

Today's Fishkeeper

AUGUST 2004 £3.25

PASSIONATE ABOUT FISH

Moving house with fish!

**Create your own
blackwater
aquarium**

**Getting to know
Indian glassfish**

**Growing plants
the hi-tech way**

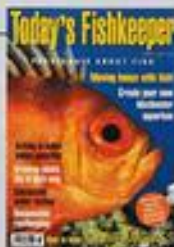
**Successful
water testing**

**Responsible
reefkeeping**

**WIN PRIZES
GALORE
FROM D-D
AQUARIUM
SOLUTIONS**



How to keep NATIVE MARINES



INCORPORATING
**AQUARIST
AND PONDKEEPER**
The magazine for every fishkeeper since 1978

Designed & Published by

PS Magazines Ltd
7 The Pickyard
Clifton Reynes
Oxney, Bucks
MK46 5LD
Tel: 01234 714644
Fax: 01234 714633

Editor

CHRISTINA EVATT
(01234 714784)

Advertisement sales

DARREN FINCH
(01234 714404)

Production director

MICHELE SWALES
(01234 714637)

Designer

RACHEL WOOD
(01234 714637)

Publisher

KAREN PICKWICK
(01234 714644)

Group sales manager

MARK LIGHTFOOT
(01234 714404)

SUBSCRIPTIONS

01234 714644

Printed by

NEWMAN THOMSON

Distribution to the news trade

COMAG SPECIALIST
01695 433600

Opinions expressed in any article remain those of the author and are not necessarily endorsed by the Editor or by PS Magazines Ltd.

Correspondence requiring response or return of any material supplied must be accompanied by a stamped addressed envelope.

While every care is taken to ensure accuracy of content, PS Magazines Ltd will not be held responsible for any inaccuracies, distortions, copyright infringements or otherwise commercially-damaging claims in respect of products advertised. Any such instances are liable to face action by third parties suffering as a result. Advertisers are reminded to refer to conditions of booking.

This publication is declared for purposes of Zoological Nomenclature in accordance with the International Code of Zoological Nomenclature, Fourth Edition, Articles 8.3 and 8.4. No new names or nomenclature changes are available from statements in this publication. ISSN 1475-8799 © PS Magazines Ltd 2004

Cover picture by Max Gibbs:
Mexican Big Eye,
Pseudogobius alba

Welcome!

There has been much talk recently about the launch of the draft Animal Welfare Bill. It has been hailed as the most comprehensive modernisation of laws on domestic and captive animals and that includes fish.

The new law will introduce a new duty of care on pet owners to look after their animals properly. It will define what constitutes cruelty and modernises over 20 pieces of animal welfare legislation.

I don't think any of us would disagree that raising standards of animal welfare is a good thing, but what does it mean to fishkeepers and the aquatic trade? If it means the end of badly-run fish shops, which fail to keep their fish in adequate conditions, then that's a good thing. And if it prevents some fishkeepers from causing death to their fish by neglect, then again, that's positive. However, there have been questions raised over whether fish shows will be allowed, and over restrictions on imports – this, of course, may not be so good for the fish hobby.

There is one other thing that bothers me ever so slightly and that is that the age of children buying pets has been raised from 12 to 16. Of course, I know this is a good thing if it means that there will be fewer unwanted pets bought and a more responsible attitude, but I'm not sure responsibility necessarily comes with age in all people!

The reason for my reservations comes from a purely nostalgic point of view. As young child I remember the thrill of being able to walk round to the pet shop and buy goldfish for my tank. Not having parents there and being able to buy MY fish certainly made me look after my charges all the more. Also, when I visit fish shops now, I see young children enthused about fish and it's these youngsters that are the fishkeepers (not to mention TFK buyers!) of the future. But I guess kids can look on the bright side; if they're under 16 and have to take mum and dad along, it's a perfect opportunity to get them to pay for everything!

There seems to be a bit of a water quality theme running through this issue of TFK. There's a guide on pg 48-50 on how to mature your tank filter. It's one of the most fundamental parts of fishkeeping and one of the most misunderstood ones, so for all you people new to the hobby, I hope it helps. Ben Helm also talks about water testing on pg 54-55 and, although it's written mainly for pondkeepers, it highlights the importance to test water for all fishkeepers.

Well, here's hoping that by the time this magazine is out there will some better weather. I can imagine there's a lot of pondkeepers frustrated that they can't sit by their ponds in the sunshine!

Christina

See you next month



TROPICAL/MARINE/COLDWATER

6 Starting point

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

42 On the move

Moving house? Roy Osmint has some advice on a pain-free move

MARINE

18 Fishkeeping answers

All your marine questions answered by our resident expert Andrew Caine

28 Sea View



Andrew Caine takes a look at marine fish from a bit closer to home than their tropical counterparts

52 Surgery

Our resident vet, Lance Jepson, looks at the marine fish disease, Uronemiasis, and how to treat it

70 Responsible reefkeeping

Captive-bred fish and sharing coral cuttings. Anthony Calfo investigates

page 28



PONDS & COLDWATER

54 Water testing Q&A special

Ben Helm explains why it's important to test your pond water regularly



57 Koi World

Bernice Brewster writes about the importance of oxygenating water and ulcer treatment

58 Ponderings

Want to build a mini wildlife pond? Dave Bevan shows you how in his step-by-step guide and outlines the wildlife you may attract

28 SEA VIEW



TROPICAL

14 Indian glassfish

Mary Sweeney is a great advocate of Indian glassfish and says they make great community fish

18 Fishkeeping answers

All your tropical questions answered

24 Create a blackwater tank

David Armitage shows you how

32 Big-lipped beauty

Juan Miguel Artigas Azas tells us of his travels to find the shy cichlid *Amphilophus nourissati*

page 66



47 Discus Problem Solver

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

66 It's the real thing

New imports and unusual fish, Erwin Schraml hunts them out...

90 End Point

Pat Lambert profiles the unusual mudskipper – an interesting fish for the more experienced aquarist

WIN a host of prizes from D-D Aquarium Solutions. Prizes worth over £400 must be won. Turn to p77 – good luck!



TODAY'S FISHWORLD

36 Points of view

Dick Mills is in the chair as readers share their news and views

39 Today's Diary dates

40 Club News

News and show winners from around the club scene

PLANTS

62 High-tech plant-keeping

How to keep a planted tank the high-tech way. Peter Hiscock explains



page 62

REPTILES & AMPHIBIANS

74 Desert dwellers

Val Davies suggests some small desert dwellers which will make great pets for beginners



page 74

REGULARS

3 Editorial

73 What's in next month's issue

78 Subscribe to your favourite fishkeeping magazine

CUT OUT AND KEEP

38 South African leaf fish
Monocirthus polyacanthus

BEGINNERS

6 Starting point

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

14 Creating a community

Mary Sweeney sings the praises of Indian glassfish

Cover Story

18 Fishkeeping answers

All your questions answered on both tropical and marine

28 Sea View

Andrew Caine takes a look at native species of marine fish

58 Ponderings

Dave Bevan rounds up all the seasonal happenings in the pondkeepers' calendar

62 Planting the high-tech way

Peter Hiscock looks at keeping plants in you tank using all the latest equipment

Cover Story

74 Reptiles for beginners

Val Davies suggests some easy-to-keep desert dwellers

NEWS

10 Today's news and views

All the new products and news from around the trade – plus the latest fish from the tropicalfishfinder website

KEY TO SYMBOLS:

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

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

Starting Point...



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

Find out more about Piranhas

If you are fascinated by piranhas (aren't we all) I have just read a small book on them, it's entitled *Piranhas* written by David M. Schleser and is in the Barrons educational series ISBN 0-8120-9916-8. I first heard about the book when I met David some years ago in the US. And he told me of his venture to run Amazonian boat tours out in Peru. Small this book may be but it's quite meaty and you will learn a lot about piranhas from it. David has travelled extensively on the Amazon experiencing the piranha at close quarters. There are chapters on care and feeding, aquarium set-ups, their natural environment and even how they have been bred in captivity, needless to say this has only been done in very large public aquaria. So, even if you never intend to keep one (his advice to parents with small children is not to keep piranhas as pets) this is a worthwhile addition to your bookshelf and it's a well illustrated, inexpensive paperback and many of the photographs of Piranhas have been taken in the field.

'What goes around comes around'

...so the saying goes and so it is with summer holidays. Peak season is here and with it comes the worries for beginners of leaving their fish for two weeks. There is really no need to worry if your fish have been well maintained and are in peak condition. Healthy adult fish can be left unfed for up to two weeks and it's not a problem. Routine maintenance

TOP TIP

Gradually lower the tank temperature by a couple of degrees in the run-up to your holiday. Fish need less food at lower temperatures as their metabolic rate slows down.



A Red bellied piranha with its fearsome looking teeth

such as water changes and gravel cleaning should be done a day or two before you go as the tanks should not be squeaky clean on your departure. If you have someone who will look in and see that heaters and filters are working properly and you have a spare heater near the tank just in case, this is all the supervision required. A contact telephone number of your friendly aquarium shop should be on top of the tank in case of problems.

It is important not to introduce new fish into the set-up within a week prior to departure as any new introduction needs careful observation during the settling in period. Baby fish cannot be left without food for more than a day as, ideally, they need several small feeds daily. Breeding projects should not be attempted until you have returned and the feeding regime has been established, do not overfeed at this point just re-introduce your normal feeding regime. It is a fact that I have returned from holiday to find my fish looking great, in tanks that have not been polluted by kindly neighbours overfeeding. Enjoy your holiday in the knowledge that fish are the most undemanding of pets.

Appetising food for baby fishes

The virtues of newly hatched brine shrimp were extolled in last month's Starting point and this month there is a step-by-step guide to its culture.

Micro-worm is another fish food culture that is a yummy food for baby fishes, particularly for fish like corydoras, as it sinks to the bottom. It takes up little room, is very cheap and many breeders use it.

Purchase a micro-worm culture from a mail order company. Use a clean 250g margarine tub. Cook some instant porridge in water, cool and layer to a depth of a centimetre. Place a teaspoon of culture in the middle and cover with a pierced lid. Store at 74°C.

In a week's time the tiny worms can be wiped from the sides and fed to the babies. A new culture can be started in the same way from the old while it is still fresh as they do go off.

Newly hatched brine shrimp is highly recommended by fish breeders.

RECIPE FOR SUCCESS

You need:

- A well cleaned out 1 litre pop bottle
- A length of plastic airline tubing enough to run from base of bottle to pump
- An air pump
- 2.5 g of eggs



17g of salt



- Water at tank temperature
- A funnel to fit top of bottle

Method:

- Half Fill the bottle with water (about half a litre).



- Insert funnel and add the salt, followed by the brine shrimp eggs.

- Attach one end of the tubing to the air pump and insert the other end into mid water level of bottle – an airstone on the end of the inserted tubing gives better agitation.



- Brine shrimp usually hatch in 24-36 hours dependent on temperature. When hatched, remove the tube and leave for about half an hour when the hatched brine shrimp will congregate in the bottom of the bottle as the shells float to the top.



- Siphon the brine shrimp into a net lined with kitchen towel above a container to hold the salty water. The water should all drain away leaving the live brine shrimp in the paper towel.
- Use a container of fresh water of the correct temperature, empty the live brine shrimp into it by swirling the towel around.
- Spoon feed to the fish being careful not to overfeed.

Good luck! It's really worth the effort and doesn't take very long.

Photos from *Breeding your Freshwater Fish* by Derek Lambert with thanks to Interpet Publishing



It's easier with **AQUARIAN**
www.aquarian.com



The Spotted talking catfish, *Agomoxys pectinifrons*, is one of the Doradidae family



LOST FOR WORDS

Annual fish: Some killifish that breed on a seasonal pattern are called annual killifish. Their habitats are temporary small pools which dry up after a short time. The adult fish lay their eggs in the peaty soil and die when the pool dries out. Egg development is paused in the peat (a period known as the diapause) until the rains come again when they hatch and the annual ritual starts again.

Cyanobacteria: Has characteristics of both algae and bacteria but is different from both. Commonly referred to as Blue green algae or slime

Doradidae: These South American armoured catfish protect themselves by their ability to lock the dorsal and pectoral spines in an erect position. These defensive weapons can make it difficult to net and handle these species. The noises

they emit is created by the movement of their pectoral spines around -the sound is amplified through the swimbladder.

Drosophila: Fruit flies. Wingless fruit flies are a delicious food for surface feeding fish such as Hatchets and Halfbeaks. Some pet shops sell starter cultures which have full instructions. Normal winged fruit flies are useless as they fly off when released unlike the wingless ones which rest on the surface from which they are eagerly snapped up.

Gill cover or operculum: This is a hard but flexible cover forming the outer wall of the gill chamber. It protects the gills and plays a major role in the pumping mechanism that regulates the flow of water over them. As the gills are the main organs of respiration in fishes, the movement of the gill covers is faster in fast moving fishes.

Spawnbound: If there is no suitable male for a ripe female to mate with or conditions in the aquarium are not to the fish's liking a

female can fill up with eggs which if not expelled or reabsorbed can be trapped inside and she becomes spawn bound. The eggs rot inside causing infection which can kill. Some larger females can be hand stripped but it is impracticable with very small fish

Venturi: An aeration device incorporated within powerheads or power filters. It draws air from the atmosphere via a tube, into the water, and dispels it in a stream of bubbles.

Zeolite: These ammonia adsorbing chips are very useful in a newly set up aquarium or one which has not been running very long. They are a filter media which can be placed in an outside or canister filter before a water change. Used in conjunction with sodium thiosulphate (water conditioner) they quickly remove ammonia at a time when a biological filtration system is not at full strength with its nitrifying bacteria.

AND NOW FOR SOMETHING COMPLETELY DIFFERENT



The Threadfin rainbowfish, *Iriatherino werner*, makes a lovely little community fish

If you want something different, are prepared to make a little extra effort then the little rainbows may be just the fish for you.

Last month I told you about a beautiful larger rainbow fish, but for me the little ones have a greater fascination. These are little gems that are worth searching out for a community of small rainbow fishes commonly known as blue eyes.

Pseudomugil conneelee is a lovely little fish which only grows to 4-5cm and is a great community fish with other small rainbow species such as *Pseudomugil gertrudi* growing to 3cm and *Iriatherino werner* the threadfin rainbowfish growing to 5cm and so called because of the elongated extended filaments. It has a courtship behaviour is really spectacular

with these. An aquarium containing a group of any one of these species only could be quite a stunning sight. It is best to purchase young fish and grow them up together if you mix the species. Males are easy to sex as they are more colourful and have extended finnage.

Heavy planting to rear and sides of the tank is appreciated with plenty of open swimming room in the foreground. These shoaling fish are a delight to the eye when kept in optimum conditions of regular water changes, clean filtered tanks and small foods, particularly for gertrudi which are one of the smallest of the rainbows. I have always kept mine in a tank containing a shoal of one species and they have bred into our handmade spawning mops. The eggs will be eaten, however if they are not picked out of the mops and removed to hatch, but that's another story.

The 10 golden rules of fishkeeping

Read all about it

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

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

THE WATER

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

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

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

THE FISH

4 Stocking levels: For freshwater/tropical we recommend 12cm of surface area per 1cm of fish.
 Marines: For a fish only setup we recommend 2.5cm of fish for 9l of water and for Reef only setups we recommend 2.5cm of fish per 27l of water.

For your free beginners guide please call: 0845 677 6770 or visit our website: www.aquarian.com

AQUARIAN



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

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

THE ROUTINES

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

5 Water changes: Freshwater/tropicals 10-20% weekly
 Marines no more than 20% every two weeks.

Fond fish also appreciate an occasional water change. Keep an eye on ammonia, nitrite and nitrate levels. They should be zero in a mature pond.

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

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



It's easier with **AQUARIAN**
www.aquarian.com



Today's news

All the latest news and products from the world of aquatics

Sex-change fish mystery

Research carried out by the Environment Agency suggests that a third of male fish in British rivers are in the process of changing sex due to pollution in human sewage.

A survey of 1,500 fish at 50 river sites found more than a third of males displayed female characteristics.

It is thought that the main cause is hormones in the sewage, including those produced by the female contraceptive pill. There has been concern for some time that chemicals, known as endocrine disruptors, are causing fish to change sex.

These findings have led the agency to ask if this problem could damage fish populations by reducing their ability to reproduce.

The Environment Agency said that its findings highlighted the need for water companies to develop new treatments to rid the water of these hormones.

