Today's Fishkeeper

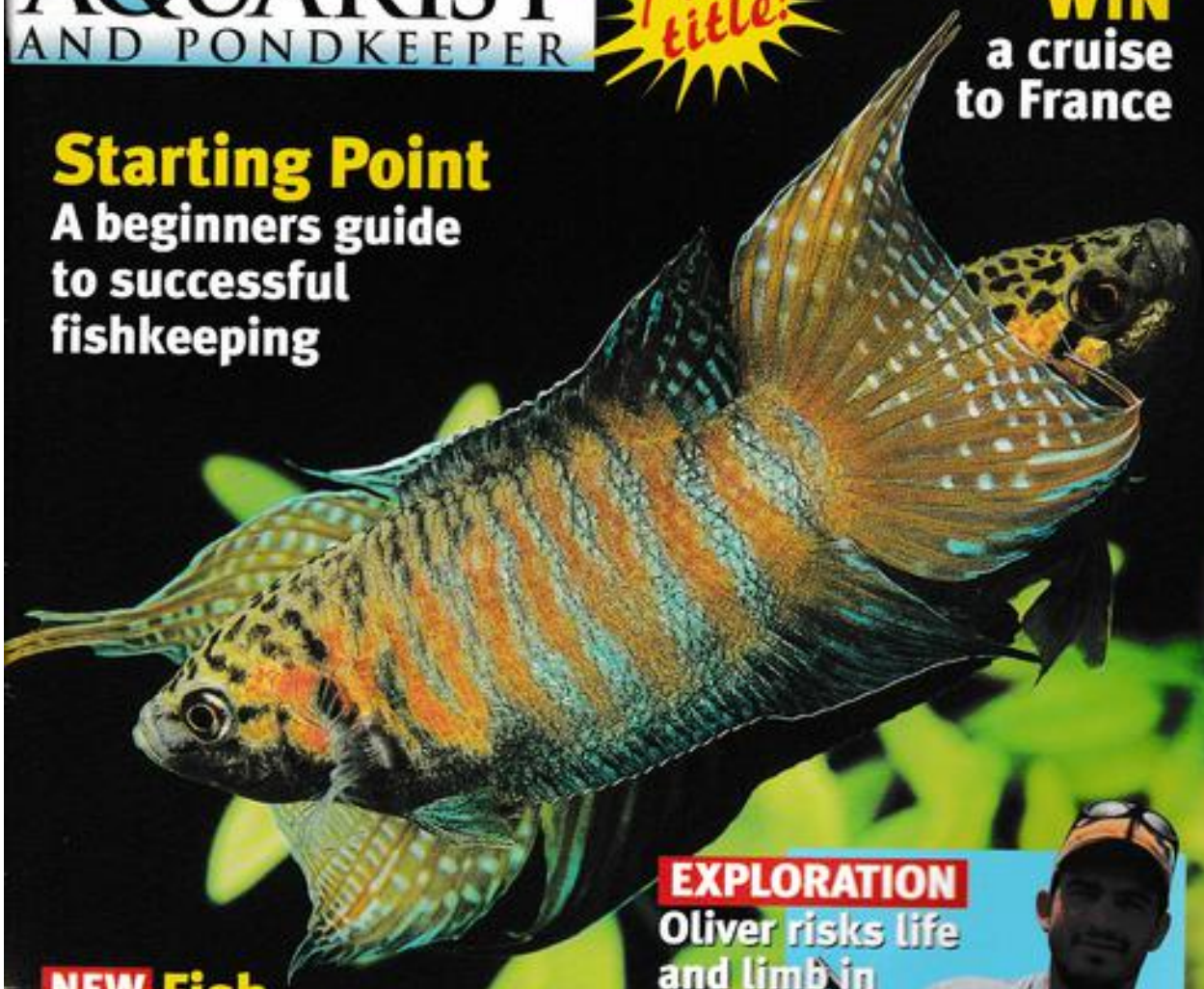
OCTOBER 2001 £2.75

PREVIOUSLY AQUARIST AND PONDKEEPER

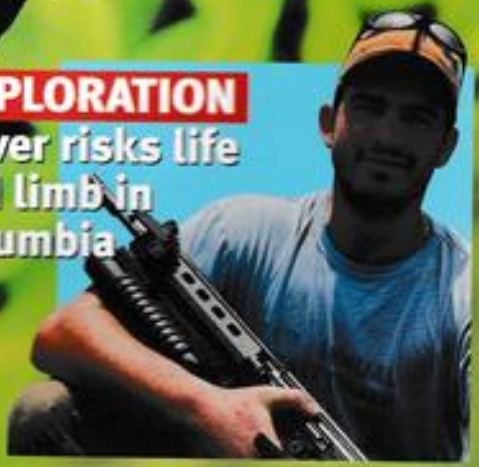
New title!

WIN a cruise to France

Starting Point
A beginners guide to successful fishkeeping



EXPLORATION
Oliver risks life and limb in Columbia



NEW Fish
Wilhelm's delight

NEWS Koi Plague
What you must know

FROM BEGINNER TO ADVANCED

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OCTOBER 2001

Today's Fishkeeper

inside this month

BEGINNERS

TROPICAL/MARINE/COLDWATER

MARINE

PONDS & COLDWATER

TROPICAL

PLANTS

tropical | marine | coldwater & ponds | plants | regulars

Continued over ☞

Editorial

Welcome to the first edition of *Today's Fishkeeper*. As promised not a great deal has changed from when we were *Aquarist and Pondkeeper* - only the titles of some of the articles and a couple of new regular features. As expected a few people were not happy at the change but just about everybody agreed it was needed to bring the magazine into the 21st century.

As we go to press OATA are holding a meeting to discuss the serious threat Koi Herpes Virus presents to the hobby of koi keeping. What is so worrying about this disease is the way some people have tried to cover it up or blow it up out of all proportion. Some people have even tried to attribute blame to particular individuals or companies. This is not helpful in the present situation. It may be nothing more than a few isolated cases that can be linked to a single source of infection. It could, of course, be much more widespread and serious than that. What is needed now is for everyone to work together to sort the problem out. See page 68 for further details.

Happy Fishkeeping
Derek

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NEWS & VIEWS

REGULARS

CUT OUT & KEEP

Today's Fishkeeper's monthly gallery builds into a collection of fabulous full-page colour photos, each with useful information

KEY TO SYMBOLS:

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

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

tropical marine coldwater & ponds plants regulars

Starting Point...

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

I have been keeping fish for more years than I care to remember. I've kept and bred hundreds of species, founded a specialist livebearer group, travelled down jungle tracks in search of fish and given lectures at home and abroad but I still think there's nothing like those first exciting, heady days of keeping fish.

For the past two years my column has been tucked away in the middle of *Aquarist and Pondkeeper* under the heading of 'Young Aquarist'. Due to the magazine's change in title Young Aquarist disappears but, suddenly, here I am at the beginning of the magazine under the headline 'Starting Point'. You will also find a photograph with a little write up because the powers that be insisted on it.

In essence, my column will remain unchanged. It is, as it has always been, me talking to you about fish and fishkeeping but I'd really like to make this a two-way conversation. If there's anything that the experts write about fish and fishkeeping further on in the magazine that you don't understand, you can get in touch with me and I'll try to explain it in 'Starting Point'

A fish and plant for you

The Leopard danio is a bright, lively shoaling fish and a perfect community dweller. It's not a fussy feeder, eats everything and shows no aggression towards its tankmates. Zebra danios are the wild colour form of Leopards and they are equally suitable. At about 2 inches full size they are a must for a community of small fishes. They were one of the first species of fishes that I bought.

If you want a plant that is easy to grow, gets tall and covers the background fairly quickly then you can't do better than *Vallisneria spiralis* there's also a twisted one *Vallisneria torta* which is equally hardy. Mine gets rampant and I do have to cut it back and watch where those

Vallis really does grow tall, so keep it to the back and sides of your aquarium

Vallis makes an excellent plant for the back and sides of an aquarium

Give Leopard and Zebra danios plenty of swimming room and always buy a group of at least six. Buy young ones as they only live about two years

Leopard danios are ideal community fish

Can you really cope with looking after an Oscar?

runners are going. Even in the early days when my plant growing successes were pretty poor I was successful with Vallis.

Resist the temptation of an Oscar's large, intelligent eyes. Think hard before you buy this fish

Is this fish for you?

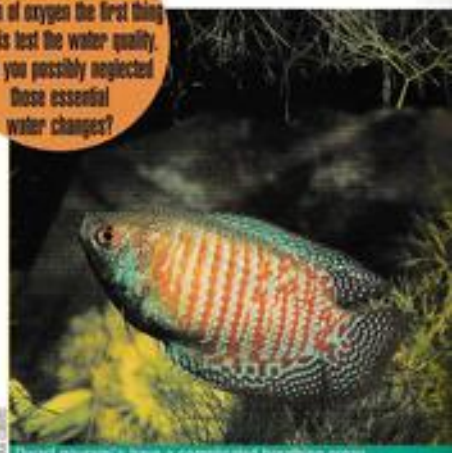
I've never owned an Oscar but I've several friends who have. These fish are real personalities and will become a pet if kept in a 3' x 15" x 15" tank on their own. A friend of mine frequently plays ball with his Oscar! They need a deeper, wider tank because they are chunky fish that grow to 12" in body length.

If you are tempted to buy, be warned because they come along with a lot of problems. They will move things around, demolish equipment, including your aquarium heater, unless it is safely protected. Rocks should be heavy and firmly fixed unless you want a smashed tank.

The Oscar is definitely not a community fish and tank mates have to be chosen with care, always remembering that ONE Oscar needs a 3' tank so you would have to have a very large tank to house your Oscar plus companions. It will attack more timid species of a similar size, eat those which are smaller and become a sufferer itself if housed with more aggressive species. It is virtually impossible to tell the sexes apart so if you think your Oscar is lonely and needs a mate - think again. An Oscar who has been kept alone and then has a prospective companion introduced could lead to a fatal battle. All things considered a specimen tank is probably best.

When you buy an Oscar you can buy a lot of trouble but you can also buy a truly interesting and rewarding pet.

If your fish are gasping at the surface in search of oxygen the first thing to do is test the water quality. Have you possibly neglected those essential water changes?



Dwarf gouramis have a complicated breathing organ called a Labyrinth. This structure enables the fish to absorb oxygen from the air

How fish breathe

Fish, like all living creatures must breathe to live. They breathe in through the mouth extracting dissolved oxygen from the water. The oxygen is absorbed as it passes over the gills and waste gases are expelled.The gill openings are protected by gill covers which open and close faster as the fish breathes more rapidly. Breathing is much harder for fish than it is for us for there is much less oxygen in water than in air, breathing is therefore much faster and uses up much more energy. If the water quality is poor and low in oxygen the fish has to breathe even faster.

Corydoras catfish often leave their home in the bottom of the tank, swim straight up to the surface for a breath of fresh air. This is normal for them.

Fishes, like the Dwarf gourami pictured here, breathe in the normal manner but also have a complicated breathing organ called the Labyrinth. This structure enables the fish to absorb oxygen from the air. In their natural habitat this allows them to survive in waters low in oxygen content. Some mudskippers breathe through their skin when they run across land. Others have stouter gills that hold much more air and water and enable the fish to stay out of water for longer periods.

The Paradise fish is another fish with a labyrinth but this fish was the first tropical fish to be imported into Europe. It came into France in 1869 from China where it lives in small pools and rice growing paddy fields. It was one of the first labyrinth fish I ever kept, and is beautiful, hardy and adaptable.Water temperatures can fall as low as 65°F (18°C) without causing any harm, but they are happier at 70-74°F(21-23°C). ➡

When bagging fish ensure that there is more air than water in the bag. This means the fish has more oxygen to breathe

Paradise fish were one of the first tropical fish to be imported to Europe

tropical | marine | coldwater & ponds | plants | regulars

Lost for Words?

Operculum (pl opercula)	This is the name for the flaps that cover the gill openings. They open and close rapidly in times of stress.
Mouthbrooder	After spawning these fish collect the fertilised eggs and incubate them in their mouth. Even when the fry are free swimming, in many species the young return to the parent's mouth when in danger.
Gravid female	In livebearing fish the female is fertilised internally and carries young until they are born as fully formed replicas of their parents.
Conditioning	The sexes are separated and fed with high quality foods before breeding is attempted.
Substrate	The material used to cover the base of the tank such as gravel or sand. which should all be carefully cleaned before use.
Quarantine tank	A tank in which to isolate sick fish or to keep new fish to ensure that they do not carry any disease which would be harmful to the fish in their eventual home tank. An essential piece of equipment for any fishkeeper.
Inside Box Filter	A small plastic box that sits inside the tank with a filter medium of carbon and filter wool. An airline runs down to the box drawing water down through the filter medium and bubbles the air back into the tank. Have been extensively used in the past by breeders and in quarantine tanks.
Sponge filter	These are more widely used these days than box filters but serve the same purpose. The filter medium is a plastic sponge which sits over the bottom end of the siphon tube.

Tanks

We're very lucky these days as we can buy a tank that comes along with all the necessary accessories, gravel, heater/stat, lighting, filter, packed into it. Several manufacturers now provide the complete kit at reasonable prices and if it's only the tank you want or can afford this makes a fuss free option, but don't do what I did and position your tank on a shelf that cannot take the weight. A tank full of water can weigh a lot and a burst tank can cause a lot of damage.

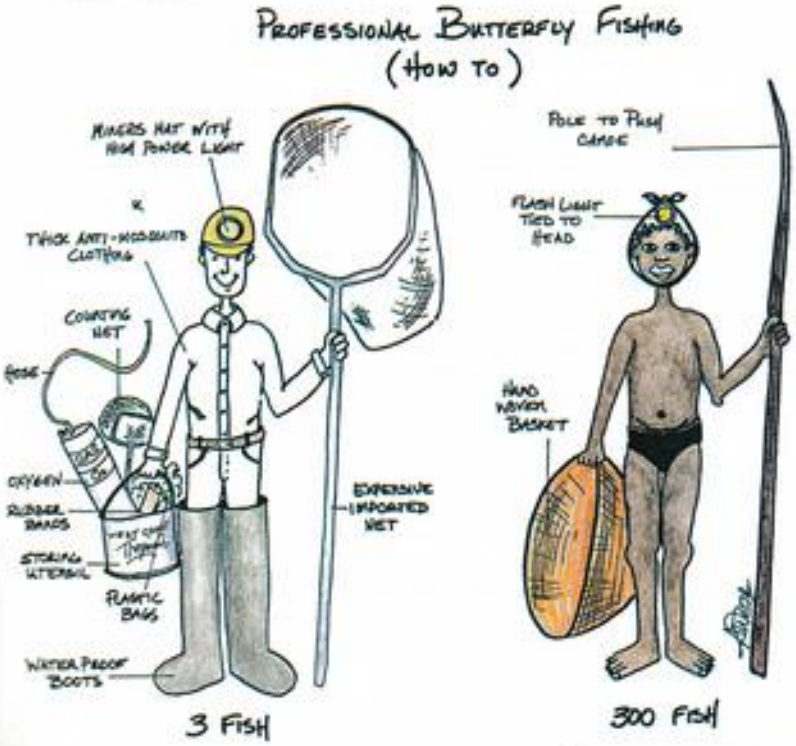
Some manufacturers do tank/cabinet set-ups all in one. All you have to do is fill them up, plug them in and you're ready to go. There are many such set-ups on the market and the cabinets give you useful storage space. They vary in style from the basically simple to the more ornate. ■

Pat's tip

1. All gravel should be thoroughly cleaned. Place the gravel in a bucket, cover with water and turn the gravel over and over, rinse and repeat in fresh water over and over again until the water remains clear after the last wash.

2. Don't place your tank in a window or you will soon have water that resembles pea soup. You need to be in control of the lighting, so place it in an area that does not receive direct sunlight.

3. During the running in period the heater/stat should be tested to make sure that the temperature remains within safe limits. I've known these to malfunction so test it out, you don't want cooked or frozen fish do you?



A few months ago the fish safari saw Ann and Grant Weir in Africa catching butterfly fish - this was serious stuff. The fun part slipped behind our editor's desk and I happened to find it when I was looking for something else. (Ed's note. What on earth was Pat doing scrabbling around on the floor behind my desk?). Here is Ann's drawing for all of us who go fishing. So you're not successful? Perhaps you don't have the right gear!

Congo Tetras are a medium sized species that put on a lovely show first thing in the morning

PHOTO: M.P & C. PIENAAR

A tank full of tetras

Gordon Davies suggests a host of tetras for your community aquarium

Loreto Tetras are ideal fish for a community aquarium

PHOTO: LAWRENCE KOLKA

Tetras are available at your local aquatic outlet in a vast variety of colours, but where do you start? Well probably the most famous of the gang has to be the faithful old Neon tetra and its brighter coloured cousin the Cardinal. Either of these species are what attracts the attention of most people and inspires them to get a little aquarium (little do they know what they are letting themselves in for!)

The small tetras are ideal community fishes, their temperament and colours being a welcome addition to an aquarium. Any good aquatic book will give you a large list of tetras to pick from. Here are some I have kept and been very pleased with, a few of which have even bred without any intervention.

Smaller tetras

Neon tetras, Cardinal tetras, Lemon tetras, Pristella tetras, Glowlight tetras, Pencil fish, Bloodfin's and Loreto tetras are all ideal community aquarium fish. These are ideally kept with small Danios, small Barbs, Corydoras catfish and Khuli loach. Housed in a 3' or 4' (100cm or 120cm) aquarium with plenty of plants, a good filter providing a gentle current of water, they make a colourful and peaceful display.

In neutral to soft water, when settled they will soon display their superb colouring. The males will show off to the females and spar with one another providing you with some amazing displays of males trying to do what males do best 'show off'. No damage is usually done, however, during these little out bursts, though I have witnessed male Serpae tetras becoming a little over excited with

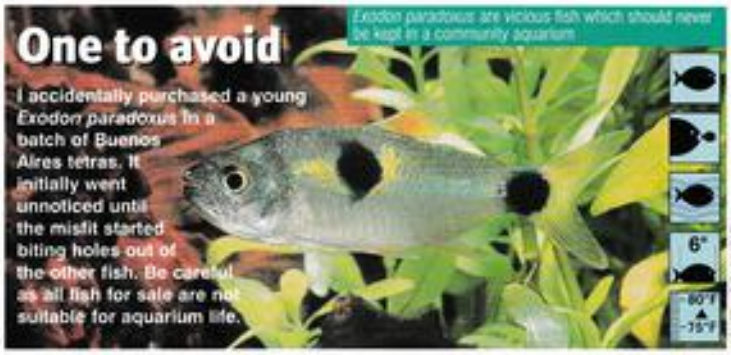
this activity which has resulted in some fin nipping. Red and Black Phantom tetras are often seen and these are good fin displayers, as are Rosy tetras.

Medium sized species

One of my favourites are Congo tetras, the males' flowing fins and pearly scales are a magnificent sight even before they start their performance. The best time to observe them is early morning with sunlight on the front glass. They interact and look better in large shoals, this activity can be encouraged by sprinkling a watering can of cold water on the surface. ⇒

One to avoid

I accidentally purchased a young *Exodon paradoxus* in a batch of Buenos Aires tetras. It initially went unnoticed until the misfit started biting holes out of the other fish. Be careful as all fish for sale are not suitable for aquarium life.



Exodon paradoxus are vicious fish which should never be kept in a community aquarium

"The males will show off to the females and spar with one another providing you with some amazing displays"

Red Phantom Tetras display well towards each other

The ideal setup for medium sized tetras

The medium sized species are just as impressive as their colourful smaller relatives. I recommend at least a 4' x 2' x 2' (120cm x 60cm x 60cm) aquarium to give them adequate swimming space and room to grow. They are often fast active swimmers needing a large open area in which to perform but with good thickets of plants towards the rear of the aquarium to give them security.

Vallis is ideal to plant at the rear with small Cryptocorynes towards the front, with perhaps an *Aponogeton crispus* slightly off centre. Indian fern floating on the surface provides shade and greenery that is soft enough for them to have the occasional nibble on.

A water temperature of about 75-78°F (24-26°C) is fine, but some may need 80°F (27°C) to breed. Filtration is important and should be the best you can provide. I prefer internal power filters for this type of set-up. I have had good results in 4' (120cm) aquariums with a large internal power filter feeding an above tank trickle filter. Where the filtered water returns to the aquarium a smaller internal power filter can be used to push the fresh water along providing a good water current. I have noticed especially with the medium and larger tetras they do appreciate good water movement.

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Beckford's Pencilfish, in common with all Pencilfish, are excellent additions to any community aquarium

PHOTO: OLIVER LUCANUS

Strange! I am sure it would have the opposite effect on me?

Rummy nose tetras, at less than three inches long are another colourful species with their contrasting red nose and black and white striped tail. I find they do better in larger aquariums with dense planting on the bottom as they can be a little bit shy and benefit from the extra security provided by the plants. They prefer the lower levels of the aquarium and are peaceful enough to be kept with smaller tetras.

Bleeding heart tetras are another stunner, when in prime condition, and coloured up with all fins on display. Emperor tetras are also a very beautiful fish colouring up with blue, green and purple hues. I have had the occasional problem with two males aggressiveness towards each other, but this is all part of their mating ritual.

