot in situ, it would certainly kill the fish as well. The white spot undergoes a maturation phase, until it reaches the size at which it is clearly visible to the naked eye and then releases special enzymes which puncture the skin and allow it to escape into the water. Needless to say a heavy infection of white spot causes the skin of an infected Koi to be peppered with tiny holes, which allow secondary infections to take place as well as compromising its ability to regulate water.

Free swimming stage

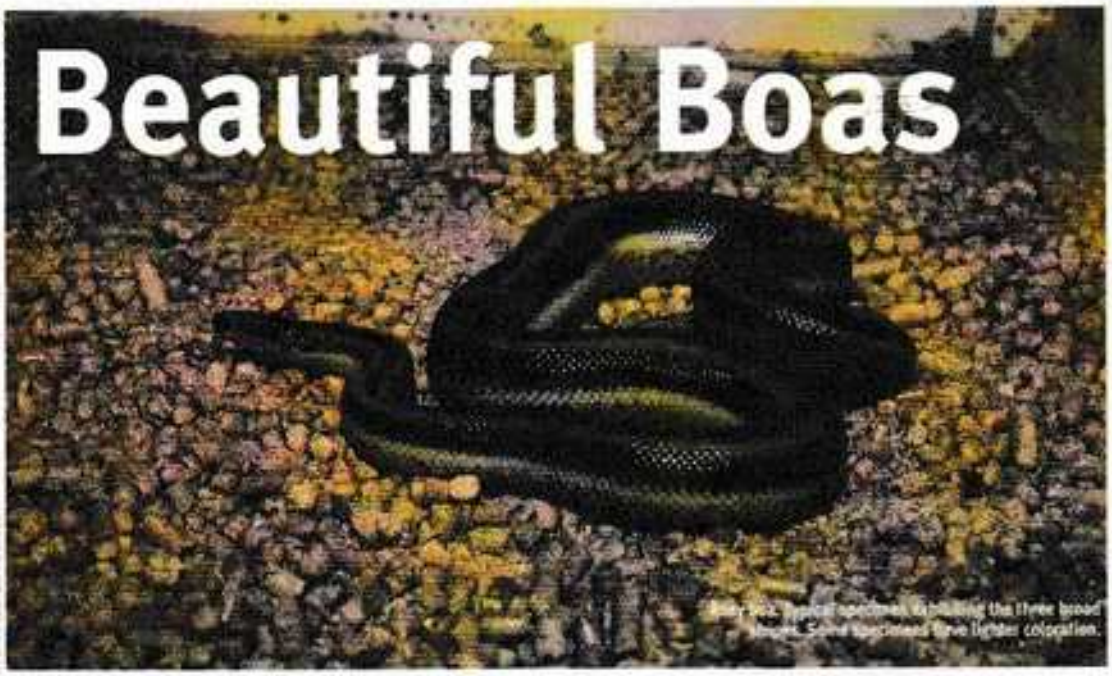
Once in the water, the white spot parasite undergoes a free living stage, during which time it reproduces to give rise to between 50 - 3,000 infective individuals known as 'swarmers'. The swarmers seek a new Koi to infect, using chemical signals to find the fish but there is a time limitation and if no new fish is found within 12 hours, the ability of the swarmer to infect a fish declines. In the wild with a lake of several hectares and millions of litres of water, most swarmers usually die before encountering another host, in our Koi pond, we have definitely swung the balance in favour of the parasite, a small volume of water, recirculated and a large number of Koi to infect, it's no wonder that infections by this parasite cause such a problem.

A new parasite appears

Just in case you thought that all the parasites which might infect fish have been discovered, in the last year a new fluke has appeared albeit in Bream, infecting the lateral line, it's name is Pellucidhaptor and what do we know about it? Very little, in fact we don't really know if it can cause a significant disease problem but perhaps it has been there for years but better optical equipment is just allowing us to find these new weird but wonderfuls.