Studies have been carried out before but this latest study is the first to show the scale of the problem in Britain. Should we also be asking ourselves what sort of impact this has on humans, too?

Warning not to release pet fish

After a spate of wild fish deaths in the Midlands, owners of pet fish are being warned by the Environment Agency, not to release them into the wild or into park ponds.

Ornamental fish from home tanks or ponds can harbour diseases that can devastate wild populations. Domestic fish can develop a degree of resistance, but once released into a pond or stream, they can infect wild fish. The pet fish itself will have a poor chance of survival in the wild where it has to find food and avoid predators.

In addition, it is against the law for anyone to introduce any fish into the wild without prior written consent from the EA. If found guilty, offenders could face a fine of up to £2,500.

Anyone seeing fish in distress should report it to the Agency immediately by calling the free Emergency Hotline on 0800 807060.



RIVER OF DREAMS

The Federation of British Aquatics Society (FBAS) had a successful week at Hampton Court with their 'River of Dreams' show garden winning a bronze medal. In a vote on the RHS website their garden showed its popularity by coming first in the visitors' 'favourite water garden' poll.

The simplicity and achievability of the garden was its key to success. The flowing water meandering through rocks replicated a small river, showing that movement is possible even if you don't have a river at the bottom of your garden.

Sponsored by Rolf C Hagen Ltd, Anglo Aquarium Plant Co Ltd, MA Direct - Focus Features, and KC Landscapes, the garden was expertly designed by Terry Hill of the Koi Pond Construction Kompany. For further information on the FBAS visit their website at www.fbas.co.uk and don't forget the Festival of Fishkeeping at Bracklesham Bay in October.

Seahorse found in Southend-on-Sea



SCIENTISTS are hoping the discovery of a seahorse in the Thames could be a sign that these fascinating creatures are coming back to British waters, the *Daily Mail* reports.

Seahorses - the only species in the world where the male gets pregnant - were a common sight in Britain 200 years ago, but were forced out by pollution from the Industrial Revolution.

A fisherman spotted a 15cm seahorse in shallow water near Southend-on-Sea this summer. He took it to the town's Sealife Centre, where it now shares a tank with two hermit crabs.

The centre's curator, David Knapp, told the *Mail* it was a "remarkable" discovery.

"It suggests the cleaner water of the Thames and the recent hot weather is at last encouraging seahorses to venture back into these waters," he said.



Aquatic Solutions pays tribute to Derek Lambert



Due to its success over the past few years Aquatic Solutions has moved premises to accommodate its new product ranges and increased business.

Founded in April 1998 by Andrew Werendel (the current Managing Director and owner), Aquatic Solutions is based in Kings Lynn, Norfolk. Originally selling only KENT products, the company has increased its product range to encompass all aspects of the marine, tropical and coldwater fish hobby.

On its official opening day on July 7, the new 3,500 sq. ft warehouse was named after the late editor of Today's Fishkeeper, Derek Lambert. A plaque was erected as a fitting tribute to his many years as a respected aquarist in both the hobby and the trade.

His mother, TFK columnist Pat Lambert, attended the opening and said: "I would like to thank Andrew and his team at Aquatic Solutions for honouring my son, Derek, by naming their new warehouse and offices after him. Derek loved all aspects of fishkeeping and was well known to hobby, trade and scientific communities world-wide. He knew that all areas were inter-dependent and respected them all. In return he gained the respect of them all - which is rare and not easily won. The plaque in the entrance to the building says all that needs to be said."

Elite goldfish aquarium kits



The new Elite Goldfish Aquarium Kits contain everything you need to begin the fishkeeping hobby.

An ideal kit for the beginner, the starter tank comes jam-packed with accessories to get you up and running. It includes: a bottle of Water Conditioner, a tub of Nutrafin Max Goldfish Flake Food, an Elite Mini Filter, a decorative life-like plant and some bright, colour coordinated dust-free gravel.

The starter tank, itself is stylishly shaped and brightly coloured so it will be the perfect way to liven up any room.

It has an easy access lid and a fully detachable top for easy

cleaning. It is lightweight and comes with a two-year guarantee.

There are two kits available:

- System 2 has an 11-litre capacity and the tank is a colourful combination of indigo and lime green.
- System 3 has a larger 19-litre capacity and is available in burgundy and grey.

The new Elite Goldfish Aquarium Kit have a recommended retail price of £29.99 for System 2 and £39.99 for system 3.

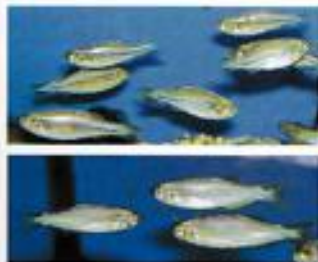


tropicalfishfinder.co.uk
The easy way to find your tropical fish

WHAT'S NEW?

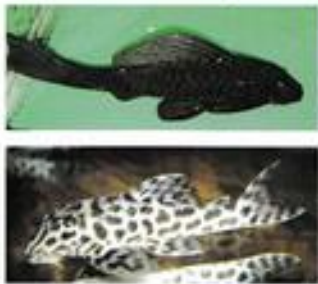
Welcome to the Tropicalfishfinder news update where over the coming months we will mention some of the more unusual and rare fish turning up at shops across the country. This month there are three fish worthy of mention that are currently available.

The first is a Danio which is rarely seen in the shops. The fish in question is Danio sp. 'hikari blue' (below). There is



also a yellow form known as Danio sp. 'hikari yellow' (above). These fish have a very attractive coloration and look great if kept as a group. The fish originate from Myanmar and reach a size of around 5cm.

The second fish, which will be of interest to those of you that possess larger tanks and like catfish, is a rare plec called *Pogonopoma obscurum* (see below). They're a recent discovery and originate from Southern Brazil and can reach a size of at least 40cm. Currently very hard to obtain in the UK, however, Wildwoods in Enfield had one of these available at the time of writing.



Finally, if you are after an L Number, but do not want to pay the high premiums, why not consider *L174*, *Hypancistrus* sp. (above)? It's pretty and won't leave a huge dent in your wallet.

All of the fish mentioned here were available at one or more of the shops using the Tropicalfishfinder service at the time of writing. To find out more go to www.tropicalfishfinder.co.uk or call 020 8297 4199.

MAJOR EXPANSION AT WHARF AQUATICS



A large expansion at Wharf Aquatics, which has been planned for a number of years, is now close to completion. The new sections are housed inside a large new two-storey building. The large new pond and coldwater fish section includes an 8,000-gallon kol pond plus many additional vats and aquarium tanks housing a wide range of quality pond and coldwater fish.

There is a large tank display area to showcase Wharf's range of custom built tanks and cabinets, as well as popular commercial tanks such as Juwel and Hagen.

The expansion includes a comprehensive new section for



reptiles, amphibians and other exotic pets, with associated dry goods and vivariums. There will also be a brand new marine section that will include around 100 fish tanks, and separate dedicated invert tanks. To enable them to maintain a high quality and good availability of livestock, there will be an extensive quarantine area for freshwater and marine fish.

It's goodbye to funfair goldfish

A draft bill has been issued in which pet owners will be given a new duty of care. This means the RSPCA can intervene when an animal is being kept in conditions likely to lead to suffering, closing what many see as a serious loophole.

This bill is seen as the biggest overhaul of animal cruelty laws for nearly a century. Children will have to be aged 16 and above to buy pets, and pet owners will be given new responsibilities for caring properly for their animals.

Funfairs will no longer be able to give away living creatures, including goldfish, as prizes, the draft Animal Welfare Bill states.

Under the current laws on animal cruelty, dating back to 1911, evidence that a pet has experienced physical suffering must be gained before legal action can be taken. So, if passed, this new law will give the RSPCA greater power to stop suffering before physical signs are evident.

Becky Hawkes, from the RSPCA, said the organisation's top priority had been campaigning to get the 'duty of care' reform into any bill. She continued, "It is the single most important piece of legislation affecting captive and domestic animals since the 1911 Protection of Animals Act.

It has been suggested that the new bill may also affect fish shows as these are seen as temporary structures. There will be people in the fish world watching closely.

Can't stand the heat?

Tetra can help you control levels of algae in ponds throughout the hot summer months.

There are two types of algae: green water and blanket weed. Green water is caused by the presence of millions of suspended algae cells, which multiply rapidly during the spring and summer months. Blanket weed tends to be more stringy and coarse and is caused by more filamentous species.

There are some basic measures to control algae in ponds:

- Light Levels can be controlled by shading the pond with large marginal plants and by also having a good selection of floating plants. When designing a pond try to allow it full sunlight for no more than half a day.
- Nutrient levels can be controlled by keeping sediment levels to a minimum and by installing a filter to remove organic matter.
- A long-term solution to green water in ponds is the installation of an ultraviolet light.
- Nutrient build-up can also be controlled through the use of good quality foods, which are easily digested and produce minimal amounts of waste, reducing the nutrient input into the water.

TetraPond AlgoFin is specifically formulated for controlling blanket weed. Designed to remove blanket weed and then prevent it from re-establishing itself, it is the only plant-safe algicide approved by the Health & Safety Executive, which began regulating such products in 2003.



NEW POND SIEVE

There's nothing new about bowed screen filters but what IS new is that Evolution Aqua have added their innovative design and technology expertise with proven sieve technology and are delighted to launch a new patented pond sieve.

Existing sieves attracted criticism for being very sensitive and unforgiving if fitted slightly at the wrong height or when they become blocked.

This new product is compact, robust, reliable and simple to install and is ideal for retrofitting with existing filters. The patented Pondflow system allows the sieve to adjust to varying pond level height differences immediately so that the flow is never impeded or interrupted. Contact your nearest Evolution Aqua stockist or visit www.evolutionaqua.com for further information.





A shoal of these iridescent fish will brighten any tank

Glass gems

A peaceful fish, the Indian Glassfish is a real stunner and a great choice for a community tank says **Mary Sweeney**

Parambassis ranga, the Indian Glassfish, is one of the fishes we call 'oddballs' in the aquarium hobby. Odd though it may be, the glassfish is one of the longest-known species of aquarium fish, first appearing in European aquaria around 1900. It comes from the waters of India, Burma, Thailand and surrounding areas. The Glassfish lives in large schools in both fresh and brackish waters. This is such a prolific fish that if it had any size to it at all, it would be a tremendous source of food for the table, but these little gems are truly aquarium fishes, as they would be only a small and bony mouthful on the dinner plate.

The Indian Glassfish, though it is found in huge schools in the wild, can be kept in small schools or at least trios of one male

Tetra 
The experts at making fishkeeping easy



and two females along with other quiet fishes in a community aquarium. Expect no trouble from this fish with regard to its behaviour toward tankmates of its own or other species. It's simply one of the most gentle of all the aquarium species. For this reason, be sure to give it similar gentle company, but do give it tankmates of other species, as it can be so timid that it does not do well when kept without some other fishes to impart courage. Some good tankmates would be: small tetras that can handle neutral waters, livebearers, any other small peaceful fish. Kuhli loaches come to mind as very nice companions. Fishes that require low pH or soft water will not do well in this tank, however, so avoid Amazonian species. A tank with these Glassfish provides a great opportunity to keep other oddballs like the Borneo

Suckerfish (*Momoloptera* sp.) that we are sometimes hesitant to try to keep with some of the more feisty species. The Borneo Sucker is only about 8cm and very similar in its keeping requirements (though I would avoid keeping the suckerfish (which, oddly, does not have a suckermouth) in brackish conditions, which should not be a problem as the glassfish do not absolutely require salt in the water.)

Keeping requirements

This is a freshwater fish that is also found in brackish waters as well as stagnant pools and large puddles. It breeds freely during the rainy season. The pH range is 7.0 - 8.0; water temperature is tropical, 20-30°C. Though it may be found in varied and

WHITEWORM CULTURE

Since Indian Glassfish are so fond of live foods, a whiteworm (*Enchytraeus albidus*) culture would be an ideal way to make sure they see some live foods once or twice a week. Plastic shoeboxes or similar containers are filled halfway with slightly dampened compost. The culture is placed in a slight depression in the compost and a small piece of milk-dampened white bread placed on top. The worms will feed on the bread and reproduce quickly. Simply lift the bread to harvest a small amount of whiteworms for feeding. Do not allow the culture to become overheated in the summer months. Try to keep it in a cool place.

See the beautiful blue coloration at the fins tips



PHOTO: www.pindora.org.uk

Stop the dyeing

Some misguided entrepreneurs in the Far East inject fluorescent dye around the edges of the Glassfish in an attempt to make these transparent fish a bit more exciting

to their customers. This is a cruel and misguided thing to do. Help stop this practice by refusing to buy such fish and if you see them in the shop, grumble. It's only when there are no customers for these poor things that people will stop the practice of dye injection. The lifespan of the fish is

shortened and the dye disappears in a short while anyway, so it's a lose/lose proposition. The results of the dyeing are horrible, aesthetically and ethically, but to see the true colour of the Indian Glassfish is a treat almost beyond compare in the aquarium.

Livefood feeding



PHOTO: from *A Practical Guide to Setting up your Tropical Aquarium* by Gina Sandford, Interpet Publishing

There has always been heated debate over whether or not live foods should be fed to your fish. Some say it can introduce disease, while others say that fish can't live without them. The choice is yours...

The Indian Glassfish of course prefers small live foods to any other kind of food, but for its own good be sure to include finely crumbled flake food in the diet. Otherwise, what will it eat when you're low on brine shrimp, blackworms, bloodworms, glassworms, whiteworms, daphnia, etc?

Prepared aquarium foods for small egglayers is much improved in recent years. And as with many fish, small amounts regularly is much better than larger amounts only once or twice a day. See the box out on page 15 about how to make your own whiteworm culture. The fish will love you for it.

PRONE TO PARASITE PROBLEMS

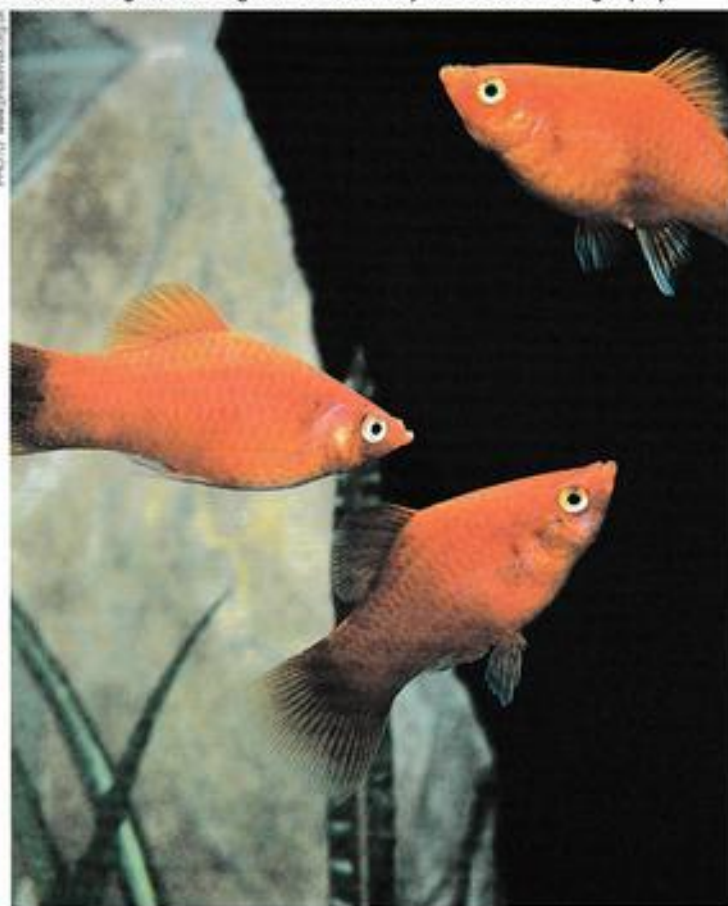
Indian Glassfish can sometimes be infected with the parasite, lymphocystis. It is not generally a problem, but because of the transparency of the fish, it is quite easily seen. Avoid fish that have any unusual spots or sores on the body or fins. Lymphocystis in the early stages resembles a salt-like dusting on the body.

unusual places in the wild, this is not a fish that will tolerate neglect. The water must be kept clean and free of toxic waste of any kind, ammonia, nitrite, nitrate and room air fresheners. Cleanliness is very important, and so is the requirement for neutral to alkaline conditions. When the water starts to become acidic or nitrate levels rise, the Glassfish begin to lose colour and drop off. The addition of a small amount of salt to the water, in the range of 1-2 grams per litre, will help prevent problems from nitrite poisoning, which also will take these fishes very quickly.