The Splash tetra, if you can track any down, have the unusual spawning technique of depositing their eggs out of the water on overhanging leaves or the glass in your aquarium and constantly splashing the eggs to keep them from drying out. They are a pretty, peaceful species as well as unusual.

Buenos aires tetras are Gordon's favourite tetra

My favourite

Buenos Aires tetras look spectacular in large shoals and are one of my long time favourites, being one of the first species I bred with any great success as far as quantity was concerned. Watching over a hundred of these little rockets eat and grow over their first few months is very satisfying. The males are quite slim compared to the full bodied females. A fast active swimmer with a very healthy appetite.

Black widow tetras are stocky, laterally compressed, black and silver fish. They are a hardy fish with a good appetite. In my experience these underrated fish are very easy to keep and live for many years, indeed I had a trio of them for 8 years. Their colouring contrasts well with other tetras such as Serpaes or even Blind cave tetras. ■

Fishkeeping Answers: Tropical

Kribensis will live happily with Platies like these unless they start breeding

Vic asks, "Who can live with who?"

Every time I buy fish I ask advice on which can go together in the same tank. I have one tank with Platys, Mollies and Swords in it, (with salt in the water). Tank two has, 1 pair Dwarf gouramis, two female Honey gouramis, 1 male Red gourami, 1 Plec, 2 Clown loach and 3 Corydoras catfish. Tank three has 10 baby Cichids, including zebra, auratus, canary and demafoni (with salt). When I got the Cichids, the shop sold me 2 Kribensis to go in with them. Since then I have been told that the Kribs should not be with them, so I have them in a small tank on their own until I find out what they can go with. I keep getting told different things so could you please tell me what Kribs can live with and is there a web site I can go on to find out about different fish, who they live with OK and what they eat?

Vic, *via e-mail*

Your Kribs will fit in fine with your Platies, Mollies and Swordtails. This tank does not need salt in it. If you are in a soft, acidic water area you need to raise the water's hardness and pH. You can do this with pH and hardness adjusters from your local aquarium shop. Salt is often suggested in livebearer tanks but Platies and Swordtails don't live in brackish water and don't want or need salt in their water. The same applies to your Rift lake cichlid tank although here it becomes even more of an issue, since salt is known to be detrimental to their long term health.

There are many good WWW sites and some **VERY** bad sites. How do you know which is which? You don't - so buy a book instead. Go to your local aquarium shop and buy a beginners guide. Interpet, Tetra and TFH produce some good beginners' guides that are inexpensive. Alternatively borrow a book from your local library.

Derek Lambert

Frank asks How can I look after an Elephant Nose?

I am new to fishkeeping and have a three-foot tank with one Elephant Nose in it, 5 baby Cory catfish and 2 baby plecs. Can you give me more information on my Elephant Nose?

Frank, *via e-mail*

Elephant Nose fish are not really suitable for beginners

Having problems? Then let our panel of experts solve them for you. *Fishkeeping 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.

Trevor asks what is killing his guppies

I was wondering if you could help me? I acquired a 2' tropical set-up in December, it has been going perfectly, until the past couple of weeks. The disease that I am querying is at the moment only affecting female livebearers. What happens is that the caudal fin appears like it has fin-rot, then in the next day, the rear end of the fish up to about the pelvic fins starts to discolour and becomes very dropsy-like. The next day the fish disappears, probably eaten. So far this disease has only affected female livebearers, two guppies, and one tuxedo platy. I have been keeping fish for over ten years and have never seen this before, is it a bad case of fin-rot!!?

Trevor Hutchinson, *via Internet*

I cannot be hard and fast without seeing the fish, but I have two suspects at the top of my list. The first is a bacterial infection with *Flexibacter columnaris*. This infection causes severe fin and tail 'rot' and can easily cause extensive damage and ulceration to the skin - this may appear as whitish patches on the skin before developing into a full-blown ulcer. This infection is so often associated with livebearers that it is often known as 'guppy disease'. Early cases may respond to proprietary medications or hospitalising affected fish in salt water - more advanced cases may need antibiotics but with the speed of the disease this may not be a practical proposition.

Another 'guppy killer' is a protozoan parasite called *Tetrahymena*. This causes extensive damage to the skin and gills to the extent that it may allow secondary infections to establish. One of the many anti-protozoal medications should be effective, although this parasite can burrow deep into the muscles underlying the skin, causing damage and hiding from the medications! Classic signs include pale or raw patches of skin, secondary infections and respiratory signs.

My feeling is that it is probably Flexibacter that is your problem. Treat or euthanase at the first sign of trouble - allowing the fish to die and be scavenged is an ideal way of transmitting any infection or causing an environmental build up of pathogens.

Lance Jepson

At your stage in the hobby, I really would not advise trying to keep Elephant Nose fish. That said, you have the fish and now need to care for it. They need a diet of mostly live foods and frozen foods like Blood worms etc. Apart from plenty of live food, you need to look at pH/hardness. They need soft and slightly acidic water to be happy. The aquarium needs plenty of plant cover and some bogwood or rockwork to create quiet areas for your Elephant Nose to settle down by.

Derek Lambert

Stuart has a problem with algae menace

I need help! My community tank has been overrun with algae. It's a brownish-green colour. My tank light has a reflector (which I fitted to help the plants). I used a liquid called 'Plant Gro' though the plants seemed to flourish without it. However, after two weeks the algae started to grow on my plants leaves giving them an ugly brown colour. Although I don't mind algae growing on ornaments etc. as it gives it a natural feel, I just want to control it. I have given the tank a 25% water change and have not put in any more 'Plant Gro'. I am reluctant to remove and wash the plants because I have a spawning pair of Kribs (did I really have a community tank?) and am also reluctant to use chemicals. So please can you offer anymore advice?

Stuart Neale, *via internet*

This problem is caused by an excess of nutrients in your system, probably made worse by the addition of the liquid fertiliser. In most community aquaria I would recommend changing at least 25% of the water weekly. There are also chemical media that can be added to a filter system that reduce nitrate or phosphate.

Depending on the exact type of algae it can be quite difficult to control, but the addition of fish that will eat it would help. Bristlenose catfish (*Ancistrus*) are useful for removing some green algae, but can be quite choosy about the types that they eat, and will need supplemental feeding at night with other vegetable matter.

The Siamese Algae Eater (*Epalzeorhynchos siamensis*) is excellent at removing algae that many other fish will not touch, especially when young and will also feed quite happily on typical aquarium foods. This may be the best option for a control method for your problem coupled with a reduction in the amount of nutrients actually being put into the tank. It is also important to ensure that the light you have is suitable for growing plants in a freshwater aquarium.

The use of chemicals to kill algae can sometimes lead to problems from the dead and dying algae. It is very unlikely that the algae you have will cause any problems other than being unsightly and it could well be a rich foraging ground for any baby Kribs as they are certain to find small organisms in it that will help supplement their diet.

Pete Liptrot

Fishkeeping Answers Expert Panel

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 Saull - Discus.
David Armitage - Anabantids.
Derek Lambert - Livebearers, Rainbows & Breeding fish.
Ian Fuller - Catfish.
Andy Gabbutt - Killifish.
Stephen Smith - Goldfish.
Bernice Brewster - Koi and Ponds.

Please indicate clearly on the top left-hand corner of your envelope which person you wish your query to go to. All letters must be accompanied by a SAE and addressed to: Fishkeeping Answers, *Today's Fishkeeper*, TRMG Ltd., Winchester Court, 1 Forum Place, Hatfield, Hertfordshire, AL10 0RN.

Internet service

Fishkeeping Answers is also available via e-mail. Most of our experts can be contacted via the Internet. A few are still not on-line so we will have to pass your messages on to them by 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:- askap@btinternet.com

Fishkeeping Answers: Tropical

Maria asks why she has a gas bubble problem

I set up a heavily planted three-foot freshwater aquarium in January. It has a substrate of silver sand, with around 10% pea gravel, that is 2-3 inches deep. I run an external Eheim filter. The aquarium is lightly stocked with fish (Harlequins, Corydoras, Albino Ancistrus). I perform a 20-25% water change each week. To achieve this I agitate the sand with a wide funnel gravity type 'hoover'. I have now noticed gas bubbles in the substrate (against the front glass). The plants and fish are flourishing - BUT am I heading for a disaster?

Maria Lavender, *via internet*

The bubbles of gas could have arisen for a number of reasons.

1. When you fill up a new aquarium with fine substrate, air inevitably gets trapped and can remain so for some time once the aquarium is up and running.

2. The accumulation of gas may result from the breakdown of organic matter by bacteria and other micro-organisms. This can either show a healthy or an unhealthy situation.

a. Healthy

The gas is an accumulation of carbon dioxide, released by respiring bacteria. Due to the poor circulation in localised areas of your substrate, this cannot dissolve completely in the water and so accumulates.

b. Unhealthy

Anaerobic, organic-rich substrates can lead to the proliferation of bacteria that produce Hydrogen sulphide as a by-product. The simple test is to disturb and release the bubbles and if they smell of bad eggs, you have a problem. The areas of gas accumulation will also turn a tar-black if H2S is identified. This should be easy to identify next to silversand.

If you have identified H2S, then you must reduce the amount of organic material in your substrate. This often used to occur when aquarists used peat or other organic material beneath their substrate for plants. The alternative approach to reduce this problem, but to still encourage plant growth is to add inorganic fertilisers to the substrate that will not be broken down by bacteria.

I hope this has been of use, and I suggest you remain vigilant with both your eyes and nose to detect any changes for the worse.

Ben Helm

Sean's angelfish problem

I have recently bought an angel fish for my tropical aquarium. I noticed that one of his eyes had a cloudy ball totally around the surface. None of my other fish have got it and I was wondering what would be the best treatment if any?

Sean Ridley, *via internet*

This is most likely a bacterial infection. Inflammation or infection of the cornea - the transparent part of the front of the eye - causes it to turn opaque. Irritation or ulceration could also trigger localised mucus production causing the greying as well. There are plenty of other possibilities ranging from tumours, glaucoma, parasites and nutritional deficiencies etc. but I would consider the above the most likely. Try treating with a proprietary antibacterial product, or consult your vet about the possibility of antibiotics.

Lance Jepson

A beautiful Blue Angelfish in perfect health

Fishkeeping Answers: Marine

star letter

Mrs George's invert problem

Please help, I must be doing something wrong! I have a marine tank containing 2 Clownfish, 1 Banana wrasse, 1 Fire shrimp (all doing well). I had a large Bubble anemone that just fell off the rock and melted away. It had to be siphoned out of the tank. The remaining 3 anemones (2 Purple tip and 1 plain Atlantic) are just shrinking away. One is now tiny and has no tendrils at all. They appear to shrink from the outer to the inner and the foot, that you can hardly see in a normal anemone, gets large. Two of them have taken a turn around the tank.

I also have a Feather duster that opens up once in a blue moon and is half the size it was. I feed dry fish food 3-4 times a day. Invert food alternate days, frozen shrimp 3-4 times a week and fresh prawns 2-3 times a week. The anemones don't appear to be eating at all.

I part change the water using Aqua plus, Salinity 1.022, pH 7.5, Nitrite 0.3, Ammonia 0. I also use calcium +3. My tank has been set up since last November and is 30" long by 12" wide by 18" deep. Thank you for your urgently needed help.

Mrs George, *Barnstaple*

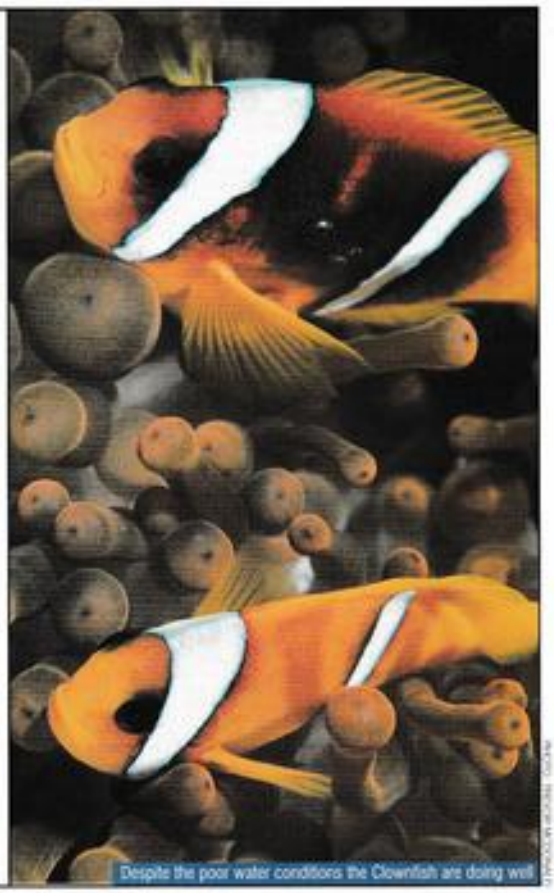
The fact that all your fish are doing great with the anemones and tube worm deteriorating is down to very poor water quality. To improve the situation you MUST address the following:-

1. Source a supply of purified water or purchase a small water purifier. Using tap water for water changes will be introducing a wide range of contaminants that will be detrimental to the system.
2. Increase the salinity to 1.025 at 79°F.
3. Increase the pH to 8.2-8.4 using pH buffers.
4. Add a bacterial culture to eliminate the nitrite reading.

You must watch your anemones as if one decays and is missed it will pollute the aquarium and could cause a wipe out. Stop adding the invert food as you are only feeding the feather duster worm that will gain enough food from fish feeding. Your bubble anemone would have required a lighting system for corals, if your lighting is not to this specification any animals containing symbiotic algae would also perish.

If you work on your water quality your whole aquarium will improve quite quickly.

Andrew Caine



Despite the poor water conditions the Clownfish are doing well

John asks what water turnover?

I am setting up a marine system but I don't know which size pump I should use for water turnover through the filter. I know that with ponds you should turn over the total volume of water capacity twice an hour, can you please tell me the optimum rate for a 60 gallon marine system?

John Platt, *Bristol*

The answer is quite simple, as much as, believe it or not 20 times per hour. My own system is turned over 15 times per hour. The water does not flow past the bacteria too fast as some claim. Because of the size of a bacterial cell water is a far different medium as perceived by us humans, if we were the size of a bacterial cell, swimming in water would be like swimming in thick warm tar, so we could easily filter the water as it passes over us at twenty times per hour. It would be like a fillet steak floating past my face at one mile per hour. Get a big pump.

Andrew Caine

James asks can I use cheap halides?

I want to use halide lights over my reef tank, my local shop has quoted me for the lights, I will buy the unit, however, I can get bulbs for £17.00. Can I use these to save money?

James Keith, *Leeds*

Without knowing the specifications of the bulb I cannot answer. I would suggest that you get the bulbs with the unit. Many makes of halide lamps are produced, the majority for security lighting, which do not produce the correct wavelength and illumination that is required for algal photosynthesis, and would cause you great heartache in algal problems and coral deaths. Pay the extra and use halide lamps that are produced for aquarium usage.

Andrew Caine

Peter scrapes his way to trouble

Just recently I have seen little green algal discs growing on my glass, it is much harder than normal algae as it won't come off with my magnet, I really have to scrub to get it off. Please can you enlighten me as to what it is and is there an easier way to remove it?

Peter King, *Norwich*

You are experiencing calcareous algal growth on your glass, and it is hard to get off. You must not use any algal scrubber to remove it as when the algae is released from the glass it is caught in the scrubber, it is calcareous so will now act as a grain of sand and will scratch the glass with further intense rubbing. You need to get an algal scraper with a fluidised plastic blade, I can recommend the Kent pro scraper for this job. They are expensive but do the job easily without scratching the glass that would be costly to replace in both time and money.

Andrew Caine

Correct feeding of any fish will bring out its best colours. Royal Gramma certainly have some beautiful coloration to bring out

John's majestic angel threat

I have had my reef now for about six months it is a 75 gallon system all working well until two weeks ago. I wanted a final fish and fell in love with a Majestic angel, parted company with my money and introduced it. In two weeks seven of my corals and a green carpet anemone have been consumed. My local shop says it is not the angel yet I have seen it with my own eyes, please can you tell me what is going on?

John Chadwick

Yes I am afraid you are correct, your angel will eat many soft corals, you must get it out or more will suffer the same fate. I am sorry but in my experience it is likely that you will have to strip your tank to catch this fish.

Andrew Caine

Daniel's 'funny question'

I know this might seem a funny question but can you give me tips on what to feed my fish in a reef tank? I have two Blenny, an Emperor tang, Long nose hawkfish, Royal gramma and a Flame angel.

Daniel Brown, *Hull*

This is a very good question, and I hope the majority of fish keepers read this not only marines but tropical and coldwater fishkeepers as well. When you see a healthy fish they look great, when you see a vibrant fish they jump out of the tank and hit you in between the eyes. The correct feeding along with a stress free habitat can produce coloration that is magical.

The answer to your question is variety, at least three different types of frozen food should be utlised, green matter for vegetarians, flake food, as well as live food at least once per week. The best tip I can give is to splash out on vitamins, two drops to your thawing frozen food and left for at least one hour before feeding.

An example of a feeding program is: flake food in the morning, followed by a mix of frozen foods in the evening is great. Feed all fish at least twice per day, not once, and remember to add those vitamins.

Andrew Caine

Majestic angels will eat many soft corals

Fishkeeping Answers: Coldwater

Chris asks why his koi is jumping

I wonder if you could help me with a small problem regarding 2 Koi in an 18,000 litre pond. I have several 16"-20" koi and various goldfish, tench, orfe. Two days ago I noticed that two of my koi that have identical markings, 1 - 16" and 1 - 8" were laying on the bottom of the pond. They are both still feeding, but have lost colour. They are red, black and white (no idea of breed). The larger one has started leaping out of the water. I have no problems with nitrate according to my test-kit and only these 2 fish are affected. I've put in an all-purpose remedy solution and can't think of anything else to do. It seems odd that the only two fish affected are remarkably similar. Can you help me?

Chris Dent, xxxxx

Koi will leap for a variety of different reasons:

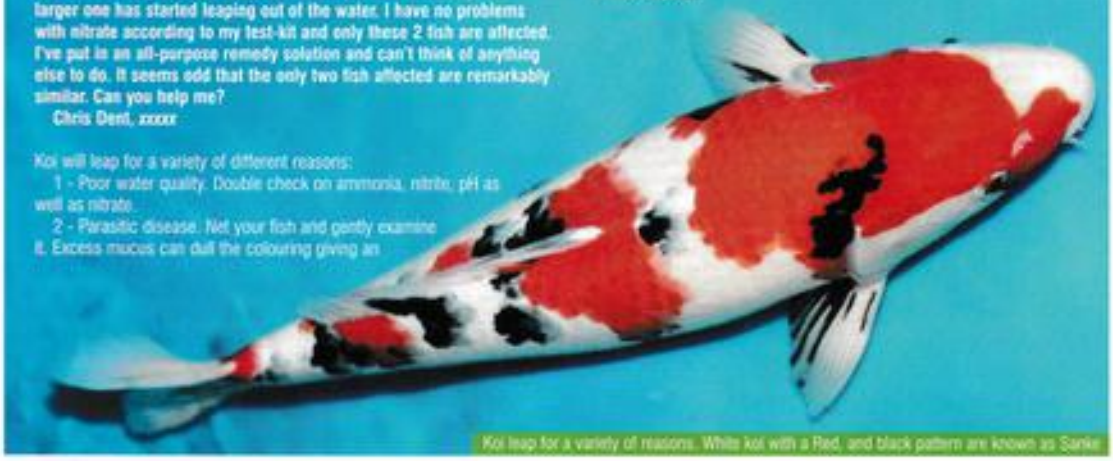
1 - Poor water quality. Double check on ammonia, nitrite, pH as well as nitrate.

2 - Parasitic disease. Net your fish and gently examine it. Excess mucus can dull the colouring giving an apparent loss of colour. Also lift the gill covers and look at the gills, these should be a darkish salmon pink with a neat semicircular edge to each gill arch. If colouring is mottled, pale or gills look ragged there may be a parasitic (gill fluke/white spot) or bacterial infection going on.

3 - Some koi leap for the sheer *joie de vivre*!

That two similarly marked fish are affected is probably coincidence, unless they are very closely related!

Lance Jepson



Koi leap for a variety of reasons. White koi with a Red, and black pattern are known as Sanke

Foaming water in a pond is quite common in summer

Mr Beardon's foaming pond

This question came in by telephone. Mr Beardon's pond is 10'x8'x2' deep in full sun and south facing. It has a Bio filter plus UV clarifier and a 1700 GPH pump. He has a small waterfall with a 4" drop going into the pond. The problem is it is producing a foamy scum with lumps floating off every so often. It looks unsightly and his local shop suggested he switch from flake food etc. diet to an exclusive pond pellet diet. This was a month ago and things have not got better. The fish are all healthy and he has not lost one of them since the pond was set-up. He has been offered an anti-foaming chemical cure but would rather not keep pouring chemicals into his pond. What is causing the problem and how can he solve it?

Foaming water in a pond is quite common in summer, particularly those with moving water or a UVc. The foam is created by a build up of proteins and other organic compounds that cause the bubbles to form when the pond water is aerated or agitated. Where bubbles would normally burst immediately, the build up of organic compounds in the water causes these bubbles to stabilise and resist being burst so easily. In a way, the water leaving your waterfall into the pond is acting like a protein skimmer, (which causes bubbles to form and collects them in a cup, removing protein from the water).

The build up of proteins can be caused by a number of factors.