Finally, it is not usually in the interests of any parasite to kill or cause severe outbreaks of disease in the Koi which they infect. When any Koi become overwhelmed by parasite infections, these are usually secondary and it is important to look for the underlying reason why the fish are becoming weak and therefore susceptible to infection. ■

Beautiful Boas

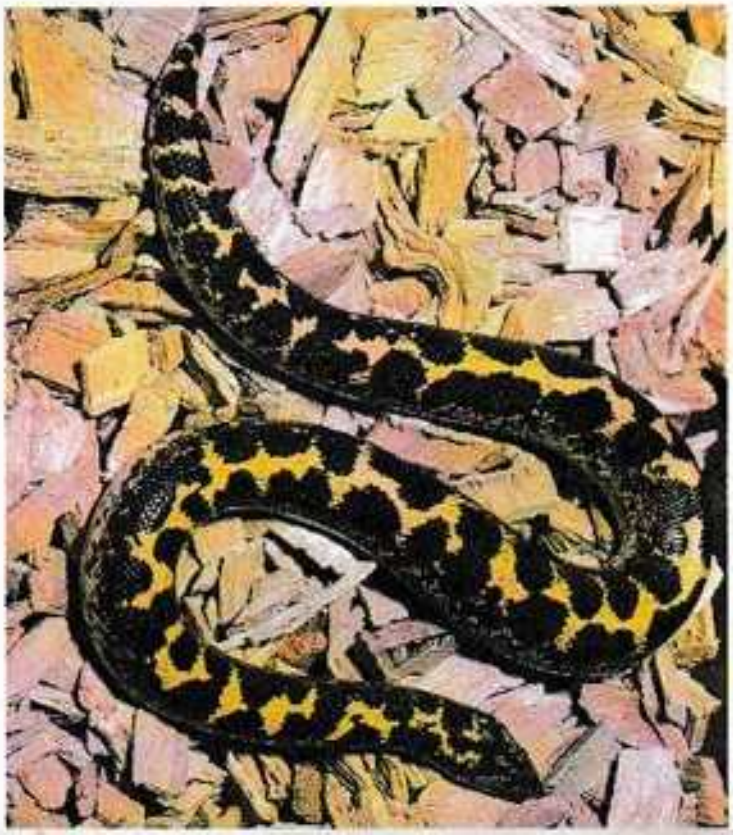


Bob and **Val Davies** introduce some small Boas suitable for beginners.

When first starting our series, Reptiles for Beginners, we said that the larger lizards and snakes were not suitable for those with no experience. This included the Boa constrictor. However, a number of people, new to the hobby, are still attracted to the idea of owning a boa. So, to fill this gap, we are looking at a few species of boas which remain under 120cm long.

ROSY BOAS.

Originally referred to as *Lichanura*, but more recently known as *Charina* species. The Rosy boa is an inhabitant of arid areas in south western United States, Mexico, Southern California, Baja, Arizona and some islands in the Gulf of California. Reaching 90cm the background coloration varies from bluish grey to cream with three broad stripes. These can be either dark brown, reddish brown or salmon. Coloration seems to vary depending upon the region the specimen comes from. The range of the Rosy boa is limited with many isolated populations which probably accounts for the colour variations. Despite its common name very few individuals are 'rosy'. These are desert snakes. The habitat is rocky.



Kenyan sand boa. Some specimens are orange instead of yellow and are usually more expensive.

This head shot of a Russian sand boa shows the small eyes set high up and the scales which resemble grains of sand. These features, common to sand boas demonstrate adaptation to a burrowing lifestyle.

daytime temperatures are high, nights can be cool and humidity is very low. These nocturnal snakes are efficient hunters of rodents. Rosy boas are docile and rarely bite. Specimens in the UK will be captive bred.

KENYAN SAND BOA (*Eryx colubrinus loveridgei*)

Widely distributed from Egypt to Kenya and Tanzania this somewhat secretive boa likes to burrow in its dry habitat. Somewhat smaller than the Rosy, Kenyans reach about 75cm. It is probably the most attractive of all the sand boas. Coloration varies from bright orange, tan or yellowish with black or brown blotches on the back and broken dark bands along the sides. Usually available as captive bred.

RUSSIAN SAND BOA (*Eryx miliaris miliaris*)

Sometimes available as both wild caught and captive bred this boa ranges from parts of Asia to Inner Mongolia, Afghanistan and Turkmenistan. Coloration can vary usually they are brownish with dark brown broken bands. Some specimens have orange/reddish mottling. The belly is pale with sand coloured speckling. Size up to 60cm with females noticeably longer than males. Some books describe this species as 'nippy' meaning they bite. However our adults and youngsters have never made any attempt to bite. Even the female when obviously gravid remains placid. Again some books give size of babies as 15cm and impossible to feed. We have found this to be untrue. Young have measured 20cm with girth thicker than a newly hatched Corn snake and all ready for feeding after the first slough.