The Indian Glassfish would appreciate a planted tank, but plants tend to acidify the water, so it's probably best to stick to other

decorations of the plastic or ceramic variety. Bogwood also acidifies water, so I would avoid using that as a decoration with the Glassfish. The importance of this advice will become quite clear to you when you see the true colour of this fish. Usually when we see these fish, they are under stress, and are clamped of fin and transparent 'nothings'. When kept in a pleasing aquarium and well fed, the male's transparency becomes a lovely amber and the back of the dorsal and anal fins are edged in a beautiful ribbon of electric blue or blue-white. He's a stunner! The female, while she doesn't take on as much colour is a sparkly little thing, sedate in manner, inquisitive, and a relaxing pleasure to watch.

Glassfish aren't good at breaking in tanks so use a hardy fish such as the Red wagtail platy



Tetra 
The experts at making fishkeeping easy



These are small fish, 7 or 8 cm, so they don't require a large aquarium, but be sure to provide plenty of cover; they do like to be able to get out of the limelight if they get spooked. Also, don't forget to cover the tank. It gives them a greater sense of security and keeps them from jumping out of the tank if they're frightened.

A mature sponge filter or internal power filter is a good choice for this fish. The tank need not be large if you are just keeping a few glassfish and a small number of assorted oddballs. They are not large fish. A desktop aquarium is perfectly suitable. Natural sunlight for a little while every day is quite beneficial and will show lovely reflections off the fish, especially as they come to feel safe in your aquarium.

These are not fish for breaking in a new aquarium, however. Save that task for hardy platies and other small hardy fishes. These little Glassfish are delicate, like glass, and cannot tolerate the ups and downs of ammonia and nitrite involved in a newly set-up aquarium. Let the aquarium be at least six weeks running before you even contemplate adding Glassfish to the mix. ■



Acanthopthalmus kuhlii, Giant coolie loaches, would make good tank mates

PHOTO: www.pfcommunity.org.uk

10 Community Cautions

Big fish will usually eat small fish

- 1 Be aware of the size to which the species in your community set up will grow and try to keep them even

Fish require different water temperatures

- 2 When creating a community, always ensure that the fish you are choosing can live at the same temperature and adjust your thermostat accordingly.

Fish have varying dietary requirements

- 3 Remember to cover the scope of dietary needs within your feeding regime and add extra filtration if you stock carnivorous species.

Do not mix riverine and still water fish

- 4 Riverine fish require higher oxygen and filtration levels than still water fish. Still water will kill them. When exposed to fast moving water, still water fish quickly become distressed and lose condition. Choose either a still water OR a riverine Community.



Fish have different water requirements

- 5 Always ensure that your community tank only contains species that need the same water pH and hardness.



Tetra

The experts at making fishkeeping easy

Fill all the levels

- 6 Different fish live in different areas of the tank. There are top, middle and bottom dwellers. A good community tank will include each of these.

Never over stock

- 7 Cramped conditions can lead to aggression in otherwise placid species.

Keep your eyes open

- 8 Look for bullies in your community and remove them immediately. Prevention is always better than cure.

Provide sufficient territory

- 9 Always ensure each species in your community has it's own territory. For example if you have 5 species of cave dwellers, ensure there are 5 caves...

Differing dispositions

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

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

Q&A

Tropical

Shubunkin make good coldwater fish for beginners

PHOTO: www.shubunkin.org.uk

STARTING OUT WITH COLDWATER



I am new to the hobby of fishkeeping. I have a 18 x 12 x 11.5in LAC tank including filter. I was wondering how many and which species of coldwater fish do you recommend as a good starting point?
Paul, via email



The actual number of species of coldwater fish is not great, but there are lots of different selected varieties from which you can choose.

The general rule is, that the fancier the fish, the less handy it will be – so I suggest to start off with, a few simple small goldfish or shubunkins. With your first aquarium being so moderately sized, you will be limited to only a handful of small coldwater fish in total – so always start small to allow your fish to grow into your aquarium. You will also have to add them gradually as such a small aquarium will be unforgiving if you have a water quality problem. As an aside, have you never thought of

Cave advice



I'm moving my nine Mbuna, three Green botia and three Red-faced botia from a 5 x 12 x 15in tank to a 6 x 2 x 2ft tank. I really want to get the decor right with the correct amount of caves amongst the limestone rocks etc. I've never really figured out how big the caves should be, how many or if there should be a rear exit. How much space should the rockwork take up on the base of the tank, and how high should it be? Any other advice you can give me on a smooth tank changeover will be very gratefully received. Also, can I increase the Mbuna population in the new tank?
Brian Taylor, via email



That's quite a change of tank, and if it was up to me, I would use the new tank as a Malawi tank. The Botia does not belong there – they are from the Far East, and the Malawi is East African. Of course, if you want to keep them this is fine. The caves can be of various sizes – it depends on the fish size really. Not all the caves need to have a rear exit, because Malawis don't spawn in there – a cave without a rear exit feels more secure for the fish. As the tank is rather long, I would build up two stone piles, leaving the middle open with sand and some flat rocks. Since Mbuna live among the rocks, the rocks can occupy most of the tank, and reach almost up to the surface. Yes, you can add a few more fish, if you leave the Botia out. It's good to have many hiding places among the rocks, because the Mbunas are always chasing each other around.
All Stalsberg

starting off with tropical fish? The number of fish you could keep is greater (as you have so many more tiny fish to choose from) and it is easier to keep them clean as you can also add a scavenger and algae-eating fish. To the beginner, tropicals may appear a little more daunting, but for the extra cost of a heater/thermostat, they will actually prove easier for you, especially with such a small aquarium. Many tropical aquarists have started out with tanks like this.
Ben Helm

SHY MALAWIS

I have had a Malawi set up for 15 months now and have been successful in keeping these fish. However, recently they have become very timid dashing into the rocks every time I either walk past or up to the tank. The only time they stray out is feeding time! I have a 48 x 16 x 19in tank (260 litres) with an internal filter together with a power head for extra water movement. The lighting I have is two 38w fluorescent bulbs 'warm white and marine moonlight' which are switched on for approximately seven hours a day. The tank is decorated with lots of ocean rock towards the rear and there is black backing to both the rear and sides of the tank. The base is covered with fine gravel and crushed coral. The water temperature is 26°C with a pH 7.4, nitrate 50mg/l, KH7 and GH15. I am using reverse osmosis water with Kent Malawi conditioning agents, but I have difficulty in retaining the pH level at around 8 – it keeps dropping to around 7.4. I carry out a five-gallon water change every week. Do you have any ideas as to why my pH

level keeps dropping? I have one *Syndonotis* catfish together with a variety of 28 Malawi fish averaging between 1-3in in length. Also, do you have any suggestions as to why my fish have suddenly become timid after months of swimming around happily?
Martin Pegg, Derby



I would suspect the water, because if the water is not right, this would stress the fish. But looking at your water parameters, the only thing I could see and a little uncertain on is the nitrate. Since your pH is dropping there is little buffer in the water. But I'm not sure what has caused this. Can you remember if you have changed anything, in or outside the tank? Try to remember how it was when the fish were happy. It may have been a small thing that triggered their shyness – my fish got scared when a friend of mine showed his 'ugly' face to the fish! They hid for a long time, under bogwoods and rocks, till they felt secure again. You could try to redecorate the tank, then the fish will have to concentrate on finding new hiding places.
Aif Stalsberg

Plant-friendly fishes

Honey gouramis should leave your plants alone



I suppose I'm a bit odd in my interest in tropical tanks because it's the plants that interest me more than the fish. I want to create a lush planted tank with various specimens. However, I would like to keep some small shoaling fish to finish off the scene – can you recommend some to me that won't eat the plants?
Michael Thomas, Kent



I know the feeling, keeping fish is all about creating a natural environment in which the fish feel safe, and a well-planted tank does this better than most displays. Most small shoaling fish will not eat healthy plants, but often get the blame for eating plants when it is in fact the plants dying and the fish only eating the dead portions. Shoaling fish for a

planted tank should consist of fish which will dart in and out of the foliage and some which 'hover' above it. For darting fish I would recommend Rummy-nose tetras, Black phantom tetras, or Danios. Partially-shoaling fish would include some of the small barbs such as cherry or pentazona barbs whilst hovering fish would include neon or cardinal tetras and hatchetfish. Also, for added interest I would keep a few fish which like to 'investigate' their planted surroundings or have a high visible impact, for this I would recommend a few pairs of dwarf cichlids such as kribensis or rams, smaller gouramies such as dwarf or honey gouramies and a few larger species such as angelfish or larger peaceful gouramies such as pearl, snakeskin or moonlight gouramies.
Peter Hiscock

Today's Answers Expert Panel

Aif Stalsberg Cichlids

Pete Liprot General questions on tropical fish and oddballs

Andrew Caine General questions on marines

Ben Helm General questions on coldwater plus equipment and technical advice

Lance Jepson Health

Tony Sault Discus

David Armitage

Anabantids

Pat Lambert

Livebearers, Rainbows and breeding fish

Ian Fuller Catfish

Andy Gabbutt Killifish

Stephen Smith Goldfish

Bernice Brewster

Koi and ponds

Val Davies

Reptiles and amphibians

Questions by Post

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

Internet Service

Fishkeeping Answers is also available via email. 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 emails to: questions@today-fishkeeper.com

SNAKE SHEDDING SMALL PIECES



Although my corn snake usually sheds its skin in one piece it has recently shed in small pieces some of which are still stuck to it. Can I pull these off and what has caused this type of shed?

The process of shedding is known as ecdysis. Snakes usually shed their skin in one piece but several factors can affect this process. The atmosphere within the vivarium may be too hot and dry with an inadequate thermal gradient; the snake may have been heavily infested with mites or have fed poorly and be undernourished. Prior to ecdysis a snake often coils up in the water dish to avoid dehydration. Many keepers provide a box of damp moss for the creature to coil in as soon as the eyes turn milky blue – an indication that shedding will take place within a few days.

We use this method with royal pythons and desert snakes – the latter needing high temperatures and small water bowls to keep humidity levels very low. The snakes automatically seek out the moss boxes and remain there until the skin is shed. Under no circumstances should you attempt to peel off the remaining bits of skin – provide a plastic container filled with moss which has been dampened with tepid water. During ecdysis the spectacle or eye shield is also shed, a new one forming just prior to the process so that the surface of the eye is always protected. Occasionally when ecdysis is incomplete one or both old spectacles are retained. Removal of these by inexperienced keepers is not advisable since it is easy to remove the new spectacle at the same time thus exposing the surface of the eye which will desiccate and be lost. In these cases take the snake to a reptile vet. Val Davies

Getting along with guppies



PHOTO: www.photomax.org.uk

After asking you a question which was published in last month's issue of TFK, I have taken your advice and bought a thermostat for my aquarium. I now have four male guppies and was wondering which other fish you would recommend as tank mates. I would also like to keep a scavenger. Paul, via email

Glad to hear you've opted for the tropical option. I would continue to choose a range of community fish, such as neon tetras and other livebearers such as swordtails and platies. Regarding scavengers, look out for a corydoras cat (peppered, bronze etc.) as these are hardy and will scavenge in your small aquarium. You could also consider a otocinclus which will only grow to a maximum of

8cm. This is an algae-eating fish that will help to keep your glass clean. As this is a new aquarium, please be sure to stock a few fish each week, checking that your water quality (ammonia and nitrite) is still satisfactory. The first few weeks of a new aquarium are the most risky for your fish while your biological filter matures. Ben Helm



Star
Letter



Why wouldn't you want to convert from tropical freshwater to marine...?

Marine conversion

Q Please could you advise me about converting my tropical tank into a marine one. When I bought my tank it said it was tropical and marine compatible. I have kept tropical for almost a year and have built up a decent general knowledge but I am not sure about how to convert to a marine tank (or look after). My tank as it stands has a biological filter (established) and heater. Please could you tell me what new equipment I will need and the price ranges (protein skimmers etc.). I don't want a reef tank, just a fish-only set-up to make it easier. The fish I am looking to keep are Clown fish, and Yellow-tailed damselfish. I am not sure whether these two species would be compatible together. I know a lot more care is needed for marines and am prepared to put the effort in. Also, the fish, I have heard can be difficult to feed and often die. This could become very expensive so could you give a feeding tutorial?

Toby Gibbens (age 16), via email

A I don't know what size your aquarium is but I will give you a few pointers. You will need two filters one for chemical filtration removing phosphates and other nasties,

the other for biological filtration, the established one will have to be cleaned as the bacteria will die in marine water. Lighting is not that important in a fish only tank but make sure you have a blue actinic for the dawn, dusk simulation as this will de-stress the tank. A good protein skimmer is essential here, if your budget can stretch go for one with a needle or pin wheel impeller, as these are the best. Under no circumstances use anything else but reverse osmosis water so either get a unit or find out if your local shop sells it.

The fish you have chosen are fine and you will be able to keep shrimps, and hermits to help clean up any waste, a vital addition. Feeding: the secret here is to feed in small doses and often, always with a variety of vitamin-enriched foods. If you feed one frozen cube a day get a glassful of aquarium water and drop in the cube, add two drops of vitamins and allow to stand for one hour stirring occasionally. Then start to feed and make the food last as much as possible - 10 times a day is great. When choosing fish always make sure they are feeding, the shop should be happy to demonstrate this for you.

There is loads of free information including an in-depth article on how to feed correctly in the downloads section of my website www.aquaworld.co.uk, it has been set up as a source of information for beginners and experienced alike.

Tank tur

Q My tank is 2m in length with two powerheads in the left hand corner to help circulation. The drain and return water are located in the right hand corner. The water passes over black plastic balls, enters my trickle filter then through two layers of sponge (washed everyday) then over more black plastic balls.

Chamber one has broken coral/stones, chamber two has more broken coral plus the ceramics, chamber three has sponge plus my protein skimmer, chamber four more sponge with small stones for lowering PD4, chamber five has carbon, plus the return water pump and the pump for my chiller, which circulates the water in and out of chamber five, plus an air pump with two air stones.

I use either distilled water or tap water treated with Chlorovoc to remove chlorine and heavy metals.

I test the chemicals weekly: pH - 8.3, NO2 - 01 - 0.3, KH - 9-10 degrees K, salt level usually 1023, temp 29°C, no ammonia present, no nitrite present.

I add an active bacteria and Sera Marinovit plus every week, and the carbon is changed every six months

I have the following fish, two Sergeant major fish, one Blue chromis, one Black triggerfish, one blue devil, two Clarks clown fish, one Sailfin tang fish, one lined butterfly fish, one starfish, one anemone, two Shellfish shaped like a spotted ball, two big mushroom-like soft corals.

I feed twice per day, mornings with brine shrimps, shrimp and vegetables for the tang and trigger, and in the evening prawns and flaks.

I have some problems with the tank: firstly there is a red algae growing. Is that low water flow rate or overfeeding?

My fish have been in the tank for nine months, except the butterfly fish which has been there two months. I have tried angelfish and butterfly fish many times, but I can't keep them longer than two months. Do you have any suggestions?

On my largest mushroom-type soft coral a hole has appeared in the centre. What is this and what can I do to remedy this?

David Cumming, Singapore

A Your tank will need a little tweaking, some different water tests and I'm sorry to say a few more pounds spent on it. All your problems are due not to one aspect but to many all acting together in a synergistic manner - you will have to address all

AQUA MEDIC

for all your marine keeping answers

Turnaround

of these for your system to improve.

Change the first sponge for filter wool, and replace it every week, your set up is letting quite a bit of detritus through if you have to wash your media every two months.

You have forked out on a cooler, yet your temperature is running extremely high at 29°C. This is a major cause of your problems with stocking, reduce the temperature to 26°C to avoid a shock reduce it by 1°C per week.

Tap or deionised water is not the way to go, you must start to use reverse osmosis water for all the water in the aquarium.

Start to test for phosphates, as this may be high in concentration even if you have media to remove it as it could be used up. You must also test for calcium, and magnesium to help your reef.

Carbon should be removed and in the future only a marine grade carbon utilised, and placed in a reactor that forces water through it. Never place media in a sump in a bag as you will find that water always takes the easiest route, and will flow round your bag and not through it. Only have carbon in a system for three days a month then throw it away, so use sparingly. However, as you have a slime algae problem replace the carbon for two weeks then throw it as you have an organic load in your system to remove.