1. Excessive feeding, leading to leaching of compounds from food as it floats, and a high degree of excretion.

2. The UVc prevents algae from growing that would otherwise help to utilise some of the foam-causing chemicals.

3. Infrequent water changes. The build up of organic compounds in any water body containing fish is inevitable. By carrying out a frequent partial water change, the organic compounds can soon be diluted away.

Possible solutions include:

a. Installing a pond protein skimmer to remove the build up of organic compounds.

b. Carry out regular partial water changes.

c. Try changing diets to see if a particular food encourages more foam to form than others.

d. The addition of an anti-foaming additive. This reduces the symptom but does not address the cause.

Ben Helm

Typical and very colourful settlers on the tropical coral reefs are Pycnoclavella diminuta, colonial tunicates. Tunicates are advanced animals and true filter feeders that depend on an almost continuous flow of nutrient for survival. Photo from the Great Barrier Reef

All photos by Alf Nilsen unless otherwise stated

Moving in

The biological health and maturity of your system can be monitored by logging the settlers, **Alf Nilsen** explains

Many aquarists check and log the temperature, salinity, redox potential, concentrations of nitrate, phosphate and calcium and even other parameters regularly. By tracking the different chemical parameters the aquarists are able to view how the aquarium system develops over time. This is sensible and advisable, indeed! It might, however, be just as interesting and useful to log the macro and micro life in the aquarium and use the biological settlers as bio-indicators. This type of logging is unfortunately rarely done.

What are 'settlers'? By 'settlers' we do in this context mean micro and macro organisms (algae, tiny invertebrate forms, larvae - and juvenile stages of larger invertebrates) that settle on the substratum to live a sessile life either permanently or during a certain stage of their life cycle. Some of these organisms are so big that they are easily spotted with the naked eyes, others require a magnifying glass to be seen, while yet some can only be seen and studied through a binocular lens or a microscope.

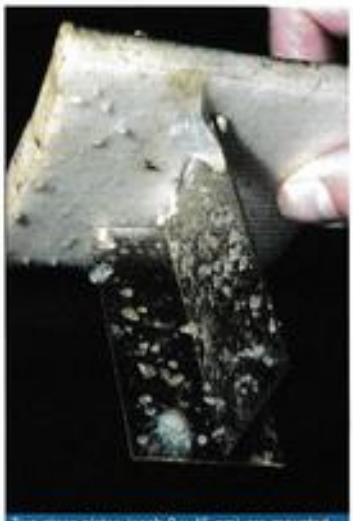
What influences them?

Factors like light, water flow and amount of nutrient have a big influence on which organisms settle and where they thrive. On the reef there are settlers almost everywhere, especially where there is a bit shade and current. Sponges, tiny hydrozoans, small worms, bryozoans, entoprocts and colonial tunicates are just a few of the common groups of animals that settle. They are all nice food eaten by larger animals on the reef such as molluscs and fishes. A good example of 'settlers' is the colonial tunicates, a group of particularly beautiful animals. They are true filter feeders and highly advanced, many of which possess a chord on the larvae stage, which makes them included with the vertebrates. The larvae remain free swimming for a while, but eventually leave the free swimming stage and sink to the substratum where they settle. Here they grow to adult tunicates and start a bud forming clone-colony.

Another group of colourful and most glorious animals on the tropical coral reefs are the large free-living flatworms in the genus *Pseudoceros*. These are not settlers, but animals that crawl around searching for their only accepted food... yes, you guessed it correctly... colonial tunicates. Settle, grow, reproduce, but protect yourself or be eaten... that is the life for a settler of the coral reef.

Settlers in the aquarium

The situation in a coral reef aquarium is quite different. Here the colonial tunicates are rare simply because they is normally not enough food available. The colourful flatworms, which are common on the reef



Two glass plates (each 2 x 45 cm) are mounted in styrofoam. Here they are seen after being left for several weeks in the sump of a reef aquarium.

Close up of a part of a glass plate that has hung inside a reef aquarium for 16 months! There are algae, sponges, worms and a lot of other organisms present

Equipment needed

You need the following for a simple model:

A couple of tiny glass plates like those used with microscopes, each measuring about 4.5x2cm.

A few pieces of floating material like styropore plates or equal.

A powerful magnifying glass.

A table or notebook that serves as a log.

You now cut two 2cm slots in the styropore, in a right angle to each other and mount the glass plates in the slots. Be sure to mark the slots so you can identify the individual plates if you use more sets of plates. Place the mounted glass plates floating in suitable places in your system. It is of course possible (and probably advisable) to use more pair of glass plates in one and the same tank.

and occasionally seen in the trade, cannot be kept alive as they have access to no food at all - there are no colonial tunicates present.

There are also examples of the contrary situation, such as with the boring "glass anemones", Aiptasia spp. The 'glass anemones' reproduce asexually by pedal laceration, where a tiny piece of tissue loosens from the mother animal's foot, drift with the current and settle on a suitable spot where it gradually grows into a new anemone, which is a clone (genetic copy) of the mother anemone.

The scene is all too familiar to many marine enthusiasts, gradually the tank becomes overgrown with "glass anemones" and the situation is out of control. The glassy polyps with their long tentacles and powerful sting seem to be popping up everywhere! Why? Nutrient is plentiful, there is a lot of available space, the light is good supporting the symbiotic algae and - most important - predators are lacking! No animals around eat Aiptasia and the anemones are safe. Sexual reproduction among the population can also occur in the captive environment, which even increases the number of specimens further.

Like so many times before we discover that the modern coral reef aquarium contains a number of interesting organisms, but is indeed different from the natural scenery.

"Settle, grow, reproduce, but protect yourself or be eaten... that is the life for a settler of the coral reef"

Logging the settlers

I would recommend putting the plates in areas that are not heavily illuminated but which have a steady flow of water. If you have the skimmer and other technical equipment placed in a sump below the aquarium, this is an excellent spot. You can also anchor the plates in the main aquarium along the sides where the light is moderate.

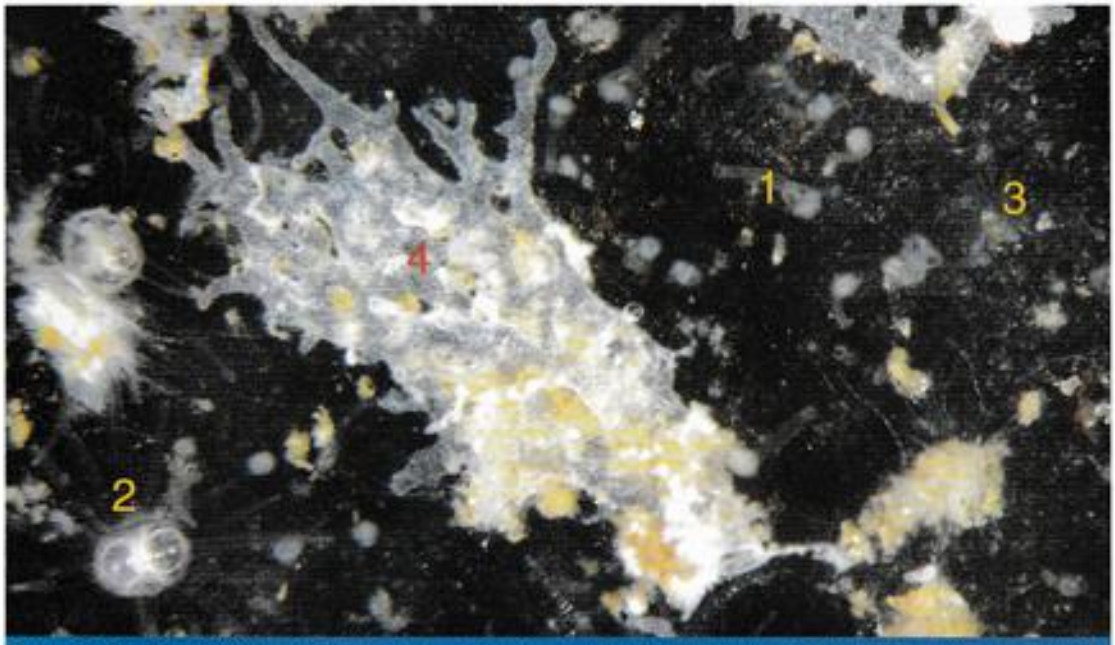
What next? You now have to make a plan for controlling the plates regularly. Settlers in your system will very soon start to colonise the plates, which soon will be covered with all sorts of interesting animals. You can log the settlers in a simple way or use more advanced methods, which requires more equipment, accuracy and a bit of skill. It is very important to check the plates with regular intervals, such as on the same day once every two weeks or once a month.

Remove the plates from the water, but not from the styrepore. Make notes on what the plate looks like and how densely they are covered with organisms. Note changes from last time you checked the plates. Use the magnifying glass and make notes on what you see, which organism dominates and how many different groups you can identify. Do also make notes on 'unknown' organisms.

Over time you will, through these observations, create a record showing biological changes in your system. ⇒

Why log the settlers?

The goal is to get an overview on how many and what types of organisms that settle over time and let this be a biological indicator of your captive system.



Close up of a glass-plate, which has hung for 17 weeks in the sump of a reef aquarium where the light was very weak and the water current strong and steady. The magnification on the film plane (24x36mm) is 6X. As you can see there are several settlers present. 1: Entoproct, 2: Juvenile Aiptasia, 3: Hydrozoan, 4: Calcareous sponge (grey) growing upon a Demosponigia sponge (yellow)

You will learn more about many interesting groups of organisms and be aware of which groups dominate during certain time spans. Perhaps you will see that some organisms are common during one time of the year, but rarely seen at other times? Perhaps you can link the presence of some organisms to the variations of other parameters in your aquarium? I am sure that you will discover a set of life forms that you never thought existed in your captive environment.

What kind of organisms will you find?

The diversity and composition of the settling fauna varies from aquarium to aquarium and is strongly linked to the amount of nutrient available. Sponges will be among the first filter feeders you discover. Personally I have found colonies of calcareous sponges to be most frequent. Also you will probably soon discover tiny specimens of 'glass anemones'. Hydrozoans occur in numbers and I have found several species myself. One of the most interesting groups that were present in my small experimental aquarium was the entoprocts (Phylum Entoprocta), which are highly advanced animals that reproduce asexually by budding off new individuals. Various tubeworms can also be present, such as the common *Bispira viola* - a species that becomes quite large, though.

Among the sessile organisms a lot of free living micro organisms will flourish, such as ciliates, which do, however, require a microscope to be seen. Larger free-living organisms, such as many Crustaceans (Isopods and Copepods) will also be found when examining the plates in a binocular lens. If your plates are located in the sump in almost total darkness, algae will not be present. On the plates hanging in the aquarium itself, a lot of algae will grow and among them sessile and free-living micro and macro organisms will thrive. If the plates get totally overgrown with hairy algae, they will not serve very well as a tool for logging animal settlers. Again I advise you to use shady or even dark locations for placing the glass plates.

The most interesting feature in this project, however, is to observe and log how the flora and fauna on the glass plates develop and change over a relatively long time span. When a couple of years have passed, you will really be able to tell an interesting story about 'settlers in your marine aquarium' - if you have the patience to do the logging regularly for so long Good luck! ■

Pseudoceros susanae, a colourful flatworm photographed in the Maldives. Most Pseudoceros spp. are food specialists on colonial tunicats

Wilhelm's delight

Horst Linke introduces a colourful new Apistogramma from the Amazon.

Translation: ***Oliver Lucanus***

The world is full of surprises and the Amazon is still full of undiscovered fish. At least that is how we could simplify things. There certainly still seem to be a large number of undiscovered *Apistogramma* species (especially those that inhabit only small areas) still awaiting discovery. Many of these occur well away from main roads and travel destinations of the average aquarist or scientist, but new frontiers open up all the time and it is to these areas that we look for new species of fish for the aquarium hobby.

Travel plans

A few years ago my travel plans led me to the rarely visited area of Maues and from there to the Rio Abacaxis. My travelling companion was Mario Wilhelm from Kamsdorf in Germany. It was my intention to visit different habitats of Discus and Angelfish varieties, especially since many new spectacular *Symphysodon discus* and *Symphysodon aequifasciatus* varieties have been exported from the eastern Madeira area of late. The area around Maues, located around 249 miles (400 km) southeast of Manaus, has been the source of very colourful and intense red natural hybrid Discus (*Sym. aequifasciata*) with a pronounced 'Heckel bar'. Also, the subspecies *Symphysodon discus willischwartzi* was described in 1981 from the mouth of the Rio Abacaxis because of its' different color.

Our route led us from the Rio Maues-Acu to the mixed water channel Paraba do Uraria and on to the black waters of the Rio Abacaxis. The Rio Abacaxis flows into the white water channel Uraria at Villa do Abacaxis, 80 miles (130 km) west (by air) of Maues. We were unlucky and the water levels had already reached 10ft (3 metres), although it was low water season. Large areas of land had already been flooded and offered more habitat to the fishes.

Every cloud has a silver lining

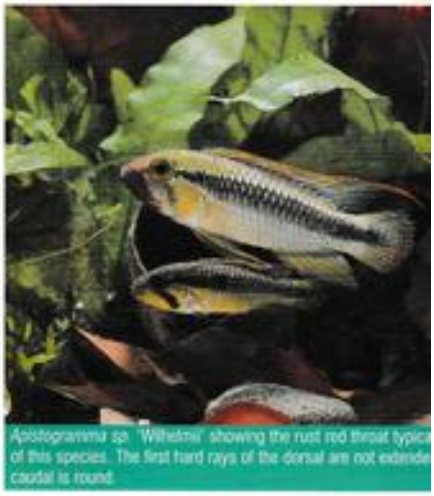
The spawning season for discus and angels was approaching and the fish were no longer in large groups but had paired off complicating their capture. It rained hard and often, making it difficult to motivate the local fishermen to go out and catch fishes. But there was one consolation, although the water levels were continuing to climb and the fish we were seeking were disappearing ever deeper into the flooded forest. The higher elevated areas still created shallow zones, with a thick layer of fallen leaves in forested areas. Emerse plants become lush underwater gardens at this time of year. This shallow zone along the edge of the water is the habitat of *Apistogramma*. They follow the rising water and therefore always remain in no more than 31.5" (80cm) deep water along the banks, where they can be found among the fallen leaves.

We were on the middle section of the Abacaxis where there were no more angel fish to be found. There were, however, lovely pastel coloured, yellow headed Heckel discus and, as we soon found out, beautiful *Apistogramma*. We had left the main channel for an Igarape (sidearm) to make camp in a small village. In the nearby forest was a small "Lago" that seemed an ideal *Apistogramma* habitat. It was a small, kidney shaped, low lying lake connected by a broad channel to the Igarape. The ground of the surrounding forested hills was covered in a thick layer

Water conditions

The new *Apistogramma* species come from water with a GH and KH under 1, the pH was 3.9 and the electrical conductivity was only 8 MicroSiemens at 29.8°C.

It rained hard and often, making it difficult to motivate the local fishermen to go out and catch fishes



Apistogramma sp. 'Wilhelmi' showing the rust red throat typica of this species. The first hard rays of the dorsal are not extende caudal is round.

Apistogramma sp. "Wilhelmi" Male

Back in Germany

Acclimating the fish to soft, slightly acidic water back in Germany proved easy enough. We mimicked the black water of their natural habitat by using peat extract and filtering through peat, a procedure that was to prove a great advantage with the other fishes collected on our trip as well. Three months later the male had reached a total length of 6cm, the females remained smaller and seem to be mature at 4cm. Under ideal conditions the fish spawned for the first time just two weeks after our return.

To successfully breed Apistogramma spec. 'Wilhelmi' you need soft, acidic water with values around GH 3-5, KH 0.5-2 and a pH from 5.0-5.8. The water must be low in bacteria and should be filtered with peat. Feeding the adults exclusively with live foods such as cyclops and mosquito larvae is also beneficial.

The pair spawned on the roof of a leaf. We had brought some of the leaves with us from the Amazon to run some experiments and a thick layer covered the bottom of the *Apistogramma* aquarium. The leaves are very thick, almost leathery and perhaps acidify the water as they decay making them an ideal bacteria inhibiting platform for the eggs and young. The orange red eggs developed well and the young *Apistogramma* were free swimming after one week, immediately eating newly hatched brine shrimp. With frequent water changes the fry grow rapidly.

Apistogramma agassizii from the area around Alenquer / Brazil have no blue coloration. White, yellow and silver are the dominant colors. This variant is not common in its natural habitat.

of fallen leaves. The water of the lake also had a thick layer of fallen leaves and wood. The water was slightly cloudy and coloured dark brown. Water analysis showed it to be very soft and acidic.

The 'Lago' seemed to contain relatively few fish. A few small tetras could be seen but it seemed otherwise devoid of fish. Only after we began sifting the leaf litter did things change. Among other fish we caught Mario found a very beautiful, brightly coloured male *Apistogramma*. At first glance it looked like *A. agassizii*, but even immediately after its capture the brightly coloured ruby red mouth and throat was clearly visible. Also, the broad lateral stripe and round caudal fin were distinctive differences to all known species. The new fish were not common in their habitat and after a long time trying to catch more we were able to find a total of just two males and three females. All five fishes arrived home in good health despite the three weeks spent traveling with us after their capture.

Since Mario Wilhelm first found the fish, maintained them carefully during our trip and then spawned them in the aquarium (together with his father the well known *Apistogramma* breeder from Ramsdorf) I would like to call the new fish *Apistogramma* sp. "Wilhelmi" until the new species can be scientifically described. This new *Apistogramma* is without a doubt a smaller, very colourful species from the *A. agassizii* group. ■

Today's Surgery

Our resident vet, **Lance Jepson**, explains Nitrite poisoning

What causes the disease?

Nitrite is an end product of the metabolism of Nitrosomonas bacteria. Ammonia is absorbed from the surrounding water by these bacteria, where it is used in internal biochemical reactions. In this process ammonia is converted to nitrite, which in turn is released into the water. Temperature and pH have no direct effect on this process, other than the effects they may have on the Nitrosomonas bacteria.

What makes it worse?

Any situation that promotes the production of large quantities of ammonia which can then be converted to nitrite, or that stops the conversion of nitrite to nitrate can trigger nitrite poisoning. So overfeeding, overstocking, rotting plants and other debris are obvious factors. Immature filters may lack enough Nitrobacter colonies to work properly, or exposure to low temperatures may shut down bacterial metabolism, preventing bacterial conversion of nitrite.

In a mature filter, a second group of bacteria known as Nitrobacter convert nitrite into nitrate by a similar process, preventing dangerous increases in nitrite level. Problems arise when levels start to rise above 0.2mg/l. Nitrite is absorbed across the gills of fish and is absorbed into the red blood cells. Here it combines with the oxygen-carrying pigment haemoglobin to form the stable compound of methaemoglobin. In this form haemoglobin cannot carry oxygen, and once significant numbers of red blood cells are affected, the fish is unable to supply its body with enough oxygen to survive. Normal haemoglobin is red, but methaemoglobin is brown, so affected fish often show brownish-red coloration to the gills instead of a more normal reddish-pink. Recovery is by replacement of these methaemoglobin carrying red blood cells with new, unaffected ones.

Fish exposed to long-term low levels develop anaemia and are predisposed to secondary infections. Seriously affected fish will show respiratory distress and gasp at the surface. They may be found at filter outlets where instinct tells them that oxygen levels are highest. Nitrite levels above 0.5mg/l can be fatal. Nitrite levels can be monitored with a variety of commercially available test kits.

Diagnosis

Species susceptibility

All species are susceptible, although some species are able to tolerate higher levels than others can. In marines particularly damselfish such as Domino damsels, and the various Lionfish seem to be more resistant to its effects.

Recognisable signs of disease

Respiratory distress. Gills may appear brownish coloured. Some fish - classically tiger barbs - adopt a head-standing position in the water. Standard nitrite tests will register significant nitrite levels.

Disease Lookalikes

Other water quality problems especially those causing gill disorders such as ammonia toxicity. Also gill diseases such as severe gill fluke infestations, bacterial gill disease and fungal infections. Certain medications such as malachite green can mimic nitrite poisoning in excess. ■

Treatment & Prevention

Good husbandry practices with attention to stocking levels will help prevent this problem. In severe cases affecting freshwater fish, adding salt to the water to a concentration of 0.3%, the equivalent of 3.0kg per 1000 litres, can be beneficial. This is because the chloride ions from salt (sodium chloride) compete with the nitrite ions at the molecular sites on the gills where nitrite is absorbed. This competition reduces the number of nitrite ions absorbed into the bloodstream.

Otherwise partial water changes are mandatory to dilute nitrite levels down, combined with an overall assessment of stocking levels, feeding practices and so on. Adding extra bacterial cultures in the form of commercially available freeze-dried or suspended cultures may be of some benefit.