SOLOMON ISLANDS BOA (*Candoia carinata*)

Sometimes called the Solomon Islands ground boa this snake's natural habitat is more humid than those described above and ranges from the Solomon Islands, New Guinea to parts of Indonesian islands. Average size is about 90cm with females considerably longer than males, spurs on the latter are prominent. Background coloration varies from cream to pale sandy, tan or red with a zigzag in brown, terracotta or greyish brown. When threatened they sometimes roll into a ball waving the tail to distract the attacker. Solomon Island boas are well known for producing large litters of young - up to 80. However, the greater the number of young produced, the smaller the babies. If 60-80 young are produced then they measure about 8cm each. Ours produce considerably smaller numbers, 11-15, and the size is 18-20cm. The tiny specimens usually do not feed and die.

Boas are not easy species for beginners to breed and newborn babies can be more demanding than hatchling Corn, King and Milk snakes. However all these small boas, given the basic care outlined above, will thrive. Breeding is a little more complex and caring for neonates requires some experience - a topic to be explored at a later date.

CAPTIVE CARE

Rosy, Kenyan and Russian boas
Solomon Island boa

Vivarium size

75 x 75 x 38cm for a pair
90 x 60 x 60cm for a pair

Substrate

Dust free sand about 7-8cm deep to allow burrowing
Dust free sand. One part can have a moisture retentive substrate to provide a little humidity

Décor

Dry habitat. Flat rock for basking, shelter/hides in both cool and warm parts. Water bowl should be very small to avoid increasing humidity.
Branches, plastic plants and hides in both cool and warm parts. Large water container. This species likes more humidity and benefits from a light spray in the morning. Ensure adequate ventilation.