Clean your skimmer every three days and ensure the water injection is cleaned, I could do with knowing what skimmer you have then I could advise better on this aspect.

The hole in the coral could be a few things and without inspection I can only give vague advice. Has it been eaten? Look for nudibranch or slugs at night or turn the coral over and inspect the rock for slugs. An iodine dip could help. 5ml of iodine on 25 litres of tank water – dip the coral for no longer than five minutes.

But it could be down to poor health due to all of the above. If you want to develop your aquarium into a reef then please catch the butterfly as this species will eat many polyps and corals. I know you have a lot to think about but I have seen worse situations turned around you should have no problem in doing just that.

CHOOSING LIVEROCK



I am new to the marine hobby and would like some advice on setting up my tank. I have been told that

liverock is the best thing to get started with and that I need to choose good quality pieces. What should I look for and how much should it cost?

Also are there any particular areas of the world that produce higher quality liverock? James Gould, Manchester



First of all you will realise that good liverock will cost, and the prices differ as to how you buy it. If you buy in bulk, which is anything over 20kg, you

will get the best deals and I have seen prices ranging from £180-£250. Buying it in smaller amounts it can range from £13.50-£18 per kg.

This stuff hits the pocket so my advice would be never to buy it by mail order – quite frankly it's a lottery as to what you get when you open the box. So you should look for a good calcareous algal covering which is purple in colour, plenty of holes and good shapes and always ask for Fijian rock. Choose each piece yourself and you can't really go wrong. One thing to add: if you see any small anemones in the tanks or on the rock don't buy it as you will infect your aquarium with aptasia anemones which are not a good thing.

Take time to choose your liverock – it will pay off



PHOTO: www.poshbox.org.uk

Star Letter Prize from

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

As Aqua Medic, the leaders in Marine Aquarium technology, is pleased to present whichever of the three volumes, normally £55.00 each – desired to this month's star letter



ANTIPHOS

Consciously better phosphate remover

B. livida

PHOTO: ALLAN BRADSHAW

Light in the darkness

David Armitage shows that it is possible to keep fish in the acid conditions of blackwater. You can even set up your own aquarium

Blackwaters. What does that term mean to you? You may be thinking about the gently acid waters of the Amazon but I want to discuss the real thing – the coffee-coloured waters of Malaysia and Indonesia. What makes them so special; how you can achieve those conditions in the aquarium, and what you can keep in them?

It's the fact that the waters in Indonesia and Malaysia often flow through peat forests that makes them so acid. I'm not talking here about the gentle acidity of the Amazon where soft water flowing over sand substrates creates tannin-stained yellowish water of pH 6. In many of the forests of south-east Asia, the water is the colour of Cola – literally, and the pH is often pH 3-4, probably because it is so rich in sulphates. You'd think that nothing could live in it – but it teems with specialist life. Since the late

1970s these waters have provided a constant source of new species – it's difficult to believe these areas were so little explored until recently. Maybe the rumour that nothing could live in such a hostile environment deterred anyone from looking.

First expedition

I first came across blackwater when I was sent to explore Selangore forest by my friends at Singapore University. I had previously encountered Amazon-like conditions as soft water flowed over white sand in northern Gabon where the pH was a little over 5.0. However, the waters in Selangore forest were pure blackwater tonic, and since then I have encountered the same thing in Johore, southern Malaysia, in

Sarawak and also in Bangka, always in association with peat swamp forest.

So what can you find in these waters? Well, rarely leaches for one thing. I've also found my wounds heal rapidly when I spend most of the day fishing immersed in this water. The first things I caught were *Rasbora maculata* which in the following years I have always found good indicators of real black water, as well as Chocolate gouramis, Liquorice gouramis and *Parosphromenus harveyi*. In later visits to Selangore, I came across the little red Betta with green side spots, *Betta livida*. In subsequent visits I found *R. nogyi* side by side with *B. tussayae* in Kuantan; *B. browmorum* side by side with *R. allani* in Sarawak and an unnamed species of *Parosphromenus* side by side with *B. burdigola* in Bangka. (When you find one

Making the most of colour

In the aquarium, the electric colour of the fish is often best appreciated by studying the fish in their dark tanks using a flashlight. The neon colours of the liquorice gourami and the electric blue or green spot in the mid-body of many of the little red Betta then become immediately obvious. A friend once reported flashes coming from the tanks of red Bettas and liquorice gouramis and its easy to see how the pigments might be intended to capture filtered sunlight for use as signalling for mates or territory in the dark waters.



P. alleni from Sibiu

or other Betta or Parosphromenus on its own you wonder what's happened to its ecological partner – is it extinct or just undiscovered?) Although I did find *B. tussya* and *B. livida* in the deep water along with the Liquorice gourami, I gained the impression that the latter came from the deeper, cooler water and the former from the top layers. The miniature species, *B. brownorum* and *B. burdigala*, as well as *B. persephone* were actually found in puddles at the side of the main blackwater streams, inside the forest where little light

penetrates. When the peat forest is dug up and drained for palm plantation, these specialists may hang on for a while but eventually the peat dries up, the acidity drops and the fish disappear.

Species found

Very often, you will find other labyrinth fish in these habitats. The presence of juveniles of many of the larger species in the forest puddles indicates that the water levels are

often high and flush fish out from the main water channels. *Belontia hasselti*, the combtail, occurs along with various 'big yellow Bettas', the mouthbrooders of the *B. waseri* group, *Betta okorensis*, *Betta bellica*, furious little Nandus, occasionally *Anabas*, the climbing perch. But these are adaptable fish, not obligate specialists from the blackwater habitat. The *Betta coccina* group and the Liquorice gouramis certainly are and to keep and especially to breed them, you'll need to try to duplicate their natural habitat. But how?



Selangore Forest habitat of *B. livida* and *P. harveyi*

In many of the forests of south-east Asia, the water is the colour of cola – literally

My technique for producing peat swamp water is simple but requires access to Reverse Osmosis (RO) water and a pH meter because the test kits rarely go low enough. I simply add a blackwater extract (in my case I use Waterlife's 'Humaquat') until the pH drops to 5 or below. In the following week or so it will drop to 4 at least. I find 2-4 drops in 2 gallons of RO water will do the trick. A method of treating tap water was described to me by Stephen Cumming of Derby. He stands two buckets one on top of the other.

TROPICAL: ASIAN BLACKWATERS

The top one has a perforated base and is filled with moss peat (NOT sedge peat – this is alkaline!). Tap water is then poured into the top bucket and percolates slowly through the peat, trickling into the bottom bucket to provide you with acid water.

What grows?

So what can you plant in an acid set-up? Well, the number of things that can survive is severely limited both by the acidity and also the low light levels. I have found that Java moss, Java fern and Anubias are the only things I can grow easily. The floating carnivorous plant, *Utricularia gibba* is another hardy choice for such a set up.

A 1-gallon tank is adequate for breeding just a pair of fish but a larger 5-gallon tank will allow you to house several pairs and you will be able to watch them interact with each

other than any other acid-loving dwarves you may like to house with them. Oak leaves make a natural substrate and provide cover for the small fish to hide under. A small piece of bog wood looks quite attractive in this set up but I tend to avoid this as the water becomes too dark to see through! The two groups of fish show different habitat preferences. While the little red Bettas prefer floating tubes at the surface to build their bubble nests in, the liquorice gouramis prefer a cave anchored to the base: a small pant pot or (black) plastic film cassette container are ideal. As far as filtration goes, a small bubble-up sponge filter is normally quite adequate.

Food can be a bit of a problem, while some miniature Bettas can be weaned onto high quality convenience foods and occasionally frozen bloodworm, I only feed live food as a rule.

males will exhibit jet-black stripes and electric coloration while the females become pale with a black stripe down the eye. In some species, the male displays, head down in front of the female. When you see this, you will know their secretive breeding is taking place. Another clue is the male taking air from the surface which he only does during nest building – he sticks the eggs to the roof of a 'cave' and may add a few bubbles. You will know when the little red Bettas are spawning as bubbles will spill out of the floating tube and you may often see the pair in the tube together. In both groups of fish, the eggs may take a day or two to hatch and then the fry hang, tail down for up to a week before they become free-swimming. At this stage they are already quite large and the 30 or so fry will be able to handle brine shrimp and microworm easily.

This completes the life cycle in blackwater and if you find it intriguing then perhaps you'll be brave enough to give it a try one day! ■

Breeding

Temperatures in the range 20-26°C are adequate for these fish, normally I keep them at about 22°C and find that breeding is most successful when this is raised to 24°C. Ideally, a quarter water change should be performed every three to four weeks. With liquorice gouramis, the

DO YOU WANT TO KNOW MORE?

Further information on labyrinths can be gained by joining AAGB. Send an s.a.e. to: The Secretary, AAGB, 19 Chiltern Crescent, Spotsbrough, Doncaster, South Yorkshire DN5 7PE



B. brownorum



P. harveyi



Did you know you can find marine beauty a bit closer to home? **Andrew Caine** takes a look at native marines

Native marines

One of my first memories is playing in a Cornish rock pool with my father and catching a pipefish. Even at a young age this event made an impact on my adult life. I also remember many years ago I was on a short holiday with a young lady, who later had the unfortunate pleasure of making a decent man of me, we were on a harbour wall and I was looking down into the crystal blue waters staring at the magnificent algae growing on the harbour walls. "What are you looking at?" she asked. "Just look at the beauty down there," I replied. "What? Seaweed! Let's go to the pub", came the reply. At that very moment I decided it was time for this uneducated bloke to go back to school and study marine biology.

So after that little ditty on my personal history, I will look at a few aspects about native marines, which hopefully will raise a few eyebrows and persuade some of you to actually keep them. I will be touching on an area of the hobby that will involve many many hours spent with the family and friends exploring the wonders that exist on our coastline.

The biggest fact in our aquatic hobby is **THERE ARE NO STUPID QUESTIONS**. People have suffered total wipe-outs in their aquariums because they thought a question was silly. On this note, I am going to ask two questions and answer them. The questions are: What equipment do you need to keep native marines? And, how do you find and catch the greatest diversity of marine species on our coast? The latter question has been covered many times by other authors but I have never seen an article on how to collect such animals. So I will be giving pointers on how to get the greatest range of diversity in your aquarium and how to increase your enjoyment by having some good days out!

What do you need?

We have to start with the hardware, and we're looking at a whole marine set up. However, there are some differences

between a native set up and a reef set up. Good biological filtration is essential here so depending on size, utilise a sump or external filters, and of course chemical filtration as well. Good skimming as always is required. Water movement is needed and so is a wave unit to replicate tidal surge. You should buy a unit which allows a night time reduction in power. As well as not having to buy live rock, another big saving is the lighting - you don't need halides or T5s, but still have a dawn dusk cycle with a blue actinic.

Now we come to the crunch: the temperature must be kept below 24°C and a good range is say anywhere between 19-20°C - a good temperature is a stable 15°C. This means in our summer we have to employ a marine aquarium cooler and this is one expensive piece of equipment which puts 99% of people off. Big mistake! Livestock is expensive - I know that because I sell them! How much money are you going to save in the long run if you don't keep having to replace them? Much more than the cost of a cooler.

What you cannot put a price on is the enjoyment you and maybe your family will

get from a day at the seaside. Just watching the unbounded joy on a child's face when they find something interesting is in my humble opinion priceless. Next month we will look at how to prepare your aquarium for the first livestock and how to collect such beasts. It's not as simple as you may think...

THE COMMON BLENNY

This small (up to 16cm) green or grey fish is a regular inhabitant under rocks and in pools on rocky shores the length of the British coastline during the summer months. If it remains moist it can even survive for a few hours out of the water until the tide comes in again. The very young green fish can be kept in home aquaria where ideally rocks should be placed above the waterline where the young fish will habitually climb when the water gets too hot. They can escape from an uncovered aquarium. The book name Shanny may also be used for this fish.

For more information about life in the seas around the British Isles, the British Marine Life Study Society has a web site at: www.glaucus.org.uk
BLENNY IMAGE AND TEXT BY ANDY HORTON

The Common blenny,
Lipophrys pholis



AQUARIUM FILTRATION
- Bio-engineered

PHOTO: www.photomax.org.uk



A fish for you

The Blue boxfish is a stunning example of what marine fish can offer in terms of colour, but he's a bit fussy when it comes to getting stressed...

BLUE BOXFISH, OSTRACION MELEAGRIS

Of the many beautiful boxfish that inhabit the tropical oceans this has to be the most stunning, yet potentially deadly, inhabitants of marine aquariums. Often found in pairs that exhibit huge differences in coloration, this beast is very desirable, however, it's a risky addition to your marine tank.

Ostracitoxin is a fish skin toxin that is released when the fish are stressed, and it's a powerful toxin as well. Every fish will be killed very quickly, and if you took smil of the aquarium water and added it to another you would have another wipe-out. In the ocean it is a defence mechanism against predation, a large beast comes for a snack and is repelled before it can take a bite, the toxin is then diluted in the ocean causing no harm, but in our closed systems dilution is not possible. So why take the risk? Well, many people do and have great results keeping the fish for many years without all the above gloom and doom.

The answer here is simple, the toxin is only released when stresses occur so our babies should only be kept with peaceful tank mates, in female male pairs or

single specimen. We do not want any hint of aggression here. Another source of stress for the beast is poor water quality, so you have to keep an eye on the nitrate level and ensure that you keep the water as good as possible.

In reefs they can cause damage with their grazing behaviour damaging some corals. Their powerful beaks make short work of tubeworms, crustaceans and other beasts. I do know of these fish in reef aquariums but these are the exceptions and most definitely not the rule.

When you see them look at the body sides to see if the animal is starving or not – good straight sides is what you're looking for, not pinched, as this indicates a fish that is stressed and in danger of releasing its toxin load. Pairs are easily seen as the female is brown with white spots and the male has blue sides with orange spots and a fawn back with white spots. To keep this vivid coloration at its best and boost its health it is very important that this species feeds at least four times a day (more if possible) with a vitamin-enriched variety of meaty foods.

PROFILE

Family:
Ostraciidae

Name:
Ostracion meleagris

Location:
Indo-Pacific

Feeding:
Vitamin-enriched meaty foods

Size:
16cm

Reef compatibility:
Not recommended

Difficulty:
Only for the experienced

Tank mates:
Peaceful companions

AQUA MEDIC

AQUARIUM LIGHTING
– Consciously better

An invertebrate for you



It's easy to see how this Peacock coral derived its name...

PEACOCK CORAL, MYCEDIUM SP

This is an easy hard coral to keep, but comes with dangers that will trip up an unsuspecting aquarist. However, it's one of my personal favourites solely because it's a plating coral and I just love them!

Unlike many of the hard coral species it is easy to distinguish because of the position of the polyps all facing to the outer edge of the coral. There are also relatively few polyps over the surface and quite large as you can see from the photograph. These are a nocturnal species in the wild – quite a few hard coral species behave in this manner. Many fish graze over the surface of corals in the daylight, and the polyps would be taken if extended.

This beast can be described as an all rounder because it is found at all levels of the photic zone over coral reefs – therefore it can be placed at all depths in your aquarium under halide or T5 lighting. In nature you find greater growth in the shallower depths so in your aquarium the greater growth rate is obtained near the surface. But be warned as it grows outward and extends into the

water column so it will shade any other corals directly under the plates. With this in mind plan the position for the future growth. As with most plating corals of this nature it will do best if you glue it to a vertical surface so the plates are extending into the water horizontally. To add to this visual wonder our beast comes in a wide variety of colours ranging from lawn, green and, if you're extremely lucky, a deep purple.

However, with most things in our hobby there comes a catch – no not one to put you off, just one to be aware of. Our baby is an extremely aggressive beast, a good defence in the wild as this behaviour stops any other coral or beast from overgrowing it – it's a survival mechanism. It will produce potent sweeper tentacles that sting and kill other corals too near it, but on top of this a more sinister and invisible threat is active. Any corals within 6cm of the outer edge can suddenly recede and die off due to a toxic chemical release. After this distance the toxin is diluted and no other harm in aquarium is evident.

PROFILE

Phylum:

Cnidaria

Name:

Mycedium sp.