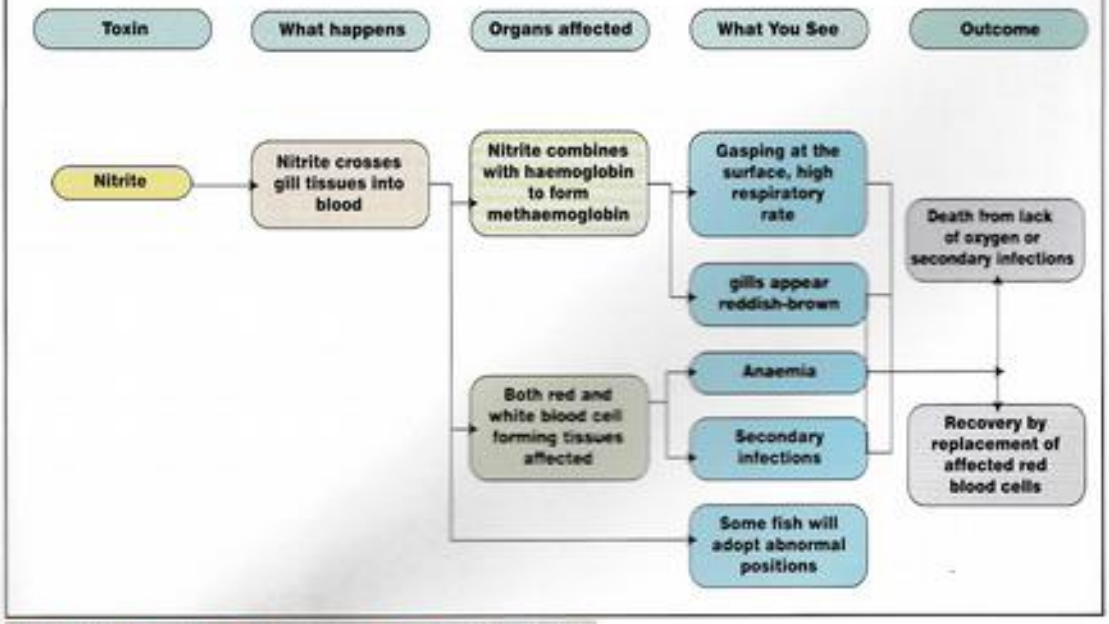
It has been suggested that dietary vitamin C may have a protective function, although its effect is less than that of salt.

Some fish - classically Tiger barbs - adopt a head-standing position in the water when subjected to nitrite poisoning

Lance's tip

Vigorous aeration may not give you the rapid results that you may expect because the problem is with the fishes' ability to carry oxygen in its blood, not a problem with low oxygen levels per se. However increasing oxygen levels as much as you can, will at least help the fish to make the best use of what oxygen it can make use of.

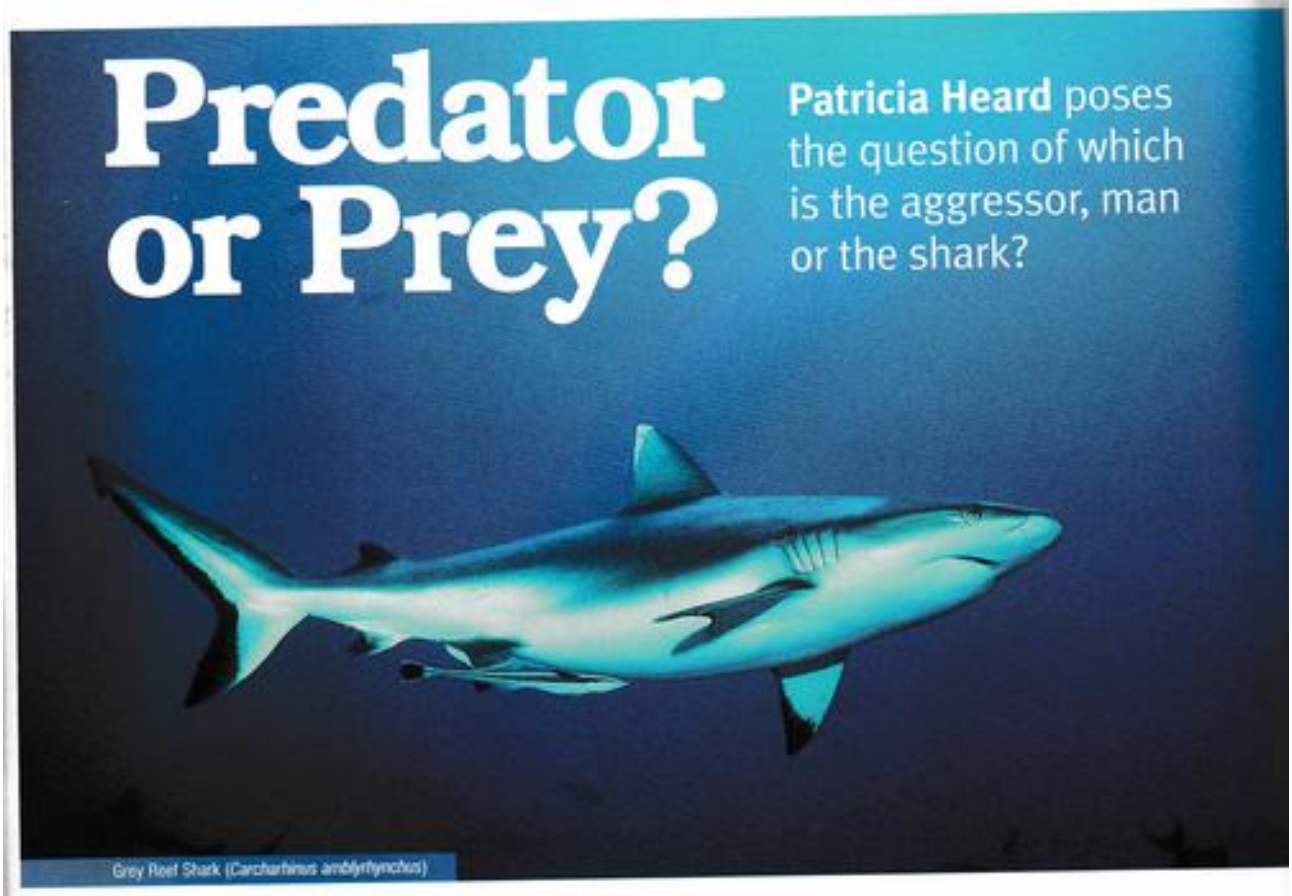
Nitrite Poisoning



tropical marine coldwater & ponds plants regulars

Predator or Prey?

Patricia Heard poses the question of which is the aggressor, man or the shark?



Grey Reef Shark (Carcharhinus amblyrhynchus)

Mention the word shark, and people automatically conjure up a scene from "Jaws", of a Great white attacking bathers and terrorising the coast. Even experts like Jacques Cousteau, who are fascinated by sharks, can create a false impression. Cousteau once confessed "We never did get to understand sharks." To try to begin to understand sharks, the American Institute of Biological Science set up a Shark Research Panel in 1958. It was charged with collating all information on sharks and shark attacks. Their aim was to establish where patterns existed. President John F. Kennedy also initiated a $2,000 million ocean research programme to try to solve the shark problem. Still the research goes on.

Man-eaters

Of the 250 species of shark in the world's oceans, only about 10% are proven man-eaters, yet sharks pose a problem that is out of proportion to the amount of killing they do. A small coastal resort can be economically crippled by a single shark attack. In 1953, sharks attacked several bathers along the Natal South Coast in South Africa. This normally crowded coast became deserted, hotels closed down and the South Coast lost millions.

It is no exaggeration to say that sharks killed an average of 1000 people per year, though this figure has declined. During the last war, both sides lost tens of thousands of men to sharks. Hundreds of ships were sunk, often with no survivors but those who did survive had horrific tales to tell. When the Nova Scotia was torpedoed by the Germans, in 1942, the 900 men on board found themselves in the shark infested waters off the Zululand coast. On makeshift rafts, they were continually circled by sharks. Out of 900 men, only 192 survived. The survivors watched their friends being attacked and eaten by the sharks.

Shark-eaters

Of course, a lot of people who would once have died are now surviving the most horrific attacks because of changes in techniques in the treatment of victims. Yet, shark attacks continue to make headline news. Although it is one of many animals to be termed a man-eater, the shark has the distinction of being the only one on which man gets his revenge, because man is a shark eater. We have now reached a situation where sharks are at risk. They are being slaughtered in their thousands for human consumption.

Frequently, sharks are caught only for their fins, which are highly prized in the Far East. Boats cast lines several miles long, and with hundreds of hooks, to catch the sharks. Once caught, the sharks are dragged aboard and have their fins hacked off. Then, while they are still alive, but horribly mutilated, they are dumped

Temperature plays an important part

Facts collected world-wide show that, with very few exceptions, sharks will not attack in water cooler than 70°F. In 1959, the world's most southerly recorded shark attack took place off Tasmania. It was January, and the mean sea temperature for that month would normally be 63°F, but on that occasion, they were experiencing a heat wave, and the mean sea temperature had risen to 71°F.

Why do sharks attack?

Jacques Cousteau noted that sharks will attack a swimmer on the surface, but if he dives below the surface, the shark will normally leave him alone. From this came the theory that the shark mistakes bathers for fish in the throws of death, and attacks what it considers to be an easy prey. The theory that rogue sharks are responsible for attacks on humans is bolstered by a huge amount of fact. In 1916, along a sixty mile stretch of New Jersey coast, a great white attacked five swimmers in only ten days. Four of the swimmers were killed. In the space of four months, on the South Natal coast, seven people were attacked. Three of them were in only three feet of water. Five died. Was each series of attacks the work of just one shark? It seems likely that it was.

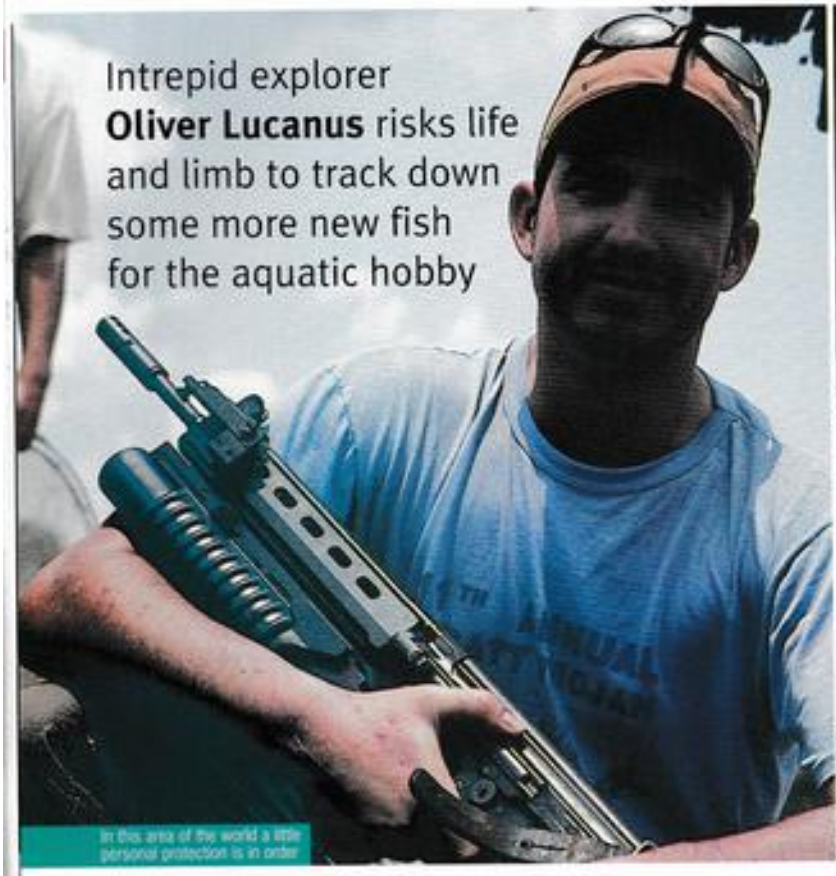
back into the sea. The fins are then sold on the Far Eastern black market, where they are sought after as a delicacy, shark fin soup. They are also famed as an aphrodisiac. While the number of reported shark attacks falls, the mass slaughter continues, leaving many species of shark facing extinction. So, is the shark really the ultimate predator, or just another misrepresented creature to fall prey to man? ■

Close up of Atlantic lemon shark's (*Negaprion brevirostris*) head. You can just see the teeth which can do so much damage

White-tip Reef Shark (*Triaenodon obesus*)

Recommended reading

Sharks in Question. The Smithsonian answer book by Victor G.Springer & Joy P.Gold published by Smithsonian Institution Press. Washington DC. London.



In this area of the world a little personal protection is in order

Misadventures on the Upper Orinoco

When I first saw a photo of *Uaru fernandezyepezi* I wanted to keep the fish. Usually, new species make the aquarium hobby long before they are scientifically described and it is rare that we (the aquarists) don't have the fish before them (science). Yet here was a large cichlid that had gone undetected until the late 80's and had never been exported alive. So after several years of patiently waiting for Colombian exporters to get their act together and send the fish, there was no alternative but to go and catch it for myself. A trip had long been planned to visit the pleco habitats on the upper reaches of the Orinoco, and collecting Uaru in the upper Rio Atabapo was only a slight detour (six days as it turned out).

The variety of fancy plecos in the upper Orinoco is much like the Rio Xingu in Brazil. Although the water is not clear, but murky white water a large number of colourful Loricariids can be found here including a whole bunch of undescribed species such as LDA019, L75, L102, L122, L128, L129, L200, as well as *Leporacanthicus galaxias* (L29), *Leporacanthicus triactis* (L91), *Lasiancistrus anthrax* (L235), *Panaque nigrolineatus*, *Panaque* sp. (L232) and *Lasiancistrus tigrinum* (L275) among others. Perhaps the most spectacular *Otocinclus* type (*Parotocinclus eppleyi*) is from small streams in the area

The problems

Logistics is usually the biggest problem with any fish collecting endeavour. It was impossible to approach the Raudales Artures, the rapids that are home to the Blue pleco (L128), from the Colombian side, because the Rio Vichada area is controlled by guerillas and a great place to get kidnapped according to the media.

The biggest problems would be posed by the transport of sensitive oxygen hungry plecos from the upper reaches to the 'airport' at Atabapo at the confluence of the Orinoco and Atabapo. The sign at the airport and a number of armed men in the small town make the point about the situation.

The Colombian army post on the other side of the river is overrun by guerillas on a regular basis and the area is not far from sporadic gunfights.

A serious oil leak on the flight south almost gave us a close-up view of the jungle, but we eventually landed on the narrow strip cut from the forest.

The Uarus are nowhere near the town of San Fernando de Atabapo, but rather several days journey upstream in the Rio Temi. Transporting our gear, live fish, food and team in a small canoe up the Atabapo would turn out to be another challenge. The only time Uarus can be caught is during extreme low water and the Atabapo becomes dangerous and difficult to navigate at that time. The sharp jagged rocks along the shores extend under water and we soon learned that travel at night would be too dangerous as we characterised sharp rocks just below the water as 'boat slicers, hippos and shark fins.'

LDA 019's are just one of many new species of fish which have been discovered in this area

Don Carlos is the last bastion of any civilisation on the river. His store trades essential supplies with the boats heading up and down river

around the Orinoco as well as a number of colourful *Apistogrammas*. So a trip to this area should produce a whole range of interesting fish for the hobby.

Pleco heaven

On the safer Venezuelan side south of the mouth of the Rio Vichada are a series of encampments where young Indian men collect plecos for the pet trade. Our dugout canoe was a precarious ride

An oil leak on the plane nearly cut the trip short before it had even begun. A crash landing in this area would almost certainly prove fatal for one reason or another

despite its size as we crossed the rapids in the main stream for the slower moving eastern shore. The camp was a series of makeshift shelters for perhaps three families on a small beach. In the shallow water a trap was made from mosquito netting to form a holding pen for the fish. The buyers visit only once per week and the fish need to be held and kept in good condition meantime. Closer inspection of the holding pens found them to be filled with nearly 100 plecos each. The most common fish here are the Green pleco (L200) and various forms of *Leporacanthicus*.

In the shallow water over a sandy river bottom there are *Hypostomus* and many *Geophagus*. A large seine net caught huge numbers of "dinner for six" sized Shovelnose catfish and the omnipresent *Pygocentrus cariba*. Nearly every river in the area has healthy and often large piranhas of this and other species in it.

I was amazed at the collectors who pry the much thought after plecos from crevices in the strong current. Their tools are a small stick, a plastic bag, masks and a flashlight. The water of the Orinoco is too murky to see much fish beyond a foot from ➡

Starry night ottos are certainly a very beautiful new introduction to the hobby. This is a typical pose in an aquarium since they love sitting upside down under a piece of bogwood

Captive care of Starry night ottos

As would be expected when you consider their natural habitat, Starry night ottos are not the easiest of fish to adapt to aquarium conditions. Indeed they have turned out to be fickle fishes that in less than ideal conditions are sensitive to whitespot and other diseases. Given an aquarium with very good filtration that produces strong water movement and additional aeration they will, however, live long and happy lives. Since algae and the organisms that live on and among it are this fishes primary source of food, good lighting which will promote algae growth is essential. Pieces of bogwood and tree branches should also be included in the set-up and some areas of plant growth.

Uaru habitat data

Temperature:	30°C
pH:	5.2
Conductivity:	36 MicroSiemens
GH:	1.0
NO_3:	0.0
Clarity:	under 2 meters
Iron:	not measurable

Other cichlids in this habitat:
***Heros* sp. yellow**
Cichla orinocoensis
***Aequidens* sp. "large"**
***Aequidens* sp. "Mouthbrooder"**
Crenicichla regani
Apistogramma cf. uaupesi
***Crenicichla* sp. "red lugubris type"**
Satanoperca daemon
***Laetacara* sp. "orangefin"**

Uaru fernandezyepezi was Oliver's main reason for going to the Orinoco

Green pleco's (L200) in a holding pen

your mask and I was happy to see a fish after feeling around in dark water at a depth of around 12 feet. The fishermen do not move around much and the small camps are quite successful without having to move, which leads me to believe that the pleco populations are quite large. Most exciting was the discovery of a small number of *Lasiancistrus tigrinus* among the hundreds of various other plecos. This small but beautifully coloured Loricariid would make a beautiful aquarium fish. The transport of the plecos turned out to be difficult as the fish would quickly run out of oxygen in our boxes and water would have to be changed constantly.

Starry nights

The sidearms and small rivers that flow into the Orinoco are often clear water streams with lush forest at their sides. The bottom is a fine sand and fallen trees and some small patches of fallen leaves, where the current has not swept them away. The water in the streams is clear enough for snorkeling and observing *Aequidens* and *Apistogramma* with their fry in the shallows. The dominant Loricariids here are various brown *Lasiancistrus*, *Farlowella* and some *Hypoptopoma*. It came as a great surprise when we had the first Starry night ottos *Parotocinclus eppleyi*. These must be one of the most beautiful Ottos yet imported for the aquarium hobby.

This species of catfish sit on branches and fallen trees in the strong current, often directly under the surface rasping the thin growth of algae. Once we identified the areas the Starry night ottos preferred they turned out to be the dominant Loricariid in the habitat. In half a day more than 200 of the small catfish were collected , together with *Hypoptopoma*, *Farlowella*, *Apistogramma* spec. "Fourstripe" and two species of Darter tetras, *Melanocharacidium dispilomma* and spectacular bright green *Ammocryptocharax elegans*.

Last bastion of civilisation

The Atabapo river is radically different from all other habitats we visited. The water is true black water: tea stained, clear but with low visibility. The round, moonscape rock formations of the Orinoco give way to white silica sand beaches and the jagged, sharp rocks along the Atabapo. The white sandy beaches have a good number of stingrays (mostly *Paratrygon*) that can be observed in shallow water. One day's journey from the town a small outpost on the Colombian side is the home of Don Carlos, a Colombian who has fought in the Korean war. Carlos is the last bastion of any civilisation on the river. His store trades palm fronds, canned goods, cold beer, chickens, ammunition, diapers, condoms and just about everything else with the boats heading up and down river. For the past 30 years he has been living here by himself like Robinson Crusoe. Our boat crew traded less than fortunate turtles (a popular dish for the local Indios) for canned sardines and batteries.

The Atabapo forms the border between Columbia and Venezuela along this stretch and it is a nervous place, manned by government soldiers only on the Venezuelan side (the Colombian army has conceded this area it seems). After a four day journey we reached the Rio Temi. This small river is the best place to collect the *Uaru* and while the fish are not plentiful we managed to catch several dozen animals in two nights. Here, the *Uaru* pairs lead their fry to forage among the roots of larger trees and in the leaf litter. Snorkeling at night turned out to be the best way to catch the cichlids, surprised by the light of the flashlights. It was the first time the fish could be observed in their natural habitat, and photographed under water. ■

Want to visit?

Colombia has had a very checkered political history. By 1903 it had already suffered 27 civil wars and democratic governments have always been fragile to say the least. Coffee amounts to about half its official exports, however, illicit cocaine amounts to much more. The government is trying to suppress the aggressive drug cartels but the scale of the problem makes this a battle they are almost certain to lose. Contact the Foreign Office for advice about travelling in this part of the world.

Thanks

I would like to thank Roland Numrich of Mimbon Aquarium in Cologne, Germany and Ricardo and Humberto for some great company and fish collecting during our stay on the Orinoco.

Blockbuster 2001

Whether it be marine, tropical or coldwater, all areas of the hobby were well catered for

LAST ISSUE WE asked for your views on Aqualife 2001 and have had a tremendous response from you. Here are a selection of some of them.

Tom Beaston, from Cumbria writes:

Having attended a number of aquatic exhibitions in the past and not been very happy with the general standard, I have to write in and say well done Shirley's. The exhibition had everything I could want from a fishkeeping exhibition. Plenty of furnished aquaria were on display giving me ideas for my own tanks and after a short bus ride I had a chance to visit a very good aquarium shop. A wonderful day out and I am already looking forward to the next one.