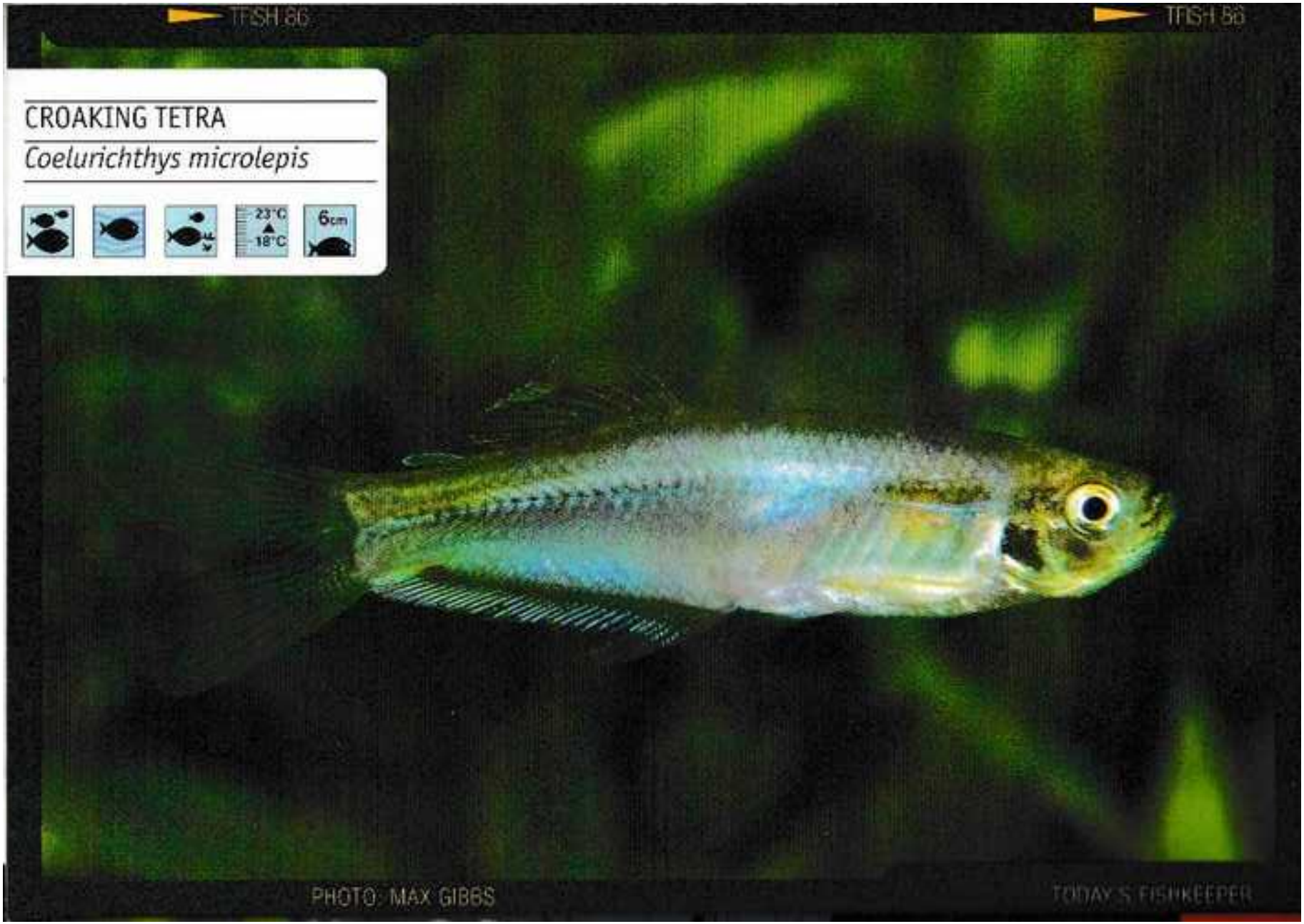
Temperature

33C hot spot, 26.5C cool end. 21C night. Photoperiod should be 14 hours.
33C hot spot, 26.5C cool end. 23C night. Photoperiod 12-14 hours.

Food

Small rodents defrosted
Adults take full grown defrosted mice. They may need to be fed from forceps, others take the mouse if placed on a stone in the vivarium.

Baby Solomon island boas demonstrating colour and pattern variation in a litter.


TFSH 86
TFSH 86
CROAKING TETRA
Coelurichthys microlepis
23°C
18°C
6cm
PHOTO: MAX GIBBS
TODAY'S FISHKEEPER

...End Point

Kathy Jinkings looks at a fish which flies in the face of 'normal' looking fish.

There are several different species of Hatchetfish. These are Marbled hatchetfish.

The Hatchetfishes are all fascinating fish. The first thing you notice about them in the aquarium store is their shape, the deep keel and flat body, and the almost horizontal back which usually appears glued to the water surface. In the wild the first sight of these fish is usually a flurry of splashes as a school sinking beneath the water surface takes to the air to avoid some predator. The deep keel serves as a muscular anchor for the pectoral fins which can be flexed like 'wings', and the fish can propel themselves above the water surface and some distance through the air to escape danger. Obviously in the aquarium this necessitates an aquarium hood!

Apart from their value as conversation pieces, these are attractive little fish, and the marbled hatchet fish is one of the most attractive of the group. The reflective silver body is marked with black streaks, and a yellowish line runs through the eye to the caudal peduncle. As would be expected from a fish that has both beauty and interest, they do have some special needs. Ideally what they like is insects landing on the water surface. Black mosquito larvae or indeed any pond resident larvae are welcomed. However, they are extremely reluctant to eat anything that is not at the water surface, and have very small mouths. Although they will sometimes eat tiny pieces of flake this is not sufficient, and they do need live foods. If you have a tight fitting tank hood then fruit flies make a tasty diet, and speedily all the ones are also good. They prefer a strong current, and can remain motionless in a powerful water flow as other fishes are swept past them! As with most Amazonian fishes, soft water is preferred, but they will thrive quite happily in a pH up to 8, and a dH of up to 20. Provided you can give them an adequate diet, they are fairly easy going in most other respects.

These are schooling fish, and a group of five or six is best. In a South American tank where the bottom can be occupied by Corydoras and the midwater by tetras, the Marbled hatchetfish and its cousins can be the ideal fish to give the water surface some interest. Although they are small, they do require a reasonable amount of swimming space, being fast, darting fishes. They are also quite shy, so some floating plants will give them a sense of security. This can pose some problems when attempting to keep floating plants along with the required strong current, as the plant can all end up squashed against one tank wall. You can put a floating plastic ring in the water and put the plants inside that to protect them, or use trailing plants that grow on the bottom but extend long fronds. Elodea is good for this, but make sure it doesn't take over all the water space.

Although spawning of hatchet fish is not easy, it can be achieved in the aquarium, especially if the adults are conditioned with small flying insects. They will also require soft, acid water and very subdued lighting. Eggs will be deposited among the roots of floating plants, or drift to the bottom of the tank. After twenty four to thirty-six hours the fry are free-swimming, at which point they make an ideal food for the adults. If you hope to rear any it is best to remove the hungry parents. Tiny mouths need tiny foods and very fine foods such as rotifers and paramecia are needed.

These are not the easiest of fish to keep, but are definitely one of the most interesting and unique small fish. If you have the time to fulfil their feeding requirements, they will give hours of pleasure and fascination.

PROFILE

Name:
Marbled hatchetfish

Scientific name:
Carnegiella strigata

Size:
3.5cm

Aquarium type:
Community of small peaceful fish

Distribution:
South America, throughout the Amazon Basin, Colombia, Guyana

Diet:
Live foods

Temperature:
24-28°C