Location:

Red Sea, Indo Pacific

Feeding:

Good range of animal-based foods

Size:

Commonly 6-12cm

Water flow:

Moderate

Lighting:

Medium to high

Difficulty:

Easy, as always very good water quality

AQUARIUM FILTRATION
– Bio-engineered

Amphilophus nourissati female guarding her batch of eggs, deposited on a pre-claimed area of sunken log, in Rio Chacanja, México



Big-lipped beauty

Juan Miguel Artigas Azas gives us the low-down on the rather shy *Amphilophus nourissati*

TCOAF'S FISHKEEPER AUGUST 2004

NAME DEDICATION

Robert Allgayer has dedicated this fish to his friend Jean Claude Nourissat, from Soillès, France. Jean Claude was a founder and long time president (and may I say heart) of the French Cichlid Association, he was an eager explorer and discovered many cichlid species for science and hobby, both in Central America and Madagascar. In addition, Jean Claude lead the team that discovered this cichlid in 1986. Jean Claude sadly passed away at the age of 62 in November 2003, just after arriving home from a collecting trip to Madagascar. This was as a result of malaria he contracted in one of his previous trips. His memory and achievements will partly remain in the name of this beautiful fish.

Amphilophus nourissati was discovered by a team including Jean Claude Nourissat, Antonio Hernández Rolón and Jean Marie Omont who were collecting cichlids in México for the French cichlid hobby in 1986.

Crossing a bridge over a small river in the Lacantun jungle in Chiapas, México, Antonio peered down to the small river and saw an unusually coloured cichlid he hadn't seen before. As Jean Claude Nourissat didn't recognise it either they decided to investigate further. It was then they realised they had found a fish unknown to the aquarium hobby.

Back in July, 1985, Don Danko paid a visit to the Museum of Zoology of the University of Michigan. The ichthyology curator then was the legendary professor Robert Rush Miller. During his visit Don took photographs of Central American cichlids in the Museum collection including a cichlid labelled *Cichlasoma coeruleum*, collected in Rio de la Pasión, Guatemala.

When the Allgayer description was published it became clear to me that it was very likely he was talking about the same cichlid species at the University of Michigan. Searching for a published description for a *Cichlasoma coeruleum* proved futile, so during a visit to the University of Michigan in May, 1993 I was able to examine the preserved fish. I questioned Dr Miller and he explained that the fish labelled as *Cichlasoma coeruleum* had been collected in 1935 by Carl Hubbs (previous ichthyology curator) and labelled with the intention of later scientifically describing it with that name, something that never happened. Shortly after Allgayer description, jars were relabelled with the new name at the University of Michigan Zoology Museum.

Description

Allgayer does not offer a comparison with other cichlids in the original paper, although



Rio Chacania, in the blue mountains rainforest in Chiapas, México, habitat of *Amphilophus nourissati*

In the description he mentions the big lips this fish has and which have given it its preliminary name *Theraps* sp. 'Grosses lèvres'. It is described as having an elongated body and a large strong caudal peduncle, essential for its rheophilic (fast flowing) habitat.

Distribution

Amphilophus nourissati is distributed in eastern affluents of the Rio Usumacinta system. It inhabits big river courses, as well as medium sized streams and creeks. The variety inhabiting small river courses are said to be more colourful (Nourissat, 1989) than those fish inhabiting in larger flows, which do however have bigger lips.

Habitat

A. nourissati is found in riverine courses in areas of moderate to strong water flow both in small shallow creeks and large rivers. It normally inhabits areas of silt, sand or muddy beds, where it feeds both in the flowing stream and calmer water.

Water chemistry in the habitat generally shows a pH above 7.5 and a moderate to very high water hardness. Water temperature stays in a tropical range from 22-28°C.

This fish inhabits in the company of numerous fish species including the cichlids: *Petenia splendida*, *Parachromis friedrichsthalii*, *Paratheraps bifasciatus*, *Cichlasoma salvini*, *Vieja ufermanni*, *Vieja argentea*, *C. octofasciatum*, *Theraps*

lentiginosus, *Theraps irregulare*, *Chuco intermedium*, *Thorichthys meeki* and *Thorichthys helleri*.

Natural history

Amphilophus nourissati grows to approximately 23cm in total length, with females remaining smaller, around 16cm. It has an elongated body, a long pointed snout, and a mouth facing slightly downwards, with thick lips. The base colour is yellowish, eight uneven black bars cross the flanks, those in the rear half being closer to each other and strongly marked, especially in dominant individuals. A blue

colour adorns the lower part of the head from the tip of the lower lip to the operculum, which is turquoise blue in coloration. The back, dorsal and base of the caudal and anal fins hold sky blue iridescent spots. A black blotch is found at the base of the dorsal fin near its base. This blotch is significantly longer on the female's dorsal. A second black blotch is present at the base of the caudal fin on the middle end of the caudal peduncle.

In breeding coloration, both male and female become bright yellow with just a teardrop shaped black blotch that extends from the back of the eye enlarging to the middle area of the flanks. The black blotch on the caudal peduncle is strikingly visible.



Amphilophus nourissati male in a monstrous 50,000 liter Central American cichlid tank in the house of the late Jean Claude Nourissat, one of the discoverers after whom this species was named. Soillies, France, Sept-1999

A gentle man, with a huge circle of acquaintances

Sadly, once again I have to give over some space in *Points of View* to pay tribute to someone who has served this magazine (and the hobby) extremely well over many years. To many readers the name John Young will mean little, but to others it means a link to the past and some fantastic years of this magazine and its services to readers.

John Young was part of the "fixtures and fittings" at the *Aquarist & Pondkeeper* magazine for more years than he cared to admit and probably longer than most people realised.

He served as Advertisement Manager under no less than three editors – Laurence E. Perkins, John Dawes and Dick Mills – and to several owners of the title, Buckley Press, Dog World and MJ Publications.

To hobbyists, John was the contact for Open Show support and he was seen year in, year out at all the main national aquatic events where he manned the A & P display stand.

His distribution duties of the coveted *Aquarist* Gold Pin for Best in Show awards was earnestly sought, and genuinely appreciated, by many a harassed society show secretary. And his knowledge of the contents of back issues and 'special supplements' was quite astonishing – seeing that he was not remotely interested in fish!

Having said that, it is understood that he was the first person to suggest a water gardening magazine, so some of what he came into contact with must have stirred some liking for aquatic subjects.

To aquatic manufacturers, John was very persuasive when it came to extracting valuable advertising revenue from them. In these delicate transactions companies could be sure of one thing – John was a man who kept his word. Once the deal was done, John did everything he could to support companies' profiles in the magazine to their best advantage.

Mr Meticulous

There is no doubt that John's efforts in encouraging and obtaining the influx of



revenue to the magazine over the many years kept the title afloat, where others would have surely foundered.

'Mr Meticulous' could have been his trade-name. Anyone who helped out dismantling the A & P stand soon found out he had his own way of packing the trailer; if anyone got ahead of him, he would simply unpack it all and start again!

John was a man with other gifts, outside of business. He was extremely involved with a theatrical group in north-west London, near to his home in Wembley. He 'trod the boards' in an acting capacity with some distinction according to those who had seen him in performance, and later took to directing. With his wife, Stella, he presented musical cabaret entertainment for the benefit of elderly residents of residential homes.

John found great pleasure in meeting people and would re-greet them with genuine friendship at each year's shows. Even when he retired from the publishing world, John still took time to re-visit the main aquatic shows, making efforts to visit friends en route.

A gentle man, with a huge circle of acquaintances in quite different circles of interest, he will be missed by all. We extend condolences to his family and share their deep sense of loss.

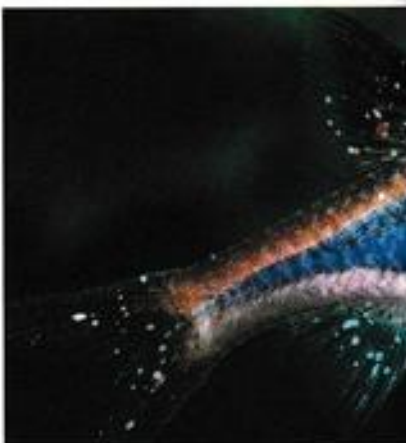
Now back to Points of View



They say crime doesn't pay but now in the world of fish shows it could be that losing (or perhaps more accurately, not winning) can actually benefit exhibitors too.

Over the years, generous show support from aquatic manufacturers has assured winners of a near-constant supply of fish food. Without labouring the point (and I know you've 'got to be in it, to win it') the number of winners is confined to a relatively small number of exhibitors. Whether this fact puts off other exhibitors or not is open to debate (do feel free to join in!) but in recent times a subtle change has been occurring at some shows.

It is also appreciated that show support from exhibitors is vital and, to this end, some shows have seen every exhibitor being rewarded with a tub of food, whether they win or not. In football parlance, maybe this will do a little to 'level the playing field' and help maintain entries into the already dwindling number of shows. This raises a question for you to ponder on – in what other ways could manufacturers support aquatic societies? After all, not every society has an annual show. Let's have your opinion.



in association with

ROSEWOOD
PET PRODUCTS

SICCE

Fish warranties

Fortunately entering into an aquatic establishment doesn't lay you open to salesperson pressure to take out extended warranties but just how do you fare with purchases when, unfortunately, they go wrong? With equipment, it's fairly straightforward, if the item is faulty then you have redress, either through the Trades Description Act or the credit card company. However, what's your dealer's attitude to replacing livestock losses? Is there a definite 'after sales period' in which you can reclaim a replacement fish?

The problem is that there are so many variables involved here. How does the dealer know the conditions in your home aquarium (both in terms of tank set-up and compatible tank mates) are as good as you say they are? On the other hand, how healthy might the fish be in the first place? Have both you, and the dealer, been satisfied at 'point of sale' time that the fish is suitable for you in all respects?

This leads on to the customer/dealer relationship. Are you an impulse buyer, ranging over a wide area and buying from various outlets whatever takes your fancy? Do you have a close understanding with your regular (perhaps only) dealer over what you want and how your demands are met? Or is it simply a case of half a dozen 'difficult dealers' and six 'cantankerous customers'?

Whitespot is a common disease – should we be able to take a fish back to the shop because of it?

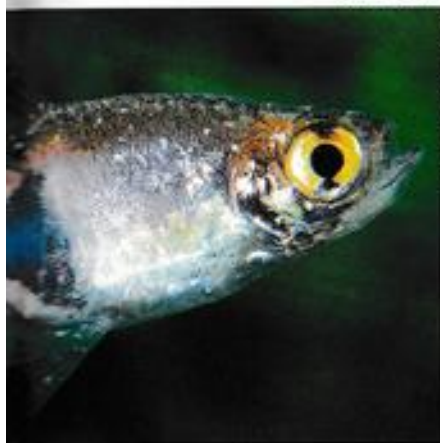


PHOTO: www.pavlovme.org.uk

Seeing red in the Red Sea



Dear TFK,

I thought I would write in and share my diving experience with you. My partner and I saved up for a diving holiday in the Red Sea. After keeping a marine tank for many years we thought it was time to see marine fish in their natural environment and learn more about them.

On completing the diving course we were thrilled to be able to dive by ourselves but our experience was totally marred by other divers who were paying no attention to marine safety warnings.

The dive instructors talked again and again about the duty of care we had towards the marine environment and we were told never to touch any of the corals or even alight on the seabed. However, a few people persisted in breaking off pieces of coral as they landed on the reef and kept touching the delicate infrastructure. We were fuming as were the dive instructors, but there was nothing we could do apart from remind them that they were destroying

the very reef they had chosen to visit.

We had an amazing holiday seeing the beauty of the reef and its fishes but neither of us is sure if we could witness its destruction at such close quarters again.

Wendy Michaels, Bournemouth

I have spoken with many people who have shared the same experience. Odd that some people would want to damage that which they had sought in the first place. I wonder how long the reefs would last if everyone had that attitude?

Hopefully, next month we can return to more normal subject matters – Pat Lambert said to me recently 'It seems all you've done lately is write obituaries!' Let's hope I don't have too many more opportunities of that nature and more occasions to grapple with your points of view.

See you next month,
Dick Mills



people and their pets

... somebody has to understand them

telephone: 01952 883408

NEARLY 400 FISH EXHIBITED AT NATIONAL KOI SHOW

The British Koi Keepers' Society (BKKS) had great success with its 2004 National show. Comprising 56 different competitors, there were an astonishing 393 fish exhibited, of which 206 were in the go-sanke classes. Kohaku was the most popular variety (82) and size 4, 55-65cm being the most popular size (87).

There was a new Junior Champion award this year for exhibitors under 15 years of age – won jointly by Edger Kuiper and Blake Squires.

The show drew visitors from Belgium, Holland, Germany, Japan, South Africa, Spain, the USA and Japan.

AWARD	SHOW CLASS	SIZE	EXHIBITOR
Grand Champion	Kohaku	7	Mark Crampton
Mature Champion	Sanke	7	Cliff Neale
Adult Champion	Sanke	5	Rick & Jean Collins
Young Champion	Kohaku	4	Robert Robson
Baby Champion	Kohaku	2	Allan Tait



PICTURES COURTESY OF WWW.IMAGESOPHO.COM

The British Koi Keepers' Society National Show

Right: Mark Crampton's Grand Champion Kohaku

Top: The grand prizegiving

Above: The show site at Newark



TWO WORTH VISITING

Grimsby and Cleethorpes open show is being held on Sunday August 1. Phone G. Henderson on 01472 81272 for times when it would be best for a visit.

British Aquarist Festival takes place on August 7-8 at St Matthews Church Hall, Stretford, Manchester.

This part of the country contains some of the best fish-breeders around and FNAS encourages this aspect of fishkeeping with its breeders award programme and the home bred-fish stand at this event is very popular.

The British Livebearer Association is holding a livebearer show at this event, too. This might well be worth a visit as some unusual livebearers will be on display. Contact B. Walsh 01254 776567 for further details.

25th show a great success

Workington and District Aquarist Society held its 25th open show and auction at Workington Rugby Union Football Club. Exhibitors and visitors travelled from as far afield as Bradford, Runcorn, Glasgow and Dundee to enjoy a show that has always been a highlight of the Scottish fishkeeping scene.

Although 30 miles or so south of the border, the Workington club has been an FSAS member since the club was founded.

This year's show was once again an enjoyable day with an increase in entries from last year. The auction was also a lively affair, with Tom Cannon wielding the gavel.

The major honours in a strong field went to Bernard Onelli, who came first with his *Thysochromis ansorgii*, an unusual but placid cichlid. Second was Billy Grant with a *Lamprologus leleupi* and third Bill Ward with a *Mogunoo adsperso*.

"Bernard has been a club member since the formation but this is the first time he has gained the number one spot," said club secretary John Hetherington. Although delighted to take the title, Bernard said he hoped he wouldn't have to wait another 25 years to gain his next Best in Show!

The Working and District AS would like to thank everyone who supported the show.

Moving house is always stressful for all concerned but if you follow **Roy Osmint's** advice it need not be a nightmare for your fish

They say that moving home is high on the list of life's most stressful experiences. It's up there with marriage, divorce, redundancy and all those other traumatic events that can have such far reaching implications on our day to day lives. For the aquarist, it presents a particular set of problems and even more pressures and tension than usual.

All right, it is fair to say that moving any animal from its familiar environment is likely to have its problems. The dog will take a little time to settle in its new home, the cat will have to be kept in for a while before being allowed out to establish new territory. So what are the special difficulties associated with fish?

Well, for a start there are the obvious logistical considerations of moving what might be an extremely large and heavy aquarium safely from one location to another. Not to mention the fish themselves! And what about the water? Yes, the water is important too. Or at least some of it.

The point being made is that there is a great deal involved in successfully moving even a modest sized aquarium. Success in this context being the re-establishment of the tank in its new home, the re-introduction of the fish and plants and the subsequent survival of both.

The only way that this success will be achieved is through careful thought and copious planning. Although the need for this is often recognised, it can easily become overlooked or neglected in the general domestic hubbub that exists prior to and during any household removal.

Biological equilibrium

As any experienced aquarist will know, an established aquarium is far more than a tank of water with a few fishes in it, if it were, the business of moving it would be much simplified. What it in fact represents is a complex miniature ecosystem where all living organisms interact with each other and their non-living environment to produce a finely balanced biological equilibrium.



In no time at all your fish will adjust to their new home if you follow a few guidelines. *Satanoperca jurupari*

PHOTO: M.P. & C. Pearson

On the move

This vital balance does not occur overnight. It is a gradual process of maturation. Like all ecosystems, so long as the balance is maintained its inhabitants are likely to remain healthy and happy. It is not until the balance tips in favour of undesirable elements that things rapidly start to go wrong.