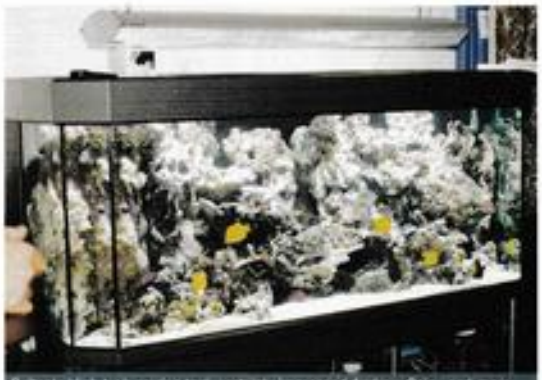
Norman Franklin from London writes:

After something of a nightmare journey up to Birmingham I was looking forward to a long cool drink in what I hoped would be an air-conditioned bar before looking round the exhibition. Sadly the air-conditioning didn't seem to be working in most of the building and I didn't find the bar for over 2 hours. That gripe aside I was really pleased with the standard of the show and felt the trip well worth it. I had a chance to talk to someone from the company who made my filter that I have been having problems with and they explained where I had been going wrong.

Carl Thompson from Manchester writes:

Aqualife 2001 was brilliant. I spent ages talking to everybody there and didn't leave until nearly closing time on Saturday. Ian Fuller's


The touch pool with a stingray in it was really popular. This was lit by one of Arcadia's new pendant lights



Deltec's high tech marine tank certainly impressed Andrew Caine and many others who visited their stand

"I thoroughly enjoyed Aqualife and look forward to the next one"

lecture was great and confirmed my opinion of him as a REAL catfish expert.

Peter Brooke from Amersham writes:

As a Koi enthusiast for many years who has just decided to branch out into marines, I found Aqualife 2001 a real eye-opener. Thanks to the advice I got at the show, I am now planning to buy a proper systemised marine tank rather than trying to convert a freshwater set-up that is not designed for marines. It will cost more but I am assured it will work much better in the long run.

Jim Taylor from Leeds writes:

I attended the exhibition and have to say I was rather disappointed. Koi were well represented, but Goldfish almost not at all and where were the tropical clubs and specialist societies? I know you had a few next to your stand but otherwise I didn't see any others. Also there were almost no unusual or show standard fish on display at the show. The saving grace of the whole thing was the lectures and general high standard of the displays. I shall be back next time but would really like to see more hobby involvement and possibly a proper goldfish and tropical fish show as well as Koi.

Every aspect of the set-ups were under scrutiny by the visitors. These visitors were checking out the external power filter in this set-up

Andrew Caine's view

I was really looking forward to this event, a chance to view a vast range of products from aquatic manufactures, have a look at the wonderful, valuable koi that had my father clutching his wallet in disbelief and not at least a good excuse to see Derek and the *Today's Fishkeeper* team.

From a purely marine view what I did see had me soaring to the sky with excitement. The two stands that caught my interest the most were Aquamedic and Deltec, both German companies with a high tech viewpoint on marine aquatics. Both stands proved very popular with the crowds as I had to make way for enquiries after only a few minutes chat.

The Aquamedic stand was full of equipment from the giant turboflotter 5000 skimmer to its range of marine additives and reef salt. The two items that caught my eye were the small nitrate reducer and calcium reactor, both able to fit neatly into a sump system. If they work as good as their larger counterparts then they would be a very good addition for the smaller aquarium, I look forward to a closer look.

Deltec showed a range of skimmers that I am currently looking at, but their main piece of equipment was a very large marine aquarium with a very high tech filtration system, boasting calcium reactor and chiller all within the cabinet.

Moving to lighting, the range of metal halides from Giesemann was very impressive, a very high quality unit with a high price tag to match. Arcadia were also there with their range of trusted tubes but also on display was a new halide that boasted twin 150w bulbs and blue lamps, with an inbuilt timer. It looks a good unit at a reasonable price, again I hope to report on this unit soon.

I thoroughly enjoyed Aqualife and look forward to the next one.

With all the manufacturers under one roof visitors could see the full range of products before deciding to buy. This couple were looking for a new aquarium but wanted one to fit into the room's decor

tropical | marine | coldwater & ponds | plants | regulars

Window on GLEE

GLEE is the trade exhibition in the UK where more new products are launched than at any other event of its type. Next month we will have a full list and details of the more important launches but here is a taster of the new products from Nishikoi that will have their first airing at this exhibition

Over 18,000 people from all areas of the garden and leisure industry attended GLEE last year

NISHIKOI

NISHIKOI ARE WELL established in the Koi world and have recently been branching out into a whole range of products for ponds, coldwater and tropical fish. Usually they would be launching just a couple of new products at GLEE but this year they have really gone to town and probably have the largest number of new products of any exhibitor. Of these the Nishikoi Niigata range is probably the most significant. These aim to be a new generation of high quality products for koi keepers.

Two new ingredients

Niigata Elite Koi Food aims to promote vigorous growth, vitality and coloration in koi. Two recent advances in fish nutrition research have been included in Niigata Elite that activate the immune and colour systems in koi.

A. Marigold Meal: Contains substantially more carotenoid pigments than spirulina and offers improved colour enhancing properties.

B. Nishi-Guard: A 2-way immuno-stimulant for enhanced resistance against disease.

1. Enhances white blood cell (macrophages and neutrophils) within koi tissue that engulf and destroy invading organisms.
2. Directly interferes with the ability of pathogenic bacteria to attach to koi tissues, preventing the initiation of infection.

Blank-kit Excel

Blanc-Kit is currently the market leading algicide in the UK and has the reputation of being one of the few which really work. Blanc-Kit Excel is an alternative method to blanketweed control and is launched as a stable mate to Blanc-Kit. That is where the similarity between the two products ends. It works in a completely different way to Blanc-Kit, inhibiting blanketweed growth in a way that is completely environmentally friendly and harmless to all pond fish and other pond plants. Water that is treated with Blanc-Kit Excel is safe for animals that may drink from the pond and is harmless to beneficial filter bacteria.

Introducing 'Nishi the fishy' Goldfish flake

Nishikoi also have a new goldfish flake in unique clear miniature 'goldfish bowl' style packaging. Manufactured from clear PET, each 'goldfish bowl' containing goldfish flake (20g) is foil sealed with a re-sealable domed lid, designed to make the pots stackable. The product labelling includes an integral, removable self-adhesive sticker featuring 'Nishi The Fishy' which can be removed from the lid. Should be a hit with the kids - of any age!

Whistling wonder

Today's Fishkeeper has been researching a new type of pond filter that will receive its official launch at GLEE - the UK's largest aquatic trade show

THE WORLD OF koi pond filtration is just about to be turned on its head! Gone will be the days of huge filters about a ⅓rd the size of your pond to be replaced by what can only be described as a whistling wonder. Here we let Anne and Andy take up the story because they have been using the filter for some time now.

Anne & Andy's story

My husband, being the larger than life man that he is, decided to construct a Koi pond! 25' by 12' by 5'. Me being the silly twit that I am, let him. As with most new enthusiasts, we promptly stocked the pond with fish and ended up with 19, all of various sizes. The weather was warm and sunny and the gluttons ate like pigs for a couple of weeks. Due to this and the now obviously insubstantial filter, the ammonia levels were soon rising rapidly. Ulcers started to appear on a good majority of the fish and the water was beginning to look like pea soup. We began to panic as what was supposed to be a relaxing hobby began to turn into a bit of a nightmare.

After a visit to D.K.S. it was a toss up between adding a fluid bed filter to our existing chamber, or going the whole hog and splashing out on a Bubble Bead filter (at the time it was still in the development stages). We didn't know very much about these so Andy and Darren explained how they work. We took a deep breath, forgot the bank balance, and ordered a BBF 5 Bubble Bead filter. It subsequently arrived, looking like something from a sci-fi movie, and during installation there was much giggling from beyond the neighbours' fence and our kids lost all faith in their parents' sanity. I was thinking "How is this strange looking, unconventional, plastic hourglass going to sort out our more than poorly fish and how am I going to blend it into the garden?"

Installed in half a day

My competent husband had the filter installed and working in half a day. We boosted the biological filtration by adding bugs to the pond water. By this time the ammonia levels were around 5.0 and the nitrite was getting on for 4.0. We had lost five fish and the ones that were left were in various states of poor health.

During a week of heartache and sleepless nights we noticed that things started to improve. After four days the ammonia readings had dropped to 2.0 and the nitrite had stabilized. The water was beginning to clear. Our fish were looking much more interested in life and starting to eat more normally. Ulcers were not red and inflamed anymore. Now, after only five weeks, both the ammonia and nitrite levels are at 0, the fish are growing like mad and the water is absolutely clear. Jaffa, our full of character Chagoi, is now eating half an orange a day and all the Koi are hand tame again.

The whistling wonder

Back washing the beads automatically cleans them everyday

Andy (with Anne in the background) feeding the koi that are now well on the way to being healthy again. The upper pond and waterfall are work in progress

Cleaning and maintenance

All we have to do to clean the filter now is backwash the system by turning the pump off for 10 minutes every day. The beads can be heard bubbling around the chamber as they are washed and the dirty water is flushed to waste, watering our garden (another job saved). The pump is turned on again and the filter is clean. The only energy used on our part is to flick the switch on the pump. We did get a slight shock the first time we back washed as it makes an amazing noise when starting up again, rather like an elephant with indigestion!

Letters

Today's Postbag

star letter

I am a new fishkeeper and set up my tank with a simple assortment of goldfish and I have had so much enjoyment from watching them. It's the most relaxing hobby for me as I am disabled and spend a lot of time lying watching my tank.

I was worried when I began to hear a sharp click on a frequent basis, so I watched and waited for the next one. At first I thought that the tank was going to crack, but then I saw that the largest fish was flicking the tank thermometer with his tail. I moved him into a different tank for a time as an experiment. However, on his return he began it again. Now I have six fishes who all play in the same way, often forming a queue in order to do it.

So, when someone tells me that fishes have a memory span of seconds I can tell them how wrong they are. Keep up the excellent magazine that I now take regularly.

Gill Utting,
Gosport, Hants

Thank you for your letter. It's often the beginner who notices important details that the advanced hobbyist quite often overlooks. Have other readers closely observed their fish and noticed details that would be interesting to others? – Ed

Share your news, views and experiences through *Today's Postbag*. Every month the star letter wins a prize worth £25 - all for the price of a 27p stamp or an e-mail

Spare fish

I have some F1 *Melanotaenia splendida inornata* rearing up at the moment, do you know of anybody around the country that, once older would be after some? My phone number is 01902 372945 and I am around the Telford/Wolverhampton area.

John Harry

Discus fry food

Dear Derek,
I am e-mailing you regarding the article in last months *A&P* regarding the various ways of rearing Discus fry by Tony Sault. I was very interested in the fry food pictured in this article. Can you tell me what the brand name is and also where I can obtain it? I live in the Isle of Skye.

Keith Macleod, *via e-mail*

The fry food pictured is a high protein food for rearing freshwater fish fry. It is called Food U and manufactured by A.B. Aqua medic. For more details of a stockist near you Tel 0845 090 3500.

*– **Derek Lambert***

Food U is produced by A.B. Aqua Medic

Sad and Glad

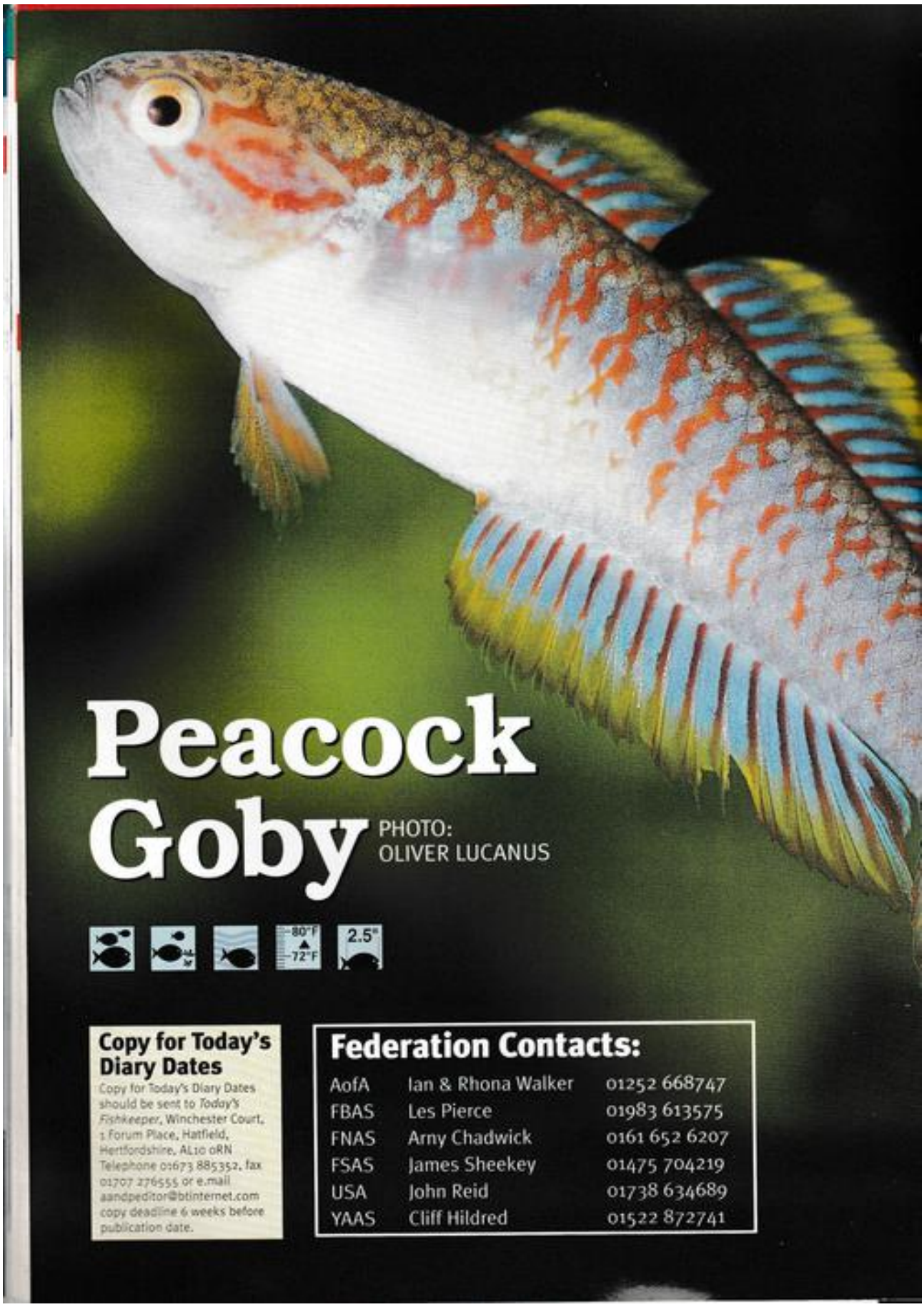
I am so sad to read that *Aquarist and Pondkeeper* is changing its name. It has been a constant companion throughout my 40 years of fishkeeping and I never thought to see the day that it would change its title. Reading your editorial I can understand why it has to happen, our language has changed (generally not for the better) and people simply don't understand what an Aquarist is these days. However, I do understand what an Aquarist is and that is what I will always be, never just a fishkeeper. Despite this I will continue to subscribe to *Today's Fishkeeper* because I am sure the spirit of *A&P* will live on in it.

Peter Shaw, *London*

Thank goodness for that! What such a fantastic, up-to-date fishkeeping magazine was doing with such an outdated title I will never know. I couldn't even say the word 'Aquarist' let alone understand it. It was purely by chance that I even picked it up in the first place. I was moving it out of the way to get to a copy of the magazine I used to buy and took a quick look inside. I was hooked. With a title like *Today's Fishkeeper* I am sure you will go from strength to strength.

Alan Fuller, *Peterborough*

Some readers are sad at the change in title, others are glad about it



Peacock Goby

PHOTO: OLIVER LUCANUS

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 01673 885352, fax 01707 276555 or e.mail aandpeditor@btinternet.com copy deadline 6 weeks before publication date.

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USA	John Reid	01738 634689
YAAS	Cliff Hildred	01522 872741

Today's Diary Dates

October's show, auction and club meeting dates

Mon 1st	**Kirkcaldy AS meeting** Contact 01738 634689
Tues 2nd	**Gloucestershire Fishkeeping club meeting** Contact Caroline 01453 824810
	Southend & Leigh meeting Contact 01702 305740
	Preston & D.A.S. meeting Contact 01772 32114
Wed 3rd	**Corby & DAS. meeting** Contact 01536 761736
	Oasis Fish Club (Sunderland) meeting Contact 0191 384 1433
	Hounslow club meeting Contact 01784 259230
	Perth A.S. meeting Contact 01738 621704
	Clacton Fish Keeping Club meeting Contact 01255 428065
	Workington A.S. meeting Contact 01900 67951
	Portsmouth A.S. meeting Contact 01673 885352
	Merseyside Aquarist Society meeting Contact 0151 201 5969
	Thameside A.S. meeting Contact 0161 339 6593
Thurs 4th	**Faircity A.S. meeting** Contact 01738 561291
Fri 5th	**Basingstoke A.S. meeting** Contact 01256 467889
	North West Cichlid Group meeting Contact 019422 707593
Sat 6th	**Goldfish Society G.B. Open show & Auction** Contact 01472 353615
Sun 7th	**Halifax AS Open show & Auction** Contact 01422 257739
	Grangemouth A.S. Open Show Contact 01342 713558
	Basingstoke A.S. Open Show Contact 01256 475751
Mon 8th	**Kirkcaldy A.S. meeting** Contact 01738 634689
	Ilford & D A&P Society meeting Contact 020 8550 7329
	Bristol Aquarist Society (Goldfish) meeting Contact 01792 207467
	Grimsby & Cleethorpes meeting Contact 01472 349178
Tues 9th	**Dunstable & D.A.S. meeting** Contact 01582 707280
	Greenock D.A.S. meeting Contact 01475 704219
	York & D.A.S. meeting Contact 01904 414272
	Telford & DAS meeting Contact 01952 409721 or 01952 616410
Wed 10th	**Linlithgow Aquarist Society meeting** Contact 01506 510558
Thurs 11th	**Mid- Sussex AS meeting** Contact 01273 602407
Fri 12th	**Yorkshire Cichlid Group meeting** Contact 01924 367086
Sat 13th	
Sun 14th	**Washington A.S. & P Open show & Auction** Contact 0191 416 7292
	Doncaster A.S. Open Show Contact 01302 787694
	A.S.A.S. Open Show Contact 01983 613575
	F.S.A.F & SAIF Supreme Championship Open Show Tel: 01475 704219
Mon 15th	**Kirkcaldy A.S. meeting** Contact 01738 634689
Tues 16th	**Southend & Leigh Club meeting** Contact 01702 305740
Wed 17th	**West Yorkshire Marine Aquarist Group meeting. Alf Nilsen's Lecture** Contact 01924 420101
	Merseyside Aquarist Society meeting Contact 0151 201 5969
	Clacton Fish Keeping Club meeting Contact 01255 428065
	Tongham Aquarists Society meeting Contact 01252 25686
	Portsmouth A.S. meeting Contact 01673 885352
	Thameside A.S. meeting Contact 0161 339 6593
Thurs 18th	**Bristol Tropical Fish Club meeting** Contact 0117 973 2145
	Faircity A.S. meeting Contact 01738 561291
	November *TODAY'S FISHKEEPER* on sale
Fri 19th	**Basingstoke A.S. meeting** Contact 01256 467889
	Festival of Fishkeeping & Water gardening weekend
Sat 20th	**Festival open to Day visitors**
Sun 21st	- - - - - Contact 020 8847 3586
	Catfish Study Group meeting at St Elizabeth Parish Hall, Aspull
	Merseyside Open Auction Contact 0151-280 5969
	West Cornwall A.S. Open Show Contact 01736 763712
Mon 22nd	**Kirkcaldy A.S. meeting** Contact 01738 634689
	Thorpe & D.A.S. Club meeting Contact 01953 605394
	Grimsby & Cleethorpes meeting Contact 01472 349178
Tues 23rd	**Lincoln & D. A.S. Club meeting** Contact 01522 880863
	Greenock D.A.S. meeting Contact 01475 704219
	Greater Manchester Cichlid Society meeting 01422 842155
Wed 24th	**Workington A.S. meeting** Contact 01900 67951
Thurs 25th	**Mid-Sussex A.S. meeting** Contact 01273 602407
Fri 26th	**Eastbourne & District Pondkeeping Club meeting** Contact 01323 731369
Sat 27th	
Sun 28th	**Caer Urfa A.S. Auction** Contact 0191 469 2809
	Preston & D.A.S Autumn Auction Contact 01772 321145
Mon 29th	**Kirkcaldy A.S. meeting** Contact 01738 634689
Tues 30th	
Wed 31st	**Merseyside Aquarist Society meeting** Contact 0151 201 5969
	Thameside A.S. meeting Contact 0161 339 6593

Meet Alf

WYMAG have invited Norwegian marine expert (and *Today's Fishkeeper* columnist), Alf Nilsen, to lecture at their meeting on Wednesday 17th October. This is a rare opportunity to meet one of Europe's foremost authorities on Marine fishkeeping. The meeting will be held at the Bruntcliffe Working Mans Club, Morley, Nr Leeds. Admission £3.00 and non-members are welcome. Contact Roy Meeke for further details on 01274 611822.

Mr & Mrs Mugford receive the Fish of Fishes award

Fish and fun in Bradford

THIS TWO-DAY EVENT organised by the Yorkshire Festival committee was very low-key this year. There were stalls with fish, snakes and numerous other goods for sale. Aquarian represented by Dr. David Ford and Dr. Peter Burgess came along with part of their impressive stand. David and Judith Kershaw had a stand selling old literature and their snakes. Clubs put on their stands, Ian Fuller came along with his Catfish display and Brian Walsh from F.N.A.S. had a stall for his wood carvings. There was a small fish show that included the Fish of fishes contest for the Best in show winners throughout the past year.

Although the Saturday night barbecue took place in the rain the spirits of all who attended were not dampened. Brian braved the weather to be the cook for the night and while he was outside with the barbecue we were all inside warm and dry. I suppose Brian is used to the damp Lancashire weather in his home county.

Y.A.A.S. would like to thank all those who gave this event their support.

Champion of Champions

IN 1967 THE Aquarist and Pondkeeper (Now *'Today's Fishkeeper'*) announced the launch of the Champion of Champions Contest, as *"For the first time in the history of Fishkeeping in this country, a competition is to be held to decide the Champion fish of the shows. The entries will come from winners of the 'Best Fish in the Show' awards, that are included in the open shows now being held, and will be automatically eligible to enter for the 'Champion of Champions' contest that will be held in conjunction with the British Aquarist's Festival"*

This contest still continues today and is now open to the first three best in shows at each show, and there are separate Tropical and Coldwater Contests. The Contests will now be held as one-day shows. The Tropical Contest on Saturday 3rd November and the Coldwater Contest on the Sunday. Further details of the Champion of Champions, and details of the British Aquarist's Festival can be obtained from A Chadwick, 9 Bromville Close, Chadderton, Oldham OL1 2RH Tel. 0161 652 6207 or E-Mail arniechad @btinternet.com

Product reviews

Eheim's Professional II external power filter receives its final review and Hagen's new Fluval 2 plus receives its initial review

Professional II external power filter

IN FEBRUARY WE set up Eheim's new Professional II external power filter on a 6ft Wild Discus and Angel tank. Now over six months on we have a much better idea of how this piece of equipment will function long term. At first sight we said it was very easy to set up and maintenance looked to be simple. Living with the filter for all these months our views have not changed from those we formed right at the outset.

Cleaning out has proven quick and simple, with the hoses being easy to remove and the main filter compartments lifting out into a bucket ready for cleaning. Eheim's high quality media means that the filter has performed very well throughout and is well worth the extra money it costs to buy. All in all an excellent filter which justly deserves our Gold Star award.

Fluval 2 Plus

HAGEN HAVE BEEN revamping and improving their whole range over the last year or so and as part of that on-going program their very popular range of internal power filters have now received a make over. This model (which replaces one of the biggest sellers in the market place) has a new clogging / flow rate indicator which warns that the filter has become clogged or that the flow rate has been reduced. It now has an opaque body to protect the beneficial bacteria inside the filter from light and the stainless steel impeller shaft can be pulled easily and safely from its chamber.

Apart from these the horizontal water outlet with simple to use adjustment lever giving 90° directional flow enables the filter to be positioned on any wall of the aquarium. Most importantly it has a variable flow rate which means you can reduce the flow for fish which don't like living in a whirl pool! It attaches securely to the side of the aquarium with three suction cups on a removable bracket, enabling the body of the filter to be detached from the motor head for easy maintenance. It comes supplied with additional airflow control device to obtain the 'venturi effect' and allows an optional extra - all Fluval Plus models allow the connection of a flexible hose.

The foam cartridge slides easily out of the filter body and separates into two pieces to hold two standard foams with either a polyester or carbon foam in the centre. This means you can clean one side at a time.

It looks like Hagen have made a number of real improvements over the original Fluval range and we look forward to being able to give this filter a favourable report after its full product test has been completed.

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New Rainbowfish

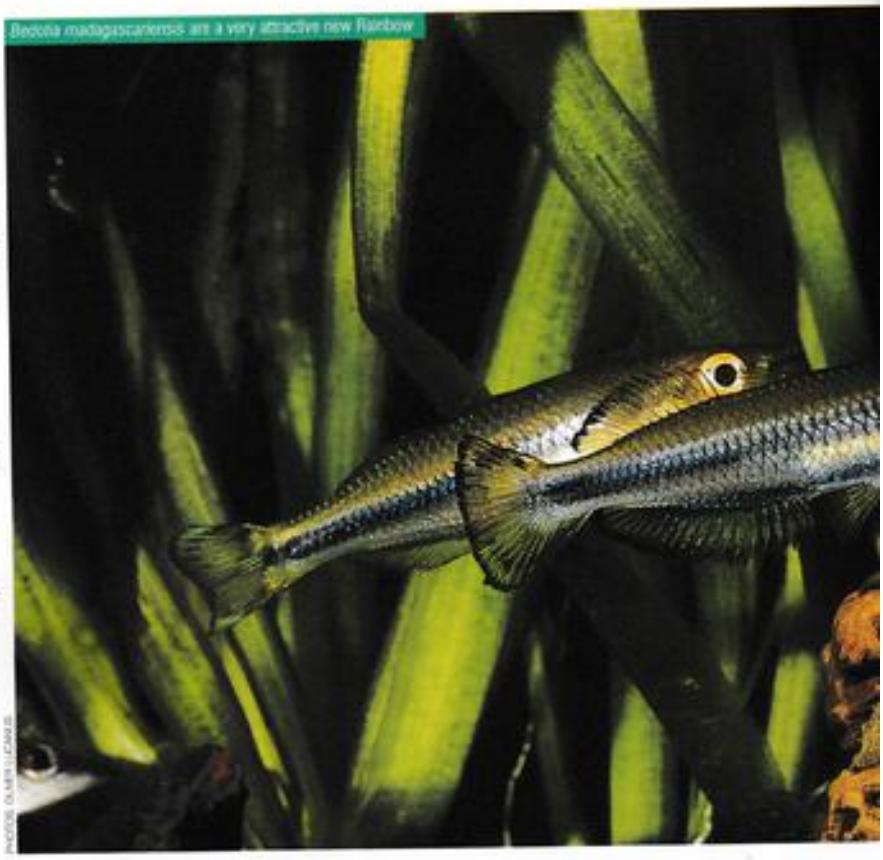
The range of Rainbowfish available to the hobby has grown hugely in recent years. **Pete Liptrot** was one of the first to keep and breed *Bedotia madagascariensis* - but this new introduction is ideal for beginners as well as advanced aquarists. Pete takes up the story

THE GROUP OF fishes commonly called the Rainbowfishes actually comprises of a diverse collection that originate from a wide area of the world. Among these is practically the only fish from Madagascar that was well known in the aquarium hobby, *Bedotia geayi*, known sensibly enough as the Madagascar Rainbow fish. Anyone determined enough to search the scientific literature, however, would have noticed that there are actually other species in the genus *Bedotia*.

Difficult place to collect

Because of the logistics of getting to Madagascar and bringing live fishes back these were mostly known only by line drawings, until recently. As greater awareness developed of the huge environmental pressures being faced by the flora and fauna of the island, certain determined scientists and aquarists started making journeys there. As a result of this some species have been brought back to act as founder populations in the event of their extinction.

One of these was a fish brought back as *Bedotia longianalis*, but recent research has suggested that these are in fact *Bedotia madagascariensis*. There was a total of four species in the genus, but it has now been shown that two of these, *B. longianalis* and *B. tricolor* are not valid species.



Bedotia madagascariensis are a very attractive new Rainbow

PHOTOS: OLAV LEMKE

Aquarium conditions

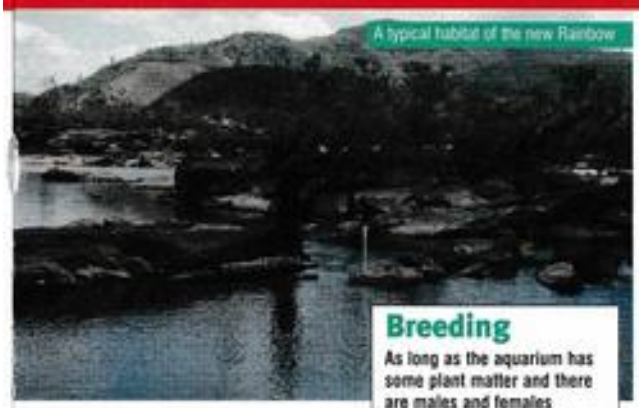
These are wonderful fish for the larger community aquarium. They have the potential to reach nearly 6" (more usually 4") and so should not really be considered for an aquarium less than 3' in length.

They seem to be content with a fairly wide range of water parameters, between pH 6.5 and 7.5 suits them admirably. The hardness would not appear to matter, but some buffering would be better to help maintain stable conditions. Temperature can range from about 70°F up to 82°F, but somewhere around 76°F would seem to be optimal. These are fish that are fast active swimmers, and if the water is too warm it could result in problems of lowered dissolved oxygen.

Large partial water changes should be carried out on a regular basis to ensure dilution of nitrogenous waste products, and the filtration should be efficient. If the filter produces a good water current they seem to appreciate this. This is probably because they are often found in shallow flowing streams in nature.

These fish enjoy their food! Feeding is not a difficult task, all good quality dry foods should be accepted. In spite of their mouth shape showing that they are very much adapted to feeding at the surface, they will quite happily take food aimed at other fish from the bottom, and they have even been seen feeding, albeit clumsily, on courgette aimed at some Ancistrus catfish in the same aquarium.

Frozen foods should also be offered on a regular basis, these will help to condition the fish for spawning. If live foods are available these will be certainly enjoyed, insects such as small crickets or fruit flies being probably very similar to a large part of their natural diet.



A typical habitat of the new Rainbow

Breeding

As long as the aquarium has some plant matter and there are males and females present, there will probably be some spawning taking place, but as soon as the fry hatch they will probably be eaten by the adults, even if the eggs do not get eaten by the other fish in the tank. To breed them deliberately it would probably be better to set up a 10-20 gallon tank with clean water at about 78°F, a mature sponge filter, some Java moss or spawning mops and a lid.

Introduce a couple of pairs. The males have longer, more colourful fins, and are often larger. Their snout may also appear relatively longer compared to the total length of the fish. After five days remove the adult fish, and start watching the water surface for young after the 6th day. These are large fry by usual Rainbow fish standards, and will enthusiastically take newly hatched Artemia nauplii. If these are not available then prepared fry foods and micro-worm will suffice, but growth rates will be unlikely to be as high.

They do grow quickly and can very soon be moved onto crushed flake foods, and fine frozen foods. Ensure the water quality is perfect at all times, they are particularly susceptible as fry to any deterioration. Careful water changes and good filtration are required, but the water flow should not be so great so as to cause the young to burn up resources that could be used for growth. Once the young reach about 1.5" they can be placed in with the adults (tank space allowing) or you should not have any trouble finding a dealer willing to exchange something for them.

Pete's practical tip

These fish can jump well so keep the aquarium well covered with a tight fitting cover glass.

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Sea view

This month **Andrew Caine** reviews a new product and has a fish and invertebrate worth making room for

Calcium reactors within a marine filtration system are essential to an aquarium containing a high amount of live rock, clams and hard corals. This single piece of equipment allows a stable and high calcium content within the aquarium.

The CO_2 that is injected into the reactor, however, reduces the pH of the water from 8.2 to 6.0 and then is allowed to react with the media and release calcium. The out flowing solution back into the tank is of a high calcium content but has a low pH of about 6.0.

The result is a trade off between the two, high calcium at a cost of low pH fluid into your aquarium. We then have to take steps to raise and stabilise the pH within the tank. To find a media which would allow the reaction to take place and release calcium into solution at a higher pH range would, therefore, be a big break through in the general control of marine water pH. This is what Rowadur is supposed to do.

The test

The aquarium we used to test this new product on was a 750 gallon marine system containing a large amount of hard corals. Using a calcium reactor with automatic pH control, the system had been working brilliantly with a calcium output of 530ppm at a pH 6.0 giving a constant reading of 520ppm in the system. Five litres of Rowadur media was introduced to the reactor and we altered the pH controller to introduce CO_2 at a pH 7.5 and to cut off supply when the pH fell to 6.5 within the reactor.

The results were quite outstanding. The fluid within the reactor falls to a pH 6.5 over a period of 30 minutes, the pH then rises to 7.5 at which point an injection of CO_2 occurs and the pH drops back down to 6.5. This relatively high pH allows calcium to be released from this media into solution and return to the main tank.

The results

Over a period of 2 months we have had a solution dripping from the reactor with an absolutely constant calcium level of 560ppm at a pH ranging from 6.5 to 7.5. So how has this effected the total pH control on the system? Kalkwasser dosing to maintain the systems pH has dropped by 79% with a pH fluctuation of 0.1 over 24 hours and a stable calcium level of 560ppm allowing good growth of all hard corals. The other added bonus has been a vast reduction of CO_2 consumption.

The total amount has not been measured, however, I can report a major reduction.

Tubastrea need high levels of calcium to thrive in captivity

PHOTO: OLIVER CAINE

Our opinion

Rowadur calcium reactor media has certainly lived up to its specifications. By reducing the amount of Kalkwasser and CO_2 used in the aquarium it has helped save money and increase the level of Calcium within the system. For this reason we are awarding it our highest award of a gold star. We would like to thank Mr Mark Howarth for his assistance and allowing this test to take place on his fantastic marine system.

	reactor pH	Calcium Production	Calcium in System	CO_2 Consumption	Kalkwasser Consumption
normal media	6.0	530ppm	520ppm	high	100%
Rowadur	6.5 - 7.5	560ppm	560ppm	low	21%

Contact information and price

Your local stockist can obtain it from D & D Aquarium solutions on 020 8561 2492. There is no RRP on this product, however, expect a price of around £47.00

Marine fish

Teardrop tang (*Acanthurus achilles*)

It isn't hard to see where this little beauty gets its common name from, due to the orange teardrop coloration terminating at the caudal peduncle (the base of the tail), however this beautiful coloration is a sinister warning. As with all surgeonfish, located at this point is a lethal weapon in the shape of a razor sharp barb, or scalpel, hence surgeonfish. This is a weapon they can and will use to great effect. Any other *Acanthurus* species will not be tolerated in the same aquarium and often will result in the death of one, often sliced apart.

Again with many *Acanthurus* species they will not tolerate stress from any quarter, that is tankmates, water quality or even the wrong feeding. Any degree of stress often results in the dreaded whitespot, and a very worried owner if in a reef system. Even a healthy animal introduced to your aquarium can fall victim. With all this doom and gloom you can keep one successfully if you take the right steps.

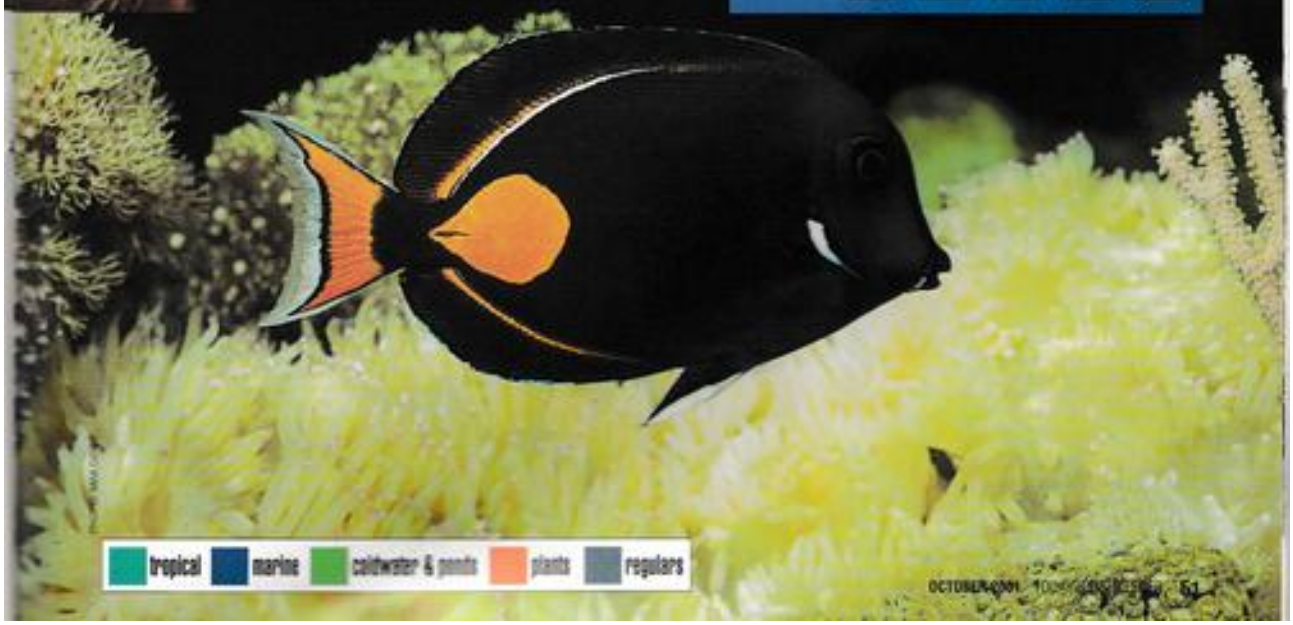
You will need a large aquarium with a minimum capacity of 77 gallons (350 litres) with plenty of open swimming space as with most tangs they never seem to stop swimming. The water quality must also be of the very highest quality and the aquarium decorated with liverock. Wait until your aquarium is over six months old before you stock it with this species. When you have sourced a healthy fish introduce it to a quarantine tank for two weeks and treat it with a course of whitespot medication as a preventive measure. Give it plenty of algal based food at least four times a day and fatten it up ready for introduction to your main tank.

The mature live rock and feeding 3-4 times a day is very important. This animal is a herbivore and has a basic digestive system, that is the food through put rate is very fast in relation to a carnivore, who retains the food for greater assimilation. The tang will process food very inefficiently and a great amount of sustenance is wasted, so you have to feed regularly and the mature live rock will give it plenty of grazing opportunities.

It's a great fish, commands quite a high price tag, but is not that hard to keep if you stick to the rules and do a bit of reading before making the investment. Go on enjoy one.

PROFILE

Family	Acanthuridae
Name	*Acanthurus achilles*
Natural habitat	Indo pacific
Feeding	Algal based flake foods, fresh macro algae, small meaty foods.
Reef compatibility	Recommended, can nip at polyps but this is often a bi-product of grazing over the rocks.
Tank mates	Peaceful fish
Difficulty	Moderate, requires good water in a mature tank, plenty of algal foods, if stressed it is prone to whitespot



Marine invertebrate

Purple acropora (*Acropora tenuis*)

Oh the mighty one, Oh the great exalted ones, Oh the acropora, Oh to keep one alive and even better watch it grow, Oh the impossible, Oh what dated attitudes.

Lets re-wind to twenty years ago when the above was quite correct, and it was nearly impossible to keep a single piece alive, to attain growth was out of the question. 15 years ago pioneering work was in place and a few esteemed aquarists were keeping them and even growing them. Five years ago more and more people were taking the plunge due to all that research. Now anyone with marine experience and the correct equipment, who wants to keep them and grow them, can do so.

This SPS Coral (small polyped stoney coral) will thrive and grow rapidly under strong halide illumination, fast water flow with high levels of calcium, iodine and strontium. If any of the coral's requirements are not met it will bleach (lose all its symbiotic algae) very rapidly and die. The secret to this coral and all SPS corals is **excellent and stable** water conditions. They will also bleach due to light shock, so when adding one do so with blue lights on only and place it at the bottom of the aquarium, over a period of days slowly move the coral up the rock work until at the top, where it can be glued into place.

A word of warning, any acropora can change colour when placed into the aquarium. A purple one can go brown and visa versa, when growing it can change shape due to the new conditions, so with this ability to change shape and coloration how can we name the species? The only true way is by scientific examination of the corallite - the little cup where a single polyp lives - this has a species distinct pattern very much like a fingerprint. So do not be fooled by anyone telling you the species name, unless they have the proof.

Acropora are not the be all and end all of corals, but they are a fantastic sight to behold in the aquarium.

PROFILE

Phylum	Cnidaria
Name	*Acropora tenuis*
Natural habitat	Indo-Pacific
Feeding	High light levels and very small particle suspension food.
Size	The fastest growing hard coral. Over 4" (10cm) per year has been recorded, only the water surface will stop this from growing. In the wild the size is governed by the water surface and breakage due to storms.
Water flow	High
Lighting	Metal halide
Difficulty	A hard coral to keep in the past, now with the right equipment it is not as difficult. Nevertheless it is only suitable for the experienced aquarist.

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TROPICAL FISH

Pearl Gourami (*Trichogaster leeri*)

By Richard Friend

Honey, Thick-Lipped, Banded, Moonlight, Snakeskin, Three Spot, Kissing, Croaking, Chocolate, Liquorice, Chameleon, and Giant. With a list of beauties such as these, selecting just one species to be named the jewel in this crown would have to be an exceptional species indeed. That one is the Pearl of the bunch, the aptly named Pearl Gourami.