They say that moving home is high on the list of life's most stressful experiences

If, when setting up an aquarium for the first time, you were to introduce the maximum number of fish the tank is capable of holding immediately, rather than building up stocks over time, you would be likely to come to grief as a consequence of the so called 'new tank syndrome'.

In this circumstance the system is overburdened right from the start. Ammonia, a dangerous substance produced from fish waste, is introduced in maximum



Moving house can be quite an undertaking, especially when fish are involved....

PHOTO: Derek Lambert

quantity before the friendly bacteria in the filter have had time to colonise and break it down into less harmful compounds through the nitrogen cycle. Water quality rapidly deteriorates and fish fatalities soon follow.

It is precisely this situation that must be avoided when embarking on a household removal. I know of more than one occasion when reasonably experienced fish keepers have fallen into this trap and lost precious fish as a consequence.

Of course, any move involves risk and no matter how much advice you are given it doesn't come with guarantees. Nevertheless, these risks can be kept to a minimum through awareness and planning.



Stripping down

When the time arrives to dismantle the aquarium and prepare everything for transportation, organise well in advance. If a large tank is involved some extra help can be extremely beneficial, especially if those involved are themselves fish keepers.

■ Assemble all necessary pieces of equipment such as nets, siphons, buckets, polythene bags, insulated boxes and water containers together so that everything is to hand. There is nothing worse than finding at a crucial stage of the operation that some vital utensil cannot be located.

FINDING THE BEST POSITION FOR YOUR TANK

One of the very first things to consider is where in your new home the aquarium is to be located. This should be established long before removal day. In making the decision certain factors must be taken into account.

Even a moderate sized aquarium when fully furnished and filled to capacity with water weighs a great deal. A large tank exerts a tremendous downward force. The fact that it was perfectly all right in your existing home does not necessarily mean it will be in the new one. Is the floor at the proposed location capable of safely carrying the load? In some cases floorboards may require additional support from beneath.

Reconnoitre the new property carefully. Are there any insurmountable obstacles that may prevent getting a large aquarium to the chosen site? If in doubt, it may be worth having a practice run using a cardboard template.

Is there a suitable electricity supply point at or near the proposed site? If not, it will be necessary to arrange for one to be installed prior to the move. Everything must be in place to enable the setting up of the aquarium to be accomplished as quickly and smoothly as possible.

There will be many other things to do on removal day and it is unlikely to be appreciated by your family if you allocate too much time to your fish!

Good position

Even if an aquarium is next to a chimney, the amount of heat that penetrates the wall is insignificant.

Bad position

Although an aquarium makes a nice feature in a hallway, it's not the best place because of draughts caused when the door is opened and closed and disturbance caused by passing traffic.

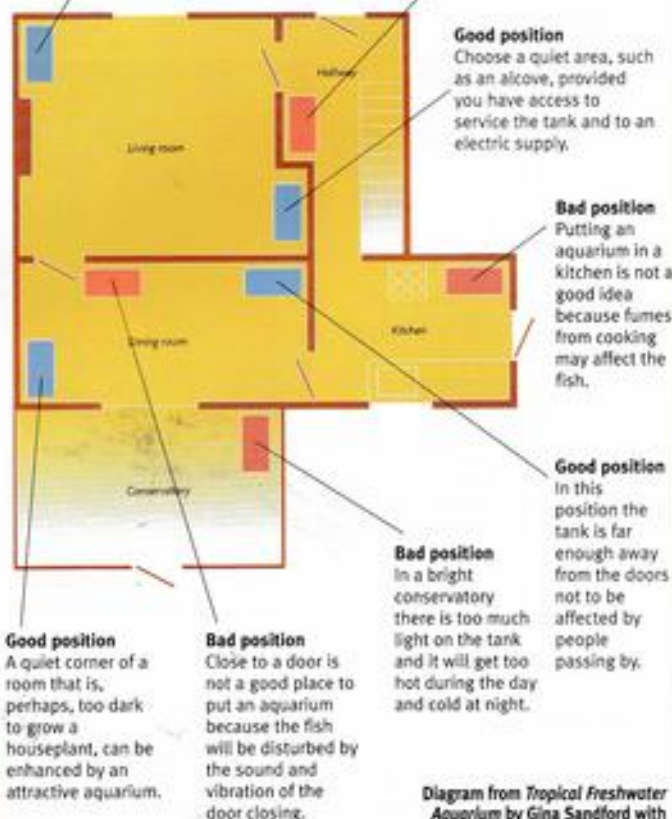


Diagram from *Tropical Freshwater Aquarium* by Gina Sandford with thanks to Interpet Publishing



Polystyrene boxes packed and ready to go

■ Disconnect all equipment such as heaters, filters, lights etc. from the electricity supply and place them safely into previously prepared boxes. Bubble wrap is an excellent material for individual protection as well as for packing. Particular care must be taken with filter media. But more about this later.

■ Carefully uproot plants from the substrate and place in suitable sized polythene bags. The bags should not contain water but must be properly sealed so as to retain a humid atmosphere within. Store in darkness during the journey and shelter from the cold.

■ Remove all other elements of décor from the tank such as bogwood, rock etc., clean thoroughly and place in containers ready for transportation.

With the aquarium now unfurnished the business of catching the fish will be much easier. Before doing so prepare your polythene bags to receive them. Fill each bag only to about a quarter capacity with water from the aquarium, the remaining three quarters must be left to fill with air.

Remember, it's not the quantity of water that will determine their survival during the journey, but the amount of dissolved oxygen in it. This is achieved through the air/water interchange. The more air in the bag, the greater the oxygen availability in the water. A battery powered air pump can be extremely beneficial in this respect, especially on a long journey.

Do not be tempted to put too many fish into a single bag and try to keep fish of similar size together. Larger specimens should have a bag to themselves.

Once the bags have been oxygenated and firmly sealed they should be placed in insulated containers such as polystyrene boxes in readiness for the journey. Make sure these boxes have good fitting lids to maintain temperature for as long as possible, as well as achieving darkness within. It is desirable that the fish undertake their journey in darkness, as in these circumstances stress levels may be reduced a little.

Water & filter media

As the object of the exercise is to re-establish the aquarium in the new location with all its previous occupants, it is most important that you do not fall into the 'new tank syndrome' trap. This is likely to occur if you simply start again from scratch.

To this end, it is vital that as much mature

aquarium water as you can is taken with you and that the beneficial bacteria in the filter media are, as far as possible, protected from damage.

Filter media should, therefore, be treated with the greatest care and consideration. Once removed, do not under any circumstances wash or rinse, or the bacteria will be destroyed. Store in thermally insulated bags or boxes. Again, a well oxygenated environment is essential.

Even if only a section of the original bacteria colony survive the journey, those remaining will, in conjunction with the original mature water, give the aquarium system a 'kick start' and provide the best chances of success.

Moving an established, fully-stocked aquarium is a major undertaking and involves inevitable risk. Even if all the advice given is followed, there can be no guarantees. There are clearly many influencing factors, principal among these being the size of the aquarium, the number and types of fish, as well as, of course, the length of journey.

Nevertheless, by careful planning, efficient organisation and observance of a few basic rules the risk factor can be kept to a minimum.

For those about to embark on a removal journey, I wish you and your fish well! ■

Replanting after a move can mean you can get creative all over again!





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

DISCUS PROBLEM SOLVER

Sponsored by:

PLYMOUTH DISCUS

QUALITY DISCUS AT DISCOUNTED PRICES

www.plymouthdiscus.com

Tel: 01752 784671
or 07976 200454



48 hours after being laid, the eggs are showing signs of the embryos developing into fry. Young Discus may eat their fry

Cannibal tendencies

A I have a pair of Discus that are spawning every two to three weeks, they rear the fry to a free swimming stage and then eat them. Is there anything I can do?

Neil Jackson, Leeds

A Cannibalism is very difficult to stop I'm afraid. If you're patient the pair may grow out of it as it's normally a trait of young fish. Alternatively, if it's only one parent eating the fry then remove it and see if the other parent will raise the fry. In such cases I am patient up to six spawns and then split the pair.

Undergravel filtration is fine

A I am setting up a tank mainly for Discus but I would like to keep other fish with them such as Cardinal tetras and catfish. My problem is I have always stuck to undergravel filtration and I've been told that this type of filtration doesn't suit Discus. Is this true?

J Matthews, Southampton

A No, this is definitely not true. I kept Discus for many years in undergravel filtered tanks before the advent of trickle filters, canister filters etc. – they were all we had and they worked well.

All they require is a little maintenance now and again with a gravel cleaner to ensure they don't block. You could also help yourself and introduce a few clown loaches which are great at rooting around in the gravel for uneaten food.

Discus on the move

A I will be moving house in the near future and would appreciate any tips you can give me as to transporting my fish?

J Pearson, Birmingham

A The main thing is to be prepared before the big day. Do not feed the fish on the day of moving. Ideally your fish should be bagged and boxed – your local retailer may sell you what you need. Work on 25% water in the bags and 75% air – you will be able to inflate the bags with an ordinary air pump.

Large Discus should be bagged individually. When all the fish are bagged

pack them into polystyrene boxes and then seal them. The fish will not die from lack of oxygen but they will suffer if the water cools dramatically or if they foul the water in the bags. The polystyrene boxes should prevent the temperature fluctuating too much.

Next, save as much water into containers from the original tank as you can. Keep the filtration material immersed or at least wet, then transport the tank.

At your new location reverse the procedure, setting up the tank with the original water and top up with fresh. Start up the filtration and bring up the temperature introducing the fish as you would when buying new fish by floating the bags and adding tank water to equalise the pH.

Am I feeding enough?

A I recently bought my first shoal of Discus – six Red turquoise approximately 5-6cm in size. They have settled in well and are alert and curious. I feed them three times a day on flake food, granular food and frozen bloodworm – is this diet enough to grow them on to healthy adults?

Peter Blakeney, Sheffield

A Your fish's diet is lacking in protein – the idea of a varied diet is excellent but must contain the correct amount of protein to sustain growth. Flake is low in protein, approximately 40% but good for vitamins and minerals, granular food is fine, but frozen bloodworm is only 5% protein and 92% water. It should only be fed as an occasional treat. As a rule of thumb, if a food contains less than 50% protein look for something else. There are many specialist Discus foods on the market that contain all your fish require in their diet. I make my own with a beef heart base that when prepared will contain at least 90% protein, this is fed to young fish 5-6cm six times a day, medium 10-12cm fish four times per day and adult fish twice a day. So, I would improve their diet slightly and increase the number of feeds per day.

Ready for action

Maintaining good water quality and a healthy environment for your fish requires a biologically and chemically balanced system. Here's how to go about it...

It may take several weeks or even months for your aquarium to mature to the point where it becomes a stable environment. During this maturation period, take care that the system does not 'overload' and that the water quality remains as near to ideal as possible. The main biological process that we are trying to establish in the aquarium is the nitrogen cycle.

Helping the nitrogen cycle

In an ideal world the nitrogen cycle would take care of itself in the aquarium and keep water quality in check without the fishkeeper having to worry. Making sure that the nitrogen cycle works effectively depends on regular maintenance and ensuring the system is not overloaded. The aquarium and the filtration system can only cope with a certain type of waste, and there are a few methods to ensure that it is kept to a minimum.

Controlled feeding is essential, so during the first few weeks or months of an aquarium, it may be worth avoiding high-protein foods until the nitrogen cycle is well established and able to cope with the increased volume of waste.

Removing nitrites and nitrates

Chemical media can help to remove toxins, reducing the load on bacteria and the nitrogen cycle. Ideally biological filtration should be able to cope alone, but in new

aquariums or in cases of increased load, use chemical filtration to help the nitrogen cycle to become established with minimal problems.

Introducing bacteria

The addition of live bacteria will help the nitrogen cycle establish quickly and increase the efficiency of waste breakdown and/or removal. There are a number of ways to introduce bacteria into the aquarium and filtration system. These bacteria are always present in small numbers, but until the fish are introduced there is not sufficient volume to cope with any significant amount of waste. The most common way of introducing bacteria is through the use of a biological/bacterial starter, readily available off the shelf from aquatic retailers. These are supplied in two forms – pure live bacteria, and live bacteria with a food source – and are usually in liquid or powder form. Live bacteria are concentrated numbers of bacteria introduced into the aquarium. Most of these will probably die off, but those that settle will form the basis of biological filtration.



PHOTO: M.P. & C. Pearson
The best way to keep your fish happy is to have good water quality

Whichever method you choose, live bacteria should be continually added throughout the first two months of maturation. Do this daily with pure bacteria starters or weekly if you are using the bacteria plus food type of starter.

Maturing the aquarium

When the aquarium is first set up it is biologically inactive, which means that none of the usual biological processes, many of which make up the nitrogen cycle, are taking place. To become a healthy environment for fish, the aquarium needs to mature, a process which will take on average six weeks. During this time it is important to take great care with stocking, feeding and maintenance, as well as following guidelines to help maturation.

Biological/bacterial starters



This liquid starter contains bacterial cultures to 'kick-start' biological filters. Simply add the required amount to a jug of aquarium water, stir and pour over the surface.



These slow-release capsules contain enzymes to aid waste breakdown and compounds to encourage bacteria. Add as directed to the filter or aquarium.

Using a bacterial starter correctly will reduce the water quality problems that can occur in a new aquarium.



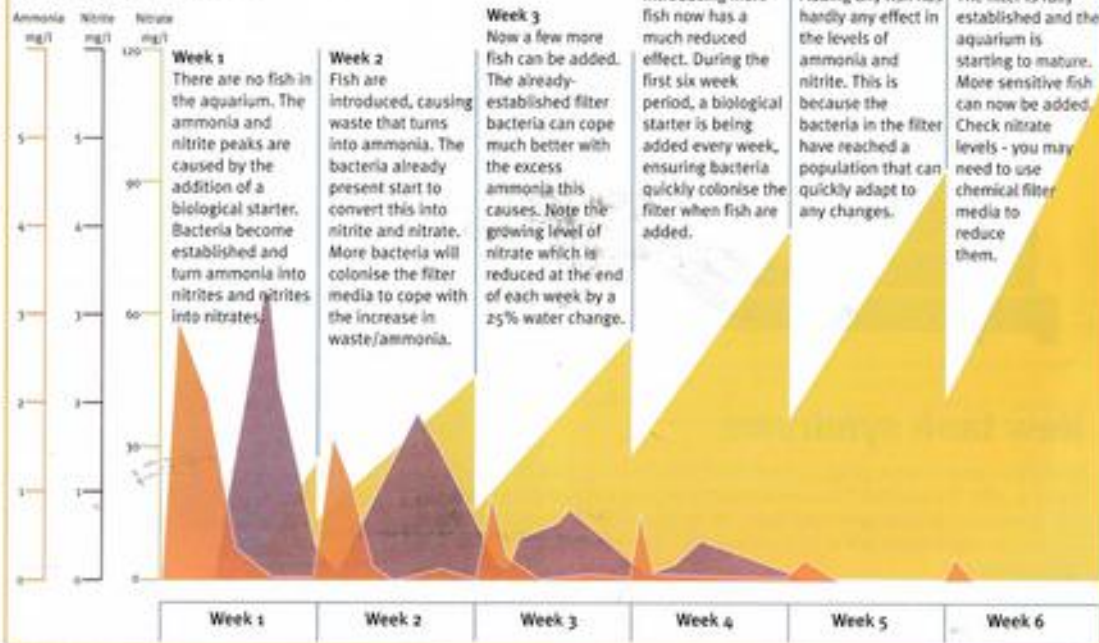
Once the aquarium is filled with water and the substrate has been washed and put in place, turn on and check all the aquarium equipment. Making sure that the filter is pumping constantly and at a steady flow, and that once the correct temperature is reached there are no fluctuations. Check the temperature at various times (morning, mid-afternoon

and night) to ensure that it remains constant throughout the day. Even though you're not adding fish yet, it's worth using a dechlorinator to remove any chloramines that may be present in the water. These are toxic to fish and can have a very detrimental affect on them. After 24 hours or when the temperature has stabilised, you can add the plants.

Water testing

Testing the water is vitally important during the maturation process. Without testing the water you won't be able to tell how well the system is doing, and if things don't go well you may lose some or all of your fish. Testing the water will greatly reduce the

HOW THE BIOLOGICAL FILTER MATURES DURING THE FIRST FEW WEEKS OF A NEW AQUARIUM



chances of this happening. There are a few things to look for when testing the water to make sure that the maturation and the nitrogen cycle are working as effectively as possible. Before you introduce any fish levels of ammonia and nitrites should be zero. You may get a reading of nitrates, as some domestic water supplies contain them, but providing the levels aren't high, this should not cause a problem. As you add bacterial starters, you may get a small ammonia or nitrite reading. This is normal and should go within a few days. Check the water before adding any fish and again 24 hours later. You should expect a slight ammonia reading, but this should drop within the next 24 hours. If not, there may be a problem with the bacteria establishing.

Each time you introduce more fish you may get a slight increase in ammonia, followed by a slight nitrite increase. This is perfectly normal, and providing optimum conditions are restored within 48 hours, you have nothing much to worry about. As time goes on this effect will be reduced because the filter will contain more bacteria and be able to adapt more quickly. ■

Maturing the aquarium

Although there are no fish in the aquarium, it's always worth testing the water for ammonia, nitrites and nitrates that may already be present



Once the aquarium water is heated and dechlorinated, you can add the plants. Live plants will help to remove some of the waste matter produced by the fish

Leave the filter running continuously and add a biological starter. This will ensure that the filtration system is better equipped to cope with waste matter when the fish are introduced.

Use an aquarium thermometer to check that the water temperature is correct and remains stable

Photos and text from *Water Quality* by Peter Hiscock with thanks to Interpet Publishing. ISBN 1-903098-00-9 Price £5.99. For further information call 01306 873822

INTRODUCING THE FIRST FISH

The longer the aquarium is left without fish the better, but sometimes this is not practical, and you will be keen to stock the tank. Even so, aim to leave the tank empty for at least seven days. After this time you can be sure all the equipment is working properly and that the tank water has matured a little. At this stage, even with the addition of bacteria starter, the filter is not well-equipped to cope with the influx of waste from feeding and fish. Because of this, only add a few of the hardiest fish. Leave a gap of at least a week before the introduction of each batch of fish. When the fish are added, the biological load on the aquarium is suddenly increased and it will take a while for the system and the filter to get rid of any increase



When introducing fish, float the bag in the tank with the lights switched off for about 20 mins to equalise temperature. Although it takes fish a number of days to adjust to the change in water conditions, you may wish to add small quantities of aquarium water to the tank every five minutes to ease their introduction.

in pollutants and then reach a level where they can cope with increased waste.

New tank syndrome

When you begin fishkeeping, you will no doubt hear of something called 'new tank syndrome'. This occurs when water quality fluctuations (mainly ammonia and nitrites) adversely affect fish. Even with the best care, you may lose one or two fish to new tank syndrome, so be prepared to expect this. If the aquarium is stocked too quickly, incorrectly maintained or the fish are overfed, new tank syndrome can have drastic effects and can kill fish in a short space of time.

Many good retailers have their own information leaflets on new tank syndrome and on maturing your aquarium, so don't be afraid to ask.

Today's Surgery



Fish like this Pearlscale butterfly, *Chaetodon chrysurus* are more susceptible to Uronemiasis

Our resident vet,
Lance Jepson MA
 VetMB CBiol
 MIBiol MRCVS,
 takes a look at the
 marine fish
 disease,
Uronemiasis

Uronemiasis is a disease of marine fish caused by the protozoan parasite *Uronema marinum*. A closely related protozoan – *Miamiensis marinum* – has been linked with disease in seahorses (*Hippocampus* sp.)

Uronema marinum is a ciliated protozoan, related to the freshwater parasite *Tetrahymena*. It can exist as a free-living organism and it has been suggested that they feed on both dead tissue such as fish and invertebrate corpses, or on the bacteria present there. This ability to survive happily off the fish can make both its control and treatment tricky.

Initially the parasite will establish itself on to a fish. It may be attracted to an already damaged area such as a cut or graze, or it may be that the host fish's immune system is not functioning correctly. The parasites are irritant and the fish may begin to scratch against hard surfaces. The skin's protective layer of

mucus thickens. This can trap the parasite and rid the fish of the irritation by sloughing mucus and *Uronema* together. Once established however, these protozoa begin to multiply by dividing and numbers readily build to an extent where the parasites begin to invade the surrounding tissue. *Uronema* protozoa will invade the deeper layers of the skin and establish themselves in the underlying muscles. There is often localised bleeding and the overlying skin can detach. All of this results in a deep ulceration of the skin. This has a double-whammy effect. First of all it allows invasion of secondary bacterial infections especially *Vibrio*. Secondly, it creates a hole in the osmotic barrier of the fish allowing vital tissue salts to diffuse out causing potentially fatal ionic imbalances. Once the parasite becomes established in the deeper tissues, death often follows quickly. It may be that

Uronema marinum



secondary invasion with toxin-producing bacteria deliver the final coup de grace.

The gills are often also heavily parasitised. The damage to the delicate gill tissues, plus the high mucus production triggered there in response to the infestation mean that these fish can find themselves struggling for oxygen. In some cases it is the gills alone that are targeted. Such fish show severe respiratory signs but no skin ulceration.

Predisposing factors

Poor water quality is a common predisposing factor. Examples would be low pH, low dissolved oxygen concentrations, measurable ammonia levels and high levels of organic waste. Injuries to the skin or stress from transportation will also help with the establishment of the parasite. All of these compromise the fish immune system in one way or another, and because the parasite can survive as a free-living organism it may be already present in the environment, just waiting for circumstances to change in its favour.

Diagnosis

All marine fish species are susceptible to *Uronema*. Typical 'victims' include butterflyfish, angelfish, clownfish, wrasse and seahorses.

The recognisable signs of disease are, in the early stages colours may dull due to the thickened mucus layer. The fish may be

irritated and scratch or flick. Fins may be clamped. Pale patches appear on the flanks and skin, become reddened and bloodshot before developing into true ulcers with the underlying muscle exposed. Infested fish may show severe respiratory signs – panting heavily, breathing faster with the gill covers much wider. The gills may appear abnormal. Seahorses have a highly modified gill chamber as part of their 'explosive' suction mechanism used during feeding, that leaves them very susceptible to the gill damage from this and other parasites.

TREATMENT

Treatment is difficult as the condition can advance rapidly. Those fish with deep ulcerations have a very poor chance of recovery. Choose a proprietary anti-parasitic preparation that specifically targets *Uronema*. If you are unsure, treat the aquarium with malachite green or malachite green-formalin combinations, as along with freshwater baths of a 3-50 minute duration given every day for five days, this will often give satisfactory results if the fish are treated early enough. Formalin in particular is dangerous to invertebrates so I would not advise its use in reef aquaria. Antibacterial preparations such as antibiotics may be needed to deal with any secondary infections.

On examination of a skin scrape under a microscope, the motile, oval shaped protozoan parasites will be obvious, especially at higher magnification.

Disease lookalikes

Bacterial diseases are the commonest lookalikes. The ulceration typical of *Uronema* is also a feature of several bacterial conditions such as *Vibrio* and *Mycobacteriosis* (Fish Tuberculosis). Many cases of failed bacterial treatment of marine fish is likely to be due to misidentification of this organism. The parasite *Brooklynella* can cause very similar signs including mucus production, ulceration and gill disease. The respiratory signs could easily be confused with other gill diseases such as gill flukes or environmental/bacterial gill disease.

Prevention

As already stated, the free-living ability of this parasite can prove problematic. Quarantine and routine freshwater baths of all new fish should help to reduce the risk of *Uronema* becoming established in your fish. Maintaining good water quality and prompt removal of any dead fish or invertebrates should also reduce the risk of parasite buildup. Treat any sick fish immediately – don't wait to 'see what happens'. The longer you delay, the more likely you are to lose the fish, and you will allow the numbers of parasites in your system will build up higher. ■

Time to test

It might be 'gin clear' but the only way of determining whether your pond water is suitable for fish is to test it. **Ben Helm** answers some common questions

Water quality has a very direct and predictable influence on the health and well being of our fish.

Poor water quality = Poor fish health
Good water quality = Good fish health

But how can we objectively measure how effective our pond filter is, or how healthy our pond water is other than by looking at the fish themselves? The most accurate way of keeping on top of your pond is to test it regularly.

Q Do I need to test my pond?

Put simply – if you don't measure it – how can you manage it? By testing regularly, understanding what the results mean, and by responding correctly, you are able to provide your fish with the best water quality.

Q What do I need to test for?

There are over a dozen different pond test kits available, each testing for a specific water parameter. Don't be alarmed though as there are essentially three key test kits that you should consider. Should you wish to delve deeper into the chemistry of your pond or aquarium, then you can also test for more diverse, but less critical parameters.

■ **a. pH.** This measures the acidity or alkalinity of your water and acts as a quick and useful guide to its suitability for fish. If the pH is unsuitable, it will stress your fish and lead to health problems. In order to make a judgement as to the suitability of your water, we need to know the pH requirements of your fish. Pond fish prefer a stable pH between 7.0 and 8.5. From a fish health perspective, it is far more desirable that the pH is stable within these limits, rather than erratic.

■ **b. Ammonia.** Where the pH of water is tested prior to introducing fish (as well as checking that it is maintaining a satisfactory level) water is tested for ammonia during the maturation of a filter or while fish are being stocked. Ammonia is the toxic substance excreted by fish which must be broken down by bacteria in a filter. If it is not broken down faster than it is released, it will accumulate and cause the fish stress. Ammonia test kits are used to check that the filter is coping with the waste produced by fish.

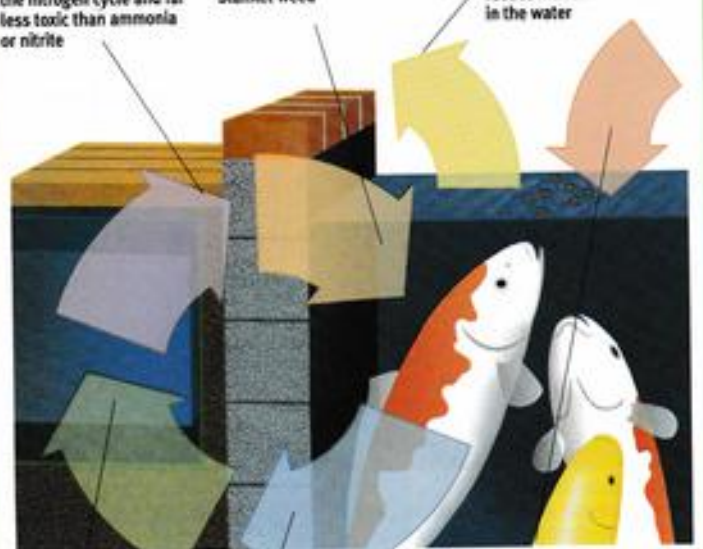
■ **c. Nitrite.** The bacteria responsible for

HOW THE NITROGEN CYCLE WORKS

By adding an oxygen atom into each molecule, aerobic bacteria convert nitrite into nitrate. Nitrate is the final breakdown product of ammonia in the nitrogen cycle and far less toxic than ammonia or nitrite

Water returning to the pond from the last stage of the filtration system may still contain some nitrate. Nitrate is one of the nutrients responsible for promoting the growth of blanket weed

Water changes are an important aspect of pond management, especially if ammonia or nitrite are polluting the pond. Regular water changes can also help reduce nitrate concentration in the water



Nitrosomonas bacteria in the filter convert ammonia (NH_3) to nitrite (NO_2)

Ammonia is released into the water by the gills. It is also produced as a waste product from their faeces and urine

Protein supplied in food is used by fish for tissue repair, growth and reproduction. Any excess protein cannot be stored and is excreted as ammonia. The protein in any uneaten food also ends up as ammonia

breaking down ammonia act quite quickly, converting it into nitrite which is still toxic and more persistent in an aquarium or pond. A different range of bacteria break nitrite down into relatively harmless nitrates, but can take a long time to do so. Consequently, nitrite tests should be used to ensure that the filter is mature enough to cope with the current stocking and feeding regime.

Other tests include:

■ **d. Nitrate** is regarded as the 'nitrogen bank' where all nitrogen from ammonia and nitrite is eventually deposited. It is only harmful in excessive concentrations (\rightarrow 50ppm) and can be removed through plant growth (either a vegetable filter or blanket weed!) or through fortnightly/ monthly partial water changes.



To test the pond water for presence of ammonia...

■ **e. KH.** This is a measure of the pond's ability to resist swings in pH. The higher the KH, the greater the pond's buffering capacity and the more stable the pH. The KH can be maintained at a satisfactory level by adding calcium carbonate compounds to the filter.

■ **f. GH.** A measure of the general hardness, which also has a loose relationship with pH and KH. As ornamental pond fish are hard water fish, a high GH should be maintained through similar methods used for pH and KH.

Q How frequently will I need to test my water?

Water should be tested regularly for pH to ensure that it is maintained at the correct level. Water used in water changes should also be tested to determine that the pH is desirable. Ammonia and nitrite are tested very frequently during the running in of a new pond. These tests will show how the filter is maturing and whether it is keeping pace with the rate at which waste is being produced.

In more mature ponds, test kits can be used to confirm that the hardness and nitrate levels are satisfactory, having a tendency to become a concern as ponds start to age.

Q How easy are these kits to use?

All test kits or testing equipment are made with the fishkeeper in mind and are easy to use and interpret.

■ **A. Colourmetric Test Kits**

These rely on a chemical reaction between the water and a reagent which results in a colour change that can be compared against a colour chart.

i. **Liquid.** Drops of liquid reagent are added to a measured test sample of water and allowed to change.

ii. **Tablet.** Instead of drops of liquid, dry tablets are crushed and dissolved in the sample water and the colour change compared to a chart.

iii. **Test Strips.** Plastic strips, impregnated with reagent are dipped into the sample water and allowed to react, causing a colour change.

Changes in behaviour will usually indicate a deterioration in water quality.

Watch out for:

- 1. Loss of appetite
- 2. Sulking on the pond bottom
- 3. Hanging motionless at the surface
- 4. Clamped fins
- 5. Gasping at the surface.

You'll be surprised as to how accurate your observations can be and how your experienced eye can become as accurate as the best test kit.

■ **B. Electronic Tests**

A range of pocket sized digital meters are available, giving a numerical reading. Digital meters are accurate and require regular calibration against known samples but are considerably more expensive than colourmetric tests.

Q Once I've tested my pond water – what next?

The time and money spent on testing water would be wasted if the results were not acted upon. If having tested your water, you discover that the water quality is not as good as it could be, appropriate remedial action should be carried out immediately.

■ **pH.** If pH is too high: carry out a partial water change with soft, acidic water and check for sources of buffer in your pond or aquarium that could be raising the pH. If pH is too low: add some treated tap water (which is artificially buffered) or add a source of lime such as limestone chippings or crushed shell.

■ **Ammonia.** This tests whether the toxic waste (ammonia) that fish excrete is being broken down. The desirable ammonia reading is zero, but should a positive reading occur then carry out the following:

1. Stop feeding
2. Do not introduce any new fish
3. Carry out a 20-30% water change
4. Only start feeding when reading is back to zero (this may take a few days).

Carry out a test each day for the next week.

However, if a positive ammonia reading reappears upon daily testing, carry out steps 1-4 again. As the filter matures, an ammonia reading is less likely to occur.

■ **Nitrite:** The only desirable nitrite reading is zero, and if a nitrite reading is present, it is an indication that the filter is not coping with the amount of waste being produced. Even a low nitrite reading is undesirable and if present, the same procedure (1-4) for ammonia toxicity applies.

Nothing substitutes for experience and once you have kept fish healthily for a season or two, and managed the water quality in a pond successfully, the need to test your pond water regularly should reduce. ■

Dissolved oxygen test

A number of factors, including water temperature and the number of fish in the pond, can adversely affect dissolved oxygen levels.



1. Stabilise the oxygen content by adding a series of reagents. At this point, a further reagent causes the test sample to turn black.



2. Swirl the solution until it is an even colour.



3. Add the final reagent one drop at a time.



4. Count the drops until the solution is clear for the oxygen reading.

Text and images with thanks to Interpet Publishing Ltd. *A Practical Guide to Building and Maintaining a Pond* by Keith Holmes and Tony Pitham. ISBN 1-84286-063-1 £5.99

Koi world



Bernice Brewster reiterates the importance of aeration and thinks the best policy for ulcers may be to leave them alone...



The pretty horrific sight of Carp ulcer disease

A few weeks ago, I spoke to the owner of a fishery who was very concerned about the carp in the lake, which were suffering from ulcers following a period of low dissolved oxygen on the site. We tend to think that outbreaks of ulcers are confined just to koi but actually common carp suffer from this problem as well, the common factor in these outbreaks is stress. Although the carp will probably recover through the summer months, the owner wanted advice on applying a topical treatment for the ulcers, as surprising as it may seem, I suggested the best policy was to leave well alone. As any ulcer heals, a very fine layer of skin forms across the surface and any, albeit well meaning, application of treatment is quite likely to remove the healing tissue, opening the site once again to opportunist secondary bacterial infection. In most instances the carp will heal better by simply being left alone. But what about koi? Should this policy of leave alone be applied here? On the whole I would say that it is better to allow the koi to heal themselves, especially through the warmer summer months. In years gone by, the koi would have been treated to an assortment of antibiotic medications, usually by injection. Over the years I have become increasingly sceptical that these

treatments are effective and am more of the opinion, the koi get better despite the treatment and not because of it. My reasoning is simply that catching the koi, anaesthetising and then injecting any koi, is extremely stressful which is counterproductive to the use of antibiotics. I also think it is important to move away from such a reliance on antibiotics in koi keeping in view of the increasing bacterial resistance to these drugs and as much from a purely selfish point of view that I have no desire to be infected by a multi-drug resistant strain of bacteria.

Stress related

Outbreaks of ulcer disease are invariably stress related, whether through deterioration in water quality or overstocking, whether we will admit to it or not, most of us have actually got more koi than the pond can comfortably accommodate. Usually koi suffering from ulcers recover but others in the pond may become affected, the long term solution is to identify and rectify the underlying cause of the stress. In addition to improving the environment, it is always important to feed the koi with a good quality feed,

appropriate for the season. The feed can be supplemented with treats such as orange or lettuce, which are rich in vitamin C, which helps the koi to recover. In the same way that human medicine is looking increasingly towards prevention of disease, rather than treatment, there is no doubt that we should be following a similar trend with the management of our koi.

Keep up the oxygen

In the summer, one of the commonest causes of stress in the koi pond is lack of dissolved oxygen. I know that I have repeated this statement possibly in every issue of Koi World through the summer months and yet I receive daily telephone calls from koi keepers, describing to me problems arising from critically low oxygen concentrations. Bear in mind that koi require a minimum of 6mg per litre dissolved oxygen for growth, tissue repair reproduction and basically to keep them healthy. As the oxygen concentration in the water drops, the koi first become less interested in feeding – when they should be eating you out of house and home – then they become inactive, just lying on the bottom of the pond. Once the dissolved oxygen concentration has dropped to less than 3mg per litre of water, then it can take weeks for it to recover to a satisfactory, stable level, often well into the autumn, once the water temperature is dropping. In the summer, there is no such thing as too much aeration, even if it does mean it looks more like a Jacuzzi than a koi pond. ■

Ulcer with topical treatment on it



Ponderings



Stonewort

Aliens in your pond!

Has your pond been taken over this summer by a sea of plant growth? Pulling it out by the barrow-load makes little difference as it comes back with a vengeance. The chances are that you have been invaded by an alien. These plants, not native to this country, are rampant once established, often taking over to the detriment of the native species.

These aliens may be introduced with fish or other water plants but the chances are that to add insult to injury you probably actually paid good money for it under the guise of an oxygenating or floating plant.

Floater like azolla, sold under the attractive name of fairy moss or fairy fern, are certainly attractive with their red and

green leaves. However, they multiply rapidly, and may form a mat several inches thick over the surface, successfully blocking out the light to the detriment of native plants.

The so called oxygenators are even worse, completely filling the pond then moving to take over the damp margin. *Crassula helmsii* is one of the worst and has several aliases to confuse the unwary. Look out for *Filix recurva*, Australian stonewort and New Zealand pygmy weed.

Others include floating pennywort and Parrots feather as well as the temperature sensitive water lettuce, water chestnut and water hyacinth that fortunately cannot survive a normal winter.



CHECK FOR AMMONIA



All living creatures excrete ammonia as a waste product. It is soluble in water and extremely poisonous to living creatures which means the levels must be controlled within the confines of a garden pond. Nature has its own way of dealing with ammonia. It is converted firstly into nitrite, which is also poisonous, and then into less harmful nitrate by nitrifying bacteria. Nitrates are then absorbed by plants and the whole cycle can start again. In a balanced natural system ammonia is not a problem.

However, when we introduce fish into a pond, particularly large numbers of fish into a new pond, then an imbalance is created as the fish produce ammonia more quickly than the bacteria can convert it into nitrite and the level in the pond increases. It can be toxic to some species at levels as low as 0.025mg per litre and can kill fish at a level of 0.2 to 0.5mg per litre, particularly at high pH levels.



ORFE FACTFILE

SPECIES	Orfe (<i>Leuciscus idus</i>)
OTHER NAMES	Idé
OTHER FORMS	Blue orfe, red and white orfe
SIZE	Up to 60cm
WEIGHT	Up to 3kg
AVAILABILITY	Golden and blue orfe available from most aquatic outlets.
HABITAT	A native of northern Europe found in large lakes and rivers.
IDENTIFICATION	A slender golden coloured fish which moves very quickly and shoals near the surface.
HABITS	An active shoaling fish which requires

Blue orfe shoaling



oxygen rich water and is usually the first to suffer if supplies are low. They are sensitive to some medications and are prone to jumping, sometimes ending up on the bank. Although a predatory fish by nature they will accept most commercial fish foods.

PONDFISH VALUE A visible shoaling fish excellent for the well aerated pond with moving water.

Dragonflies at their best

They are also sometimes called devils darning needles or horse stingers but none of our dragonflies are capable of inflicting more than a gentle nip. However, in their quest for food no flying insect is safe as they launch from a prominent vantage point to grasp their prey with their legs before flying back to their perch to consume their meal.

During August the dragonflies are at their best, skimming low over the pond and engaging in ariel combat for the best territory. In June the chasers rule the pond but by August they have been replaced by the larger hawkers. The Southern hawker, an inquisitive dragonfly, is often at home round the garden pond where it may be joined by the small darters like the Common darter.

Away from the pond the Brown hawker, with its transparent brown wings shimmering in the sunlight, hunts along the hedgerow often in the company of migrant and common hawkers. Back at the pond Southern hawkers are busy egg-laying well into September. The female bends her abdomen and lays eggs on damp plants or moss close to the water or on to plants just below the surface.





High-tech solution

A low-cost and stylish yet still high-tech lighting system like this one employs a number of fluorescent tubes in a small space, and still allows plants to grow out of the aquarium



In the second part of this series **Peter Hiscock** takes a look at the high-tech (easier) option for keeping a planted aquarium

Last month I took a look at the 'low-tech' methods of creating a good environment for aquatic plants. For those on a budget or enjoying the challenge of growing plants without having to use a wealth of equipment, the low-tech approach is ideal, but it does have its drawbacks. The low-tech approach is very much a 'hit and miss' method and introduces a number of variable factors that could throw the whole system into difficulty. For new fishkeepers, and peace of mind, a combination of modern techniques may be a safer and more controlled solution. The general idea of the high-tech method is to replace the functions performed by nature with artificial products and specially-designed equipment. The result of this is an artificial environment controlled by the fishkeeper without the complex problems associated with maintaining a more variable natural environment.

Remember your roots

The roots are arguably the most important part of the plant. It is the roots that collect the most nutrients vital for the plant's

growth and health. In nature plants grow in a variety of substrates but in the aquarium we have to create a rough approximation of the conditions that are beneficial to all plants. The three main points to consider are size, nutrient content and depth.

Substrate size

In an artificial substrate nutrients bind with oxygen, making them too large for plants to assimilate, the substrate must therefore be low in oxygen. Zero oxygen conditions will cause roots to rot and the substrate to release gasses that encourage algae and are dangerous to both fish and plants, so the substrate must always carry some oxygen. To allow just enough oxygen to enter the substrate without oxidising nutrients the substrate should be as small as possible without being small enough to compact. Fine sand is too small but small grade (1-2mm) substrate such as quartz gravel/sand is ideal.



A combination of fine grade substrates is needed to create the ideal artificial rooting medium

System integration

Introducing carbon dioxide continuously is wasteful, at night plants do not use CO₂, and excess will cause dangerous fluctuations of pH levels. To eliminate this problem, and at the same time reduce the need for regular refilling, a solenoid valve can be placed in the system. The valve is attached to the CO₂ line into the aquarium and also to the lighting system. When the lights are switched off, so is the CO₂, the plants then get the additional CO₂ only when they need it.

Nutrients

Nutrients must be available to as much of the plant's root system as possible. In an artificial substrate, nutrient-rich additives can be added but unless they are directly next to the roots, they will not be easily available. A method of nutrient dispersal must be present. Drawing water through the substrate will simply pull the nutrients out of the substrate and at the same time introduce too much oxygen.

For new fishkeepers, and peace of mind, a combination of modern techniques may be a safer and more controlled solution

The best solution is to use a low wattage heating cable at the base of the substrate. These cables produce a very low amount of heat, which causes a gentle convection current to flow through the substrate, carrying nutrients with it. To evenly distribute heat the immediate area around the cable should be filled with fine sand, the heat currents will stop this sand from becoming stagnant.

Depth

To encourage maximum growth potential, larger plants must have a suitable depth of substrate to develop larger root systems. It is worth noting that the top few cms of substrate are always oxygen rich and therefore hold little usefulness for the plants. It is only the deeper areas that hold the useful nutrients and also act as a nutrient 'sink' where waste products from the aquarium are bound to organics and become a food source for plants. To create these ideal conditions, the substrate needs to be around 8-10cm (3-4in) deep.

Our high tech artificial substrate would consist of (from bottom to top) a heating cable surrounded by 2cm of fine sand to disperse heat, a thin layer of nutrient rich additive such as laterite, a 5-8cm layer of inert fine grade substrate such as quartz gravel/sand, and a 1-2cm top layer of inert substrate of any size. There are also plenty of specially designed substrates available 'off the shelf' but many of these are only available from specialist retailers. Virtually all the specialist substrates will still work better with a heating cable and mixed with an inert small grade substrate.

Let there be light

Natural sunlight is the best light source for plants but is also great for encouraging algae and causing temperature fluctuations so in most cases, is best avoided. Standard fluorescent tubes can be used in small aquaria but for anything more than 45cm (18in) deep, four or five tubes will be needed. Using a large number of tubes can only be practical if they are combined together in a single, tidy unit or as part of the hood design. If you choose fluorescent tubes make sure you use a combination of specially-designed tubes for plants and for full spectrum outputs. For heavily-planted or deep aquaria, the best high tech option would be either metal halide (halogen) or mercury vapour lamps. Mercury vapour lamps are cheaper and have a lower running cost but metal halides produce a higher output and are more readily available for aquariums, being mainly developed for marine reef style aquaria.

Carbon dioxide

In a natural environment, or in the low-tech solution, ample carbon dioxide is produced from respiration of living organisms within the soil-like substrate. In our high tech aquarium the substrate is, in comparison, far more sterile so carbon dioxide must be



The heat produced by high intensity halide lamps is so high that ample space must be provided between the bulbs and the aquarium for ventilation

introduced artificially. The most common way of achieving this is by steadily releasing carbon dioxide from a pressurised canister into a diffusion chamber in the aquarium. Pressurised canisters will require refilling every few months, the larger the canister, the less often it will need refilling.

New kids on the (carbon) block

Alternative CO₂ systems are available which may be preferable for some aquariums. For small aquariums an external canister based system might be a bit much so a good alternative is a chemical reaction based system. These work by using

This electrical unit oxidises a block of carbon, creating a continual stream of carbon dioxide



chemicals or by using yeast production to continually produce a small amount of CO₂. To maintain these units additives are added every few weeks to replenish and continue the reaction process.

Another option for aquaria of all sizes is to use an electronic CO₂ release system. These are relatively new but are likely to become more common due to their ease of use and degree of control. The basic principle is that an electrical current is passed between two metal plates with a carbon block in the centre. Water passes freely between the plates and the carbon block and as it does it is broken down into hydrogen and oxygen. Some of the oxygen then binds with carbon atoms from the block of carbon, creating carbon dioxide. The benefits of this system is that it takes up relatively little room, is easily adjustable via a dial on the control unit, and being electronic can be plugged into a timer so it is only switched on when needed.

Feed me

In our low-tech system the soil-like substrate absorbed elements released by the fish (originally from the fish food) and kept them stored in a useable form for plants to use as needed. In a high-tech system our substrate will eventually work in the same way but it will take anything up to a few years for the substrate to mature enough and contain enough organic matter to be an effective nutrient store. During this period it is beneficial to either add substrate fertiliser tablets at the base of demanding plants and/or regularly add liquid fertilisers. Liquid fertilisers are readily available but for the best effectiveness, it



In an artificial substrate, plants rely heavily on both the roots and the leaves to obtain nutrients, hence the need for liquid fertilisers

may be worth searching for a brand associated with aquatic plants rather than a simple iron based product. The substrate is still the main source of nutrients but because liquid fertilisers are being used, the plants in this system will also take a significant amount of nutrients through the leaves. Without a gentle flow of water, the area

immediately around the leaves will be stripped of nutrients. To counter this problem, use a number of small pumps to create a gentle turbulence in the aquarium. Three or four small internal filters should suffice, and will also act as part of the filtration system. ■

THE WHOLE PACKAGE

- A typical high-tech planted aquarium would have;
- Metal halide and fluorescent tubes set on timers
 - A canister based CO₂ system with a solenoid valve
 - A substrate containing several layers and nutrient rich additives
 - A heating cable
 - Regular dosing of liquid fertilisers
 - Small pumps to provide water movement

It is the combination of all these items that create the right environment, if one of these factors is not catered for, the others will become far less effective. With all this equipment working together, the plants should thrive and hopefully you will spend more time trimming, removing and re-planting than you will on maintaining equipment.

This aquarium is full of high-tech equipment but careful positioning and design ensures that the equipment is well hidden



What's new?



Erwin Schraml takes a look at some new and rare fish and asks if they are suitable to keep in our home aquariums



Synodontis soloni

In a recent shipment of fish from the Congo, Aquarium Glaser received *Synodontis soloni* – this species has in the past been quite rare in the trade. There are however photographs in the relevant hobby literature like the *Aquarium Atlas* (Vol. 3), or in the *Aqualog Photo Collection* (1) which document an occasional import, but there are no field reports from aquarists about this species. Mayland (2001) also mentions the species, however, he only repeats data from Poll (1971). The Internet is also an unhelpful source.

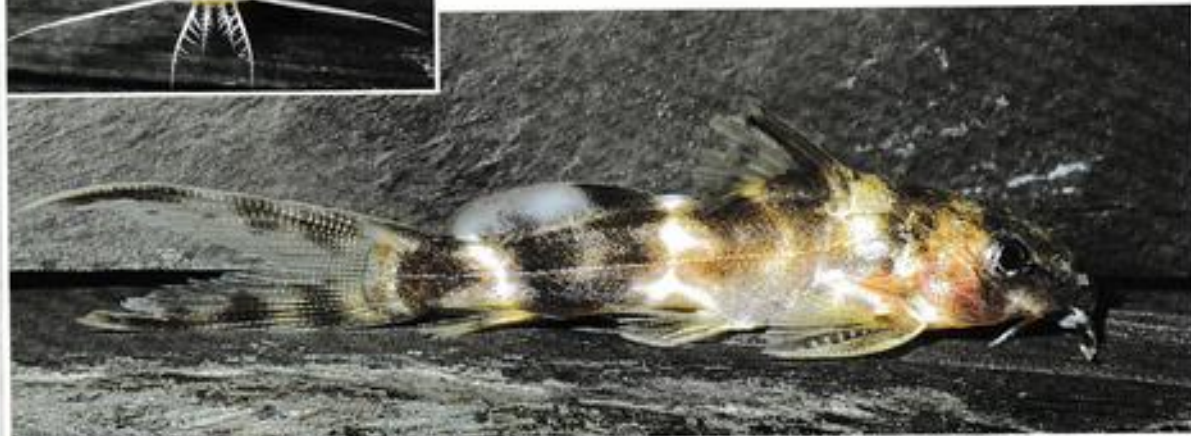
The pattern of *S. soloni* is very variable as hardly any individual has the same pattern of blotches. In the