Trichogaster leeri has its origins in the shallow ponds and slow streams of the Malaya Peninsula, Thailand, Sumatra and Borneo. To help it live in what can be water with a very low oxygen level, it has a labyrinth organ, allowing it to join the select group of fish known as labyrinth fish. The gill system is unable to process sufficient oxygen from the surrounding water, thus the Pearl Gourami will take gulps of air from the water surface, this will then be processed by the labyrinth organ to give the fish a top up supply of oxygen. Thus you must not panic when your fish does this trip to the surface in your aquarium.

The elegant Pearl Gourami has a base colour of olive green on its back, to silver on the belly. The whole body is overlaid with mother of pearl spots that carry through to the large flowing fins, while the tail has blue rectangular markings. The male has longer flowing fins, with the females being more rounded, as is her plumper body.

Breeding is both possible and fascinating. The male will build a nest of bubbles blowing them onto the surface of the water, usually in a quiet corner of the aquarium. He then collects bits of plants and interweaves these into the bubbles. Pleased with his endeavours, he courts the female by spreading his grand fins and parading in front of her.

Once successful, and having persuaded her to visit the nest under which they embrace, he fertilises the eggs as she lays them, they position themselves so that these float up into the nest, which he now adds to and protects, it is now quite a big structure. The female departs disinterested, as he remains to protect the nest and look after things until the young are free swimming. Your Pearl Gourami will accept a wide temperature range between 23-30°C (73-86°F) but will like you best for providing 24-26°C (75-79°F). They are not fussy eaters and a good quality flake food will keep these fish happy and well fed.

Treat yourself to several young fish and enjoy watching them grow, and grow they will, reaching 15cm (6"). But don't be put off by the size, providing there is room in your tank they will live peacefully; both with their own kind and other fish in the community tank, where they will be the pearl of that community

PROFILE

Family	Belontiidae
Name	*Trichogaster leeri*
Origin	Thailand, Sumatra, Malaayan Peninsula
Diet	Good quality flake and some live food

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Corys & Cats

Ever wondered which sex your Corydoras are? **Ian Fuller** explains how to tell the boys from the girls

C. macropterus pair. Males of this species have elongated finnage that can be clearly seen from the side

I suppose the most asked question I get from Corydoras keepers is, 'How do I sex them?' A simple enough question you may think but the answer is never quite as easy as that. There are several factors that need to be looked at and a lot depends on the species involved.

There are three main areas of difference, body, fins and colour. When buying new stock it can often be a very difficult task to determine the sexes. Freshly imported fish can be especially difficult as it depends on their overall condition on arrival. Newly imported fish are often under fed, having been kept in holding tanks awaiting dispatch, sometimes going for weeks without any food. In such cases it is a good idea to buy at least six specimens and condition them up. Generally speaking *Corydoras* are hardy little creatures and it does not usually take very long to get them into reasonably good condition, making it far easier to determine the sexes.

Let's take a look at each of the three areas in turn: -

Body

Firstly before I describe body shape in detail, it is reasonably safe to say that the female of a species grows a little fuller and longer in the body than males. Sometimes the difference can be as much as twenty per cent. *C. paleatus*, *C. aeneus C. hastatus* and *C. pygmaeus* are prime examples.

C. barbatus Pair from above. The plumper females body (lower fish) can clearly be seen from this view

When looking at body shape there are two views to consider, the side profile and overhead. When viewed from the side, a female should have a greater body depth between the dorsal and ventral fins and the belly area itself should also look a little plumper. When viewed from above the widest point of a male's body is at the point immediately behind the insertion of the pectoral fins. The widest point of a female's body is at a point slightly forward of the ventral fins.

Ian's tip

When buying new unfamiliar stock, politely ask the shopkeeper to place several specimens in a container so you can view them from above. This way it is far easier to see the true body shape than when they are swimming around in a tank. It would not be such a good idea though if the shop were very busy, then I would select at least three small and three large specimens.

Fins

The second area of difference to look at is the fin shape. There are a few species in which fin shape and length are obviously different, two examples of this are *C. macropterus* and *C. barbatus*. There are other species where there are virtually no discernible differences in fin

C. barbatus male showing cheek odontodes (bristles)

Ian's tip

Select three fish that have the most pointed fins and three that have the most rounded, ask for them to be put into separate bags, where they can then be compared. Again it is easier to view the lower fins in a clear plastic bag than in the stock tank.

shape at all; some of the long nosed species tend to fall into this category, with *C. coriatae* and *C. vittatus* being two examples.

As a general rule it is the ventral fins that will show any variance between the sexes, even when all of the other fins look identical. The ventral fins of males tend to be elongated and pointed in varying degrees depending on the species; females on the other hand have fins that are more rounded and fan shaped.

Colour

There are a number of species where the sexes can easily be distinguished by colour alone; most of these belong to the so-called 'Elegans group', with males usually showing brighter more intense colouring. Indeed, some species in this group have males and females with colour patterns that are so different it would be very easy to mistake them for two separate species.

Other differences

There are a number of species where males show secondary dimorphism, which takes the form of odontodes (bristles) developing on the pectoral fin spines. It is most, if not all the members of what used to be referred to as the 'acutus group' that develop these growths. They are generally the long snouted species such as *C. acutus*, *C. blochi*, *C. focieri*, *C. semiaquilus*, *C. stenocephalus* and *C. vittatus* to name but a few.

These growths are usually most evident and develop to their extreme when the males are in their best breeding condition and are trying to coax females into breeding.

At other times of the year, which is usually after the breeding season is over, the odontodes (bristles) may still be visible but will be greatly reduced and in some species they may disappear altogether. Where there are a group consisting of several males, it will almost certainly be the dominant male that will shows the most prominent growth of bristles. There are times when a male will suddenly loose his bristles, almost over night. Water conditions or a sudden decline in health putting the fish under stress can be the cause. The bristles reduce in size and may even disappear altogether, regenerating when the conditions are favourable, or more usually at the onset of the next breeding season.

There are three species that instead of growing odontodes (bristles) on the pectoral fin spines, the males grow cheek bristles on the sides of the head. These are permanent growths and as far as I have observed do not show any exaggerated growth at breeding times. The four species are *C. barbatus*, *C. kronei*, *C. macropterus*, and *C. geoffroy*. This last species is unique in having both permanent cheek bristles and seasonal growths on the pectoral fins. This is a fish originating from Surinam and is seldom seen in the hobby. ■

Once in good condition the females plumper body in many species is very obvious

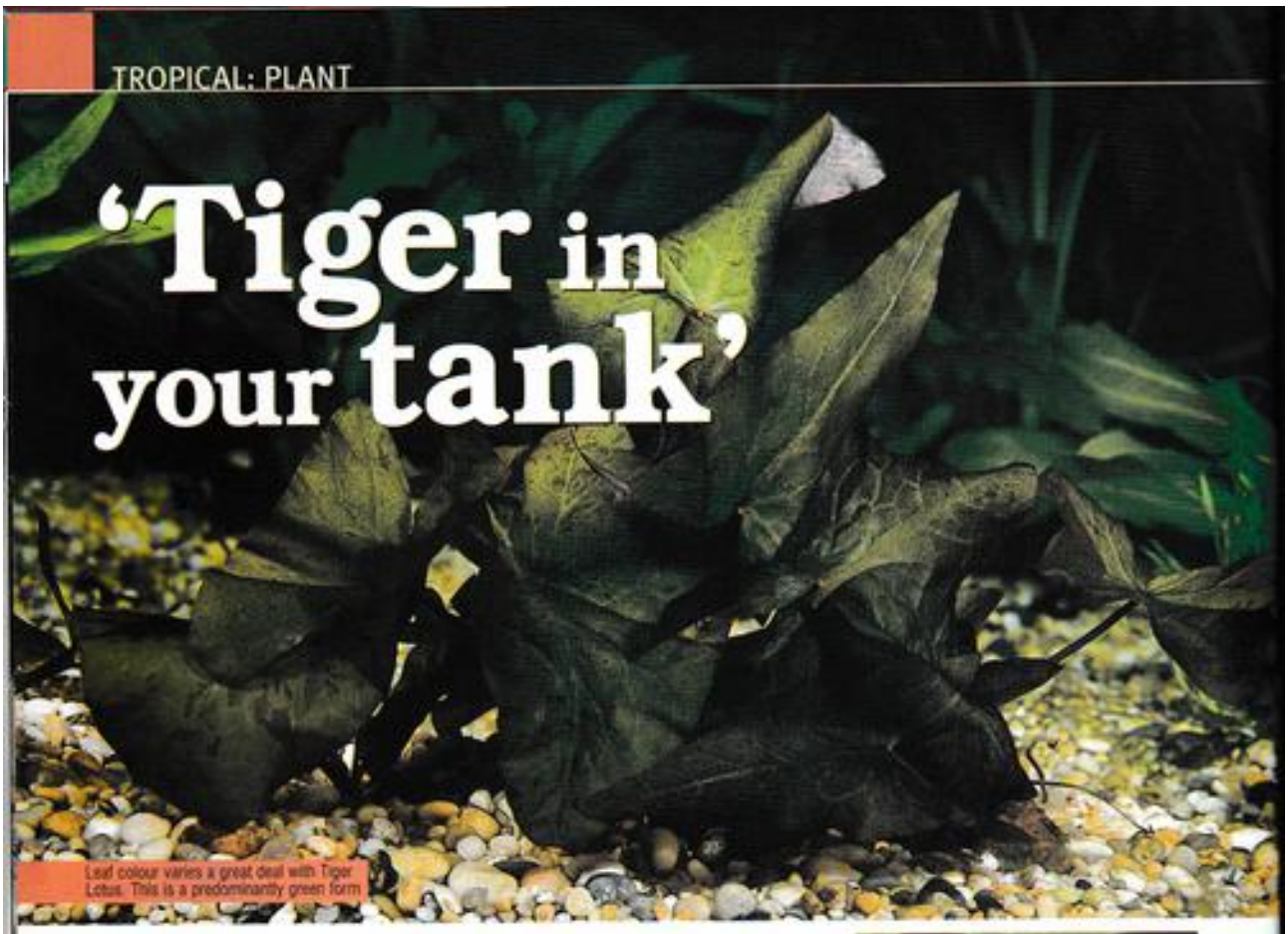
Ian's tip

When buying, if you are in any doubt buy equal numbers of both colour forms and if affordable, five or six of each, this will give the best chance of acquiring both sexes if they do turn out to be separate species.

C. elegans males are much more brightly coloured than females

C. barbatus pair looking at them from the side. The colour and fin differences on this species can still be seen from the side (male to the rear) but the view from above is a much easier way of separating the sexes

'Tiger in your tank'



Leaf colour varies a great deal with Tiger Lotus. This is a predominantly green form

There are more to Water lilies than those used in garden ponds. **John Tate** suggests one that is a beautiful tropical aquarium plant

Water lilies are generally thought of as 'Pond Plants', but, you can keep small tropical varieties in a reasonably sized aquarium. One of the most often seen in the trade is the 'Lotus Lily'. This is commonly known as the Tiger lily (*Nymphaea lotus*) and originates from Asia and parts of East Africa. Like those kept by pond keepers the lotus lily is a beautiful member of the Nymphaeaceae family.

Nocturnal flowers

Various colour forms are available, growing from bulbous tubers. Ranging from olive-green streaked with red, and a red form, with red leaves streaked with darker red. The plants are admired mainly for the flurry of thin, submersed aquatic leaves, that reach up to 4-6" (10-15cm) in length, and 2.5-4" (6-10cm) in width, with a deep cleft at the base of each leaf, which the long supporting stems join. However, like those of conventional lilies, leaves may emerge to float on the water's surface after numerous aquatic leaves have set. You may wish to remove these, as they may shade other aquarium plants, but if left there is a good chance that the plant will flower (Break out your coffee, as sadly this happens over night). ■

John's tips

1. The availability of this plant is not always guaranteed, so ring first.
2. They are often sold as a collection of small plants secured in a pot. If the plant doesn't seem crowded, and has a good root system, then it can be planted directly into the middle-ground substrate, in a prominent position as a focal point.
3. Leave the crowns (where the leaves shoot from) exposed so that they don't rot and allow room for the leaf stock to expand.
4. Given a regular liquid feed, Lotus lilies prove to be undemanding and a real beauty for the money.

If the floating leaves are allowed to remain on your plant they will usually flower producing beautiful blooms which open at night

tropical | marine | coldwater & ponds | plants | regulars


STRIPED ANOSTOMUS
Anostomus anostomus
83°F
72°F
7"
TFSH 16
TFSH 17
PHOTO: AREND VAN DEN NIEWENHUIZEN
TODAY'S FISHKEEPER

Discus PROBLEM SOLVER

Tony Sault solves some of your problems...

Q My Discus recently spawned and I have approximately 150 fry two weeks old. I have started feeding them newly hatched brine shrimp nauplii, but recently some have started to die. They just "whirl" around in the water then sink to the bottom and die. What should I do?

Pete Daniels, *East Sussex*

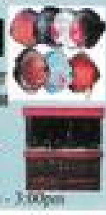
A *If you are using shelled eggs rather than shell less brine shrimp eggs the fry may be ingesting some of the shells, also the newly hatched brine shrimp must be thoroughly washed in fresh water before feeding to the fry to remove all excess salt from them. I use brine shrimp as a first food to get the fry away from the parents, then immediately start to wean them off and onto their first solid food. For this purpose I use finely powdered fry food and granular food. At most the fry are fed on Brine shrimp for 2-3 days.*

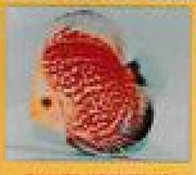
Q I recently purchased 6 small Discus but 2 seem to be getting all the food and I am afraid that the others may get left behind. Should I remove the bullies to give the others a chance?

N.Reeves, *Birmingham*

A *What you have encountered is commonly known as the pecking order syndrome and I am afraid it is a fact of life that in every shoal of Discus the dominant fish are the ones most likely to survive. There is no point in removing the dominant fish as the pecking order will reform in the remaining fish and you will be back to square one, you must change your routine. I suspect that without intentionally doing it you are feeding the fish in the same place every day. The dominant fish realise this and are always first to the food, to defeat this feed the same amount of food but put half in one end of the tank and half in the opposite end, the dominant fish will find it difficult to be in two places at once.*

A beautiful Pidgeon blood discus





Creating a herd

Want to breed your Buffalohead cichlids? **Peter Lewis** explains how

Over the past two years I have been fortunate to keep and observe three different species of Humphead or Buffalohead cichlids. Whilst all are basically variations on a theme, each has its own peculiarities when it comes to spawning. For instance, *S. casuarius* is a shy, cave-dwelling species that inhabits the rockwork and lower regions of an aquarium since this cichlid lacks a well-developed swim bladder. It is easily bullied by larger cichlids and beaten to the food by faster moving, mid-water species with which it may share an aquarium. Only at the onset of spawning or while guarding eggs or fry will *S. casuarius* resort to attack as a means of defence. This species is not an accomplished digger, although both male and female will engage in minor excavation under rocks when preparing a spawning site.

S. casuarius has a need to spawn in an enclosed space or cave, being a most secretive breeder. The cichlid is a monogamous, biparentally custodial species, pair formation occurring readily within a community situation, a strong pair bond being formed such that if one partner dies the survivor may never pair again throughout the remainder of its life. A sign that the female is nearing spawning is evidenced by her marked change in behaviour as she adopts a vigorous cleaning schedule with the spawning site being energetically cleaned.

Eggs of *S. casuarius* are clearly spherical, with a radius of 3mm. Hatching is unusually prolonged, taking up to 2 weeks at 75°F (24°C). The egg sac is large, as are the fry, and it has been

Pair of *S. casuarius*

"Both parents will 'spit' partly chewed food into a cloud of free swimming fry to encourage them to eat"

Female *S.casuarius* guarding her brood of youngsters. It can be more than 3 weeks before the youngsters leave the spawning cave

Steatocranus irvinei is possibly the most aggressive of the three species with the larger male proving a constant harassment to the females with whom he shares a tank.

PHOTO: OLIVER LUCANUS

observed that the young will exist as 'wrigglers', staying close to the cave in which they were born for as long as 10 days before the sac is completely absorbed and they become daring enough to venture from the security of the cave in search of a meal. Both parents will 'spit' partly chewed food into a cloud of free swimming fry to encourage them to eat. Free swimming fry are almost 1cm (⅜"), total length. First food can be infusoria, Brine shrimp nauplii and the smallest of micro worms or finely powdered fry food.

S. tinanti deposits as few as 20 and as many as 100 large, spherical eggs that will hatch between four and five days after spawning at a temperature of 75-79°F (24-26°C). It is the female that religiously mounts guard over the eggs while the male patrols the territory surrounding the spawning cave. The fry become free swimming approximately seven days after hatching and will first venture from the security of the mother's shadow after a further 5-10 days. Parental care continues until the young have reached a size of 1.25cm (½"), standard length.

Most aggressive species

S. irvinei is possibly the most aggressive of the three species with the larger male proving a constant harassment to the females with whom he shares a tank. Spawning success came with *S. irvinei* when a 'harem' was established that contained three females and one male in a 135 litre (30-gallon) aquarium. The tank was decorated from the floor of the tank to the water's surface with rocks and water-logged wood arranged to give ample caves and small, secure hideaways for the females into which the larger male could not venture. Any attempts that were made to breed a single pair alone in an aquarium resulted in the female being harassed to the point where she had to be removed from the tank to prevent her from being killed by the overly eager, aggressive male.

Spawns are larger than others from the same genus in that *S. irvinei* may deposit as many as 200 green-yellow eggs during each spawning cycle. Within 12 to 14 days post spawning the eggs will have hatched and the young will already be easily seen as a free-swimming cloud of fry following the female around the tank in search of food. Any disturbance in the vicinity of the tank will result in the immediate disappearance of this 'living cloud' as the fry rapidly seek shelter in the niches between the aquarium gravel substratum. As the young become bolder they will be seen throughout the aquarium constantly grazing the algae that grows on both rocks and plants in the tank. Rarely do serious squabbles occur between young as they mature and it is feasible, given a large enough tank, that the parents will proceed to spawn again amongst a tank full of young from a previous spawn. Sexual maturity comes at an age of from six to eight months. ■

Peter's tips

1. Caves and rockwork are essential in any aquarium containing Buffaloheads since all will spend hours 'resting' at the entrance to their chosen cave, fanning water back into the cave with their pectoral fins. A minimum of one cave per fish with at least two extra is optimum and will prevent inevitable squabbles over territory. Plants are tolerated in the spawning aquarium but they must be well rooted and have strong leaves. A healthy growth of natural plants will do much in helping these cichlids achieve a sense of security and become more visible in the aquarium.

2. To be assured of obtaining a pair the aquarist is best to allow a pair to select each other by buying 6-8 young fish that can be raised in a large, rock filled tank and allowed to pair off as appropriate.

3. Newly hatched fry will constantly look to make a meal of any algae growing in the tank. The hobbyist is, therefore, well advised to take this into account when rearing these cichlids and accommodate the fry in a well-lighted aquarium with a strong algal growth. Fry from any of the species considered will take newly hatched Brine shrimp immediately they reach the free-swimming stage.

4. Attempts to breed *S. irvinei* will have a greater degree of success if target fish such as one of the larger Australian Rainbows are kept in the spawning aquarium. Such a course of action may keep the male from becoming too aggressive toward his consorts.

Preparing for winter

All Shubunkins make hardy pond fish that can over winter outside

As autumn closes in, our pond needs some care and attention so the fish will survive through winter

Comets are perfectly hardy and come in several colour forms. Gold like this one and red cap are two of the most popular

I hate to say it, but we have reached the end of summer and winter is just around the corner. The first frosts may still be a little way off but we have to prepare for winter now.

Which fish need to be moved indoors?

Firstly, go and take a close look at your fish. Have you added any new ones this year? Are all the goldfish varieties you have in your pond hardy? These two questions need dealing with now because you may have to set-up an indoor aquarium to care for the more delicate varieties through the winter. Which are the more delicate varieties? Any of the

The indoor set-up

When you have decided which fish need to be over-wintered indoors you need to organise an aquarium for them. Obviously the number and size of the fish concerned is going to determine the size of tank needed. A rough guide is 1" of body length to 12 sq. ins of surface area. All your fishes body lengths added together will be the aquarium length you need if the tank is 12" wide.

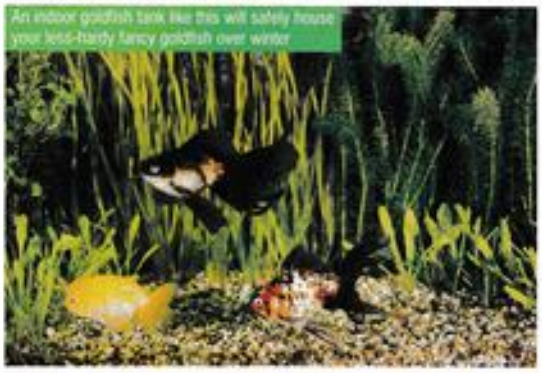
Select a good quality internal or external power filter of the correct size for your tank. There are plenty on the market but look for one with a variable flow rate (goldfish don't like being blown all over the place in a very strong water current).

Lighting is an optional extra in this tank but if you intend to grow plants it is essential. A straight forward fluorescent will supply sufficient light to see your fish by but a planted aquarium will need an extra light specifically designed for growing plants.

No heating will be required, unless the aquarium is going to be positioned in a room where temperatures can fall below 0°C. This will freeze the water and may crack the aquarium. Also, since the water will be cooled from all sides it's temperature may drop lower than that in an outdoor pond. To prevent this happening include a heater/stat set at 5°C. This will protect the tank and fish from becoming too cold.

Feeding during winter is always tricky. If the room temperature is above 16°C then your fish should be fed normally with a good quality flake food twice a day. Cooler than this but above 8°C they will need less food and should be fed with a wheatgerm based fish food. In a very cold room they will probably hibernate for much of the winter and not be interested in food at all.

You should do 10% water changes every week in the tank but make sure the incoming water is the same temperature as that in the aquarium. If there is a difference then it should be stood for 24 hours before being added to the tank. In a warm room I would step up the water changes to 20% weekly. A water conditioner should always be used when fresh tap water is added to the aquarium.


An indoor goldfish tank like this will safely house your less-hardy fancy goldfish over winter

short bodied twin tailed types are suspect. If they are English bred fish that have been over wintered outdoors from a young age then these may be safe to leave in your pond. All the others are best moved indoors. That means varieties like Fantails, Black Moors, Lionheads, Globe-eyes and Red-cap Orandas. It is possible for some of these types to survive some winters outdoors but overall it is best to move them inside.

The fancy finned types that can be left out are those with only one tail. So Shubunkins (London & Bristol forms), Comets (all colours), and Common Goldfish should be fine. One additional variety that can be left out all winter is the rarely seen Wakin. This has an elongated body like the other hardy varieties but the tail is partially twinned.

What should I do with new introductions?

You also need to check out the general health of any new season's introductions. Ideally you would have quarantined any new fish before they were put in the pond, but since this is not often done we will assume any new fish have been put straight in - hopefully some months ago.

It is very important to observe any new introductions closely for several months after purchase. This becomes particularly important when you reach this time of year. Most new fish will live happily through their first winter outdoors. If they are weakened by any health problems, however, they may perish during the winter or turn into a time-bomb of ill-health waiting to explode in the spring.

Normally, it is enough to just look down on any new fish and make sure they are feeding happily and look healthy. At this ⇒


Lionheads can be kept in a pond during the summer months but should be moved inside for the winter

Practical tips

1. If you don't normally have a net over your pond now is a good time to install one. This will catch the leaf fall from surrounding trees and make collecting them up a lot easier.
2. Place a few large clean terra-cotta pots on their sides on the bottom of your pond so fish have places to hide once all the plants die back.
3. Remove and clean up ready for storage any water pumps and lighting units not used during the winter.
4. Raise up any water pumps which will be working by at least 10" but make sure they are still 10" below the waters' surface. This way the lower strata of water will remain warmer while the pump is unlikely to be frozen.

Once water lily leaves have been frozen like this they will needing cutting off so they don't rot and pollute the water

Autumn and winter feeding

How you feed your fish at this time of year is vital for their well being. While fish are still rising to the surface and eating, the temptation will always be there to feed them. If you use a normal food this can cause serious health problems should a sudden cold snap come along. The fish will become dormant (maybe for weeks) and the food slowly rot in the gut. For this reason special foods have been developed for feeding during autumn and spring. Buy a packet of one of these and feed your fish as directed. Once they have become dormant for the winter throw the surplus food away - it will have gone off by next spring when you will need it again.

Feeding the wrong kind of fish food at this time of year can seriously damage your fishes health

ALL PHOTOS ON THIS PAGE: DAVE BOWE

⇨ time of year, however, you need to take a closer look - from all sides. To do this, catch the fish out and place it in an aquarium of pond water. Look all over for any signs of ulcers, parasitic infestation or disease. The fins should be clean, well spread and healthy looking. This health check should also take place as soon as the fish become active in the spring. This is the time many diseases break out in newly acquired fish.

If there are any obvious signs of disease, then you will need to move it indoors for treatment. This way you can be sure that any health problems occur where you can see them and can deal with them. This will mean they will need to stay indoors until late next spring when the weather has warmed up. ■

Wildlife care tips

1. Have a pile of logs or large rocks with leaf litter loosely stuffed between them close to the pond so newts and other creatures can over-winter among them.

2. Don't cut back all the dead vegetation around a pond. This will be used as cover by amphibians and over-wintering invertebrates.

Plant care

Apart from non-hardy goldfish there are plenty of non-hardy plants sold for the pond. These will die-off with the first frost and can cause serious problems. Two floating plants to watch out for are Water Hyacinth and Water Lettuce. Ponds covered with either of these will soon become a mass of rotting vegetation after the first frost. Remove all of them and dispose of them on your compost heap. If you want to over-winter a few for next season then you can keep them in a bucket of water tucked away in a frost free greenhouse or conservatory.

Submerged aquatics will also need cutting back. This cutting back can be fairly extreme but leave one or two sizable clumps in the pond for the fish to hide in or next to. Water lilies can be left until their leaves have been frost damaged before they are removed.

There is a huge array of bog and marginal plants available now. Some of these are not completely hardy and will need winter protection. A thick mulch can be used to protect these during winter but others will have to be moved into a frost free greenhouse or conservatory if they are to survive. You will need to check up on which these are.

Water Hyacinth needs removing from the pond before the first frost kills it off

tropical | marine | coldwater & ponds | plants | regulars

Close encounters *of the fish kind*

John Dawes reports on hotheaded rays and an unusual community aquarium

Fish – we have traditionally been told – are cold-blooded (poikilothermic) creatures. Nowadays – with greater frequency and accuracy – we refer to most fish as being ectothermic or exothermic. This means that the temperature of their bodies matches that of the surrounding water. A few, like Swordfishes, eg *Xiphias gladius* (family Xiphiidae) and Tunas - *Thunnus* spp (family Scombridae) are even known to be, at least, partly, warm-blooded (endothermic).

Unexpected discovery

Some months ago, I came across a scientific paper which included details of further, but unexpected, additions to this short list of endotherms; rays belonging to the genera *Mobula* and *Manta* (family Myliobatidae; subfamily Mobulinae). I say 'unexpected' because rays and their close relatives, the sharks, being cartilaginous fishes, ie elasmobranchs, are generally regarded as being more primitive than bony fishes.

Yet, findings by R.L. Alexander, a shark specialist working at the Shark Research Centre of the University of Cape Town in South Africa, has discovered some remarkable structures surrounding the brains of five specimens of *Manta birostris* and three speciments of *Mobula tarapacana*, caught in shark nets in South African waters.

He has discovered that the cranial retia mirabilia - dense networks of vessels that surround the brain - do not just consist of arteries, as previously reported, but also of veins that lie in close association with these arteries.

Ground breaking discovery

To appreciate the fundamental significance of this discovery, it is important to realise that arteries and veins, while both being blood vessels, perform different functions. Arteries carry blood to the tissues, while veins carry it away from the tissues. Where - as in the case of *Manta* and *Mobula* - both types of vessels run close to each other in what is known as a counter-current arrangement, heat can be exchanged between the two types of vessels, thus providing the possibility for warming and/or cooling the surrounding tissues.

The question therefore arises as to whether the complex counter-current network of blood vessels is being used to warm or cool the brain in *Manta birostris* and *Mobula tarapacana*.

To answer this, it is useful to consider the situation in other endothermic fish species, such as those I mentioned earlier. In these, metabolic activity within red muscle tissues generates heat that is then retained within the fish via counter-current arterial/venous networks.

R.L. Alexander has discovered that the eye muscle of closely related species, like *Mobula kuhli*, actually contain large numbers of red fibres, indicating that they might be able to act as a heat source. *Manta birostris* and *Mobula tarapacana* are both also known to possess large eye muscles and, although they have not yet been histochemically examined, it seems very likely that they too, will be found to contain large numbers of red fibres. The conclusion derived by a R.L. Alexander from all these data is that the function of the whole arrangement is for warming, rather than cooling, purposes.

What purpose?

But what useful roles can a warm brain serve in fish? Well, quite a few, actually. In 1993, a team of ichthyologists led by B.A. Block, concluded that the minimum requirement in terms of endothermy (internal heat generation) for fish to be able to occupy (and therefore feed at) different temperature regimes in nature, was a warm brain. Such fish are generally able to migrate between warm and cold regions - as found in shallow and deep water - or between the tropics and temperate zones, with greater facility than those which do not possess the ability to warm their brain. This, of course, is a highly desirable ability and offers such species great biological flexibility that other species do not possess.

Alexander's conclusions are based entirely on his anatomical observations and, as he states, 'temperature measurements of live mobulids are necessary in order to confirm this'. Nevertheless, his discoveries are most impressive and, in my view, utterly convincing. They also show (yet again) what remarkable and fascinating creatures fish are, even so-called 'primitive' types.


It is quite possible to keep Goldfish and Discus in the same aquarium... but it's not recommended


Manta Rays keep their brain warm so they can be active at a wide range of temperatures

Can you keep Discus and Goldfish together?

As you can see from the accompanying photograph, this 'colourful'(!) aquarium is decorated with a space-age background, some natural and synthetic rocks and several artificial plants, some of which exhibit quite unnatural colours. However, rather than focus on the decor, have a look at the fish themselves.

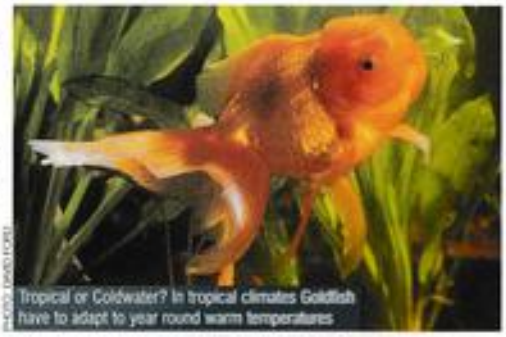
I've shown this picture (which I took in the Far East) to a number of people and their reactions have been wide-ranging. Some say (despite the evidence) that it's not possible to keep Discus and Goldfish together in the same aquarium. Others are of the opinion that it is wrong to keep these two species together, while one person actually suggested that the photograph might not actually be genuine, but had probably been arranged or staged in some way.

Taking the last point first: no, the photograph was not arranged or falsified in any way whatsoever. I photographed the aquarium exactly as I found it. This answers the first of the questions in that it shows that it is quite possible to keep Discus and Goldfish together. I agree entirely with those who are of the opinion that they shouldn't be kept together, but that doesn't alter the fact that they can.

Tropical or coldwater?

In Europe, where we do not experience year-round tropical climatic conditions, we can, with justification, refer to Goldfish as 'coldwater fish' and to Discus as 'tropical fish'.

However, when you live in a place where temperatures are high all the year round, as happens in the Far East, the term 'coldwater' doesn't have quite the same validity. In fact, the only way you can have a genuine coldwater aquarium in these regions is either by installing an aquarium water chiller (as used for coldwater marines), or by keeping the aquarium in an air conditioned room where the ambient temperature can be kept within the range normally accepted for coldwater aquaria. Otherwise, in practical terms, all fish kept in aquaria will experience tropical conditions.


Tropical or Coldwater? In tropical climates Goldfish have to adapt to year round warm temperatures

Goldfish, however, produce large amounts of waste, but are tough enough to withstand a wide range of water quality parameters. Discus, on the other hand, are considerably more delicate and require specific water conditions to remain in good health. It is for this reason - probably more than for any other - that the two types of fish should not be mixed as shown in the photograph, even if the water temperature is suitable for both.

I'll be returning to the coldwater/tropical issue in a future edition of Encounters.

Reference

Alexander, R.L. Evidence of brain-warming in the mobulid rays, *Mobula tarapacana* and *Manta birostris* (Chondrichthyes: Elasmobranchii: Batoidea: Myliobatiformes). Zoological Journal of the Linnean Society (1996), 118: 151-164.

Koi Plague

With at least six confirmed cases of Koi Herpes Virus in the UK, **Bernice Brewster** reports on a potential threat to every koi in the country

When buying new koi it is vital to quarantine them properly for several weeks to be sure they are healthy before introducing them to your pond

Bernice's tip

It really is very important to isolate all new koi purchases in a suitable holding pond system and allow them a period of several weeks to overcome the stress of transportation. The koi may be placed into the main koi pond once you are satisfied the new koi are fit, healthy and feeding well.

IN THE LAST few weeks the Koi Herpes Virus (KHV) has been identified by the Centre for Environment, Fisheries and Aquaculture Science (CEFAS) at Weymouth, following mortalities of koi. At the moment CEFAS are rather circumspect with regard to the isolation of KHV and have indicated the presence of the virus is probably a contributing factor to the mortalities.

Without doubt, the impact of infection with KHV in a population of koi is directly linked to stress, husbandry and management.

What is a virus?

A virus is simply a piece of genetic material, which is wrapped in a protein coat for protection, so is not really regarded as a "living" organism, it requires no food for energy or oxygen to live. Reproduction is the sole ambition of a virus and it achieves this by infecting a cell and taking over the usual function and hi-jacking it into just reproducing more virus particles. The infected cell therefore becomes a virus factory, producing yet more viruses to infect other cells and new individuals. The consequence of infection to the cell may be irreversible and it dies and if large numbers of infected cells die it means the tissues or organs can no longer function effectively and the animal dies.

Koi can mount an immune response to infection and indeed some may recover. One of the problems with Herpes viruses is that on infection the genetic material becomes integrated into the cells of the host. In humans, Herpes viruses cause cold sores and those of us who suffer from them know that when we are stressed or our immune systems have been compromised by some other illness such as a bad cold or the 'flu, we commonly suffer the familiar lesions on the lips associated with cold sores.

Regrettably, Koi Herpes Virus will also have this same latency, which means in effect that if the koi are stressed they may become infective and spread the virus to others in the pond, months or even years later.

Today's view

Koi Herpes Virus has the potential to be a serious threat to the hobby of keeping koi, but it is very important we all co-operate to sort out the problem and not turn the situation into an opportunity for rumour and vilification!

This view was one endorsed wholeheartedly by Keith Davenport of the Ornamental Aquatic Trade Association. O.A.T.A. will also be holding a meeting of its members to discuss this problem and formulate a strategy to deal with it. As more details are forthcoming we will keep you informed.

Which fish are vulnerable?

Those koi which are either stressed such as through importation and transportation are susceptible to infection with KHV, as are those where water conditions are less than ideal such as low dissolved oxygen, or pollution with ammonia and nitrite. Stocking levels can also influence the spread of viral diseases and ponds heavily stocked with koi are more likely to suffer heavy mortalities if KHV is introduced to the site.

What are the symptoms?

There are many diseases which may produce symptoms similar to those currently associated with KHV but principally the disease is characterised by numerous mortalities of koi accompanied by sloughing skin and erosion of the gills. The only way for the disease to be identified is by having samples of tissues from infected fish submitted for virology and histopathology. If an outbreak of KHV is suspected it is advisable to contact your local Vet, who can arrange for samples of tissues to be submitted to CEFAS for the required laboratory work.

A great contrast

Today's Fishkeeper visits Rob's Marines in Ipswich & Woodthorpe Aquatics in Lincolnshire. Two very different shops

Rob's Marines

Rob is an amazing character very much at the heart of this business. He is a shy retiring man who didn't want his photograph taken. OK I have to admit that is not quite true, in fact shy and retiring are two words you really can't attribute to Rob! In fact he has some very strong opinions about all aspects of the marine hobby (fortunately they are based in real knowledge) and helps his customers to make the right choices regarding equipment and stock.

He is a hands on aquarist with many years practical experience in keeping the fish and invertebrates he now sells in his shop. He has been in the business about 20 years and prior to that was in building work. His favourite fish are Leafy Sea Dragons and Harlequin shrimps top his invertebrate list.

Shop details: Robs Marines, 59 Felixstow Road, Ipswich, Suffolk, IP3 8DY. Tel 01473 289588. www.robsmarines.co.uk
Shop opening hours: Mon, Tues, Thurs, Fri 10.30-5pm. Sat 10-5pm. Sun 10-4pm.
Proprietors: Rob Sycamore
Staff: Sylvia Clarke, Dave Hallsworth, Simon Furlong
Number of tanks: 53 Inverts & 40 Fish
Specialities: Sorting out people's problems.
Brands stocked: TMC, Deltec, JBL, Kent, Rowaphos, Rowadur & Zoomed
Show tanks: 200 gallon reef tank.
Which groups of fish do you sell?: Marines only
Additional services: R.O. and Salt water. Tank installation and design.

Rob's verdict on the manufacturers

Which manufacturer has the best range of products in your opinion? TMC
Which company gives your customers the best service? TMC

Our verdict
An excellent marine establishment with a very high standard of corals, inverts and fish for sale.

Just a small selection of the excellent inverts on sale at Robs Marines

Woodthorpe Aquatics

'Get your fishkeeping off to a flying start at Woodthorpe Hall Aquatics' could almost be a slogan Barry could use in his adverts. Why? Because this shop is in a converted aircraft hanger and to reach it you have to drive down a disused runway! In fact Pat was more than a little worried when she realised our Editor was on a runway, knowing how bad he is at navigation. Everything was fine, however, and all they had to do was follow the signs to a large car park.

Despite its large size, this is still a family run shop with Barry and Rebecca (plus baby) very much a part of it. Barry started keeping fish 24 years ago and opened his first shop in 1989. Up till then he had been working as a farm labourer. His favourite fish are koi and with 102 vats of them in the shop he can certainly indulge his passion for them.

Shop details: Woodthorpe Aquatics, Between Alford and Withern on the B 1373, Lincolnshire. Tel 01507 451000
Shop opening hours: 7 days a week, Mon to Sat 9-6pm, Sun 10.30-4.30pm.
Proprietor: Barry Stubbs
Staff: Richard Hayward (Ponds & Koi) Dominic Naylor (Tropical) Howard Milborrow (Pond Plants) and of course Rebecca Stubbs.
Number of tanks: 120 tropicals.
Vats & holding facilities: 102 vats of koi.
Specialities: Koi, Malawi and South American tropicals.
Brands stocked: All major brands.
Show tanks: Indoor Koi pond and small tropical community.
Which groups of fish do you sell?: Tropicals & Coldwater.
Additional services: Pond cleaning, water testing & fish health diagnostics.

Barry's verdict on the manufacturers

Which manufacturer has the best range of products in your opinion? Hozelock & OASE
Which company gives your customers the best service? Hozelock

Our verdict
A friendly family run business which is well laid out and has huge potential for the future. There are plans to extend the tropical section to double its present size.

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...End Point

Some fish are only suitable for the more advanced fishkeeper. **Peter Liptrot** has news of a beautiful recent introduction well worth seeking out

For a long time all Snakeheads were thought to be big highly predatory fish only really suitable for huge aquaria, and not really of interest to the fishkeeper who wanted more than just one or two 'tankbusters'. Then came some pictures of an absolutely beautiful small species collected from near Assam in India, and given the name trade name *Channa* 'bleheri'. They remained as pictures to all but a few lucky aquarists who were prepared to part with the three-figure sum necessary to obtain one.

By 1991 the name *Channa bleheri* was given valid scientific status, but the species was still in the ranks of the almost mythical amongst aquarium fish. Over the past few years, however, they have been imported in ever-increasing numbers, and the price has dropped accordingly until they are now affordable to more or less everyone. The first imports seen were of quite small fish with a maximum length of about 12.5cm, but more recent imports have seen larger fish of over 15cm.

Captive care

Bleher's Snakeheads are scrappy amongst each other, and unless given enough room some damage can be expected to the finnage, particularly the tail. Feeding does not appear to be a problem because they have large mouths for their size and a wide range of frozen foods are readily accepted. Good quality dry foods may also be taken.

They prefer fairly warm water between 75-80°F (24-27°C), and the pH should be slightly acidic and fairly soft, although they do appear to be tolerant of water parameters as long as the water is clean. As they are not particularly strong swimmers, filtration should be fairly gentle, but as they are enthusiastic feeders it should be efficient. An external power filter should serve the purpose well.

Plenty of cover in the form of wood, plants and leaf litter will help them to settle down. It may, however, be better to avoid rockwork as they can be prone to damaging themselves against this if startled. A good aquarium cover is essential since this species can and will jump, and, although they can survive for a surprisingly long time out of water, it is better not to test this!

As breeding should always be an aim with fish like this, it would be better to start off with a small group in a large aquarium 6' long, watching carefully for aggression between them. If there is enough cover subdominant individuals should be able to keep enough space between themselves and their aggressors to avoid any real damage.

It was assumed that this fish would be a mouthbrooder as are some of the other snakeheads that lack pelvic fins, but the few aquarium spawnings reported indicate otherwise. There have not been any spawnings reported in the U.K. as far as can be ascertained, so the challenge is out there for someone to achieve this.

As a final note, it has to be wondered whether the genus Channa should be split up, as currently it contains everything from the monsters like *Channa micropeltes* (growing to 3ft in body length), through to the little beauties like this species. ■

Close relatives

It is interesting to note that over the past two or three years, as more and more fishes are being imported from the wild in South East Asia, there are a number of species very similar to *C. bleheri* becoming available. It remains to be seen how closely related these fish are to *C. bleheri*, and if they are mouthbrooders or not.

Peter's tip

They do not appear to be too predatory towards other fish (unless, of course the tankmates are much smaller than they are), so other species from South East Asia could be considered as tank mates if desired, but this fish is attractive enough on its own to make for a superb display.

Bleher's Snakehead is a beautiful new introduction well worth seeking out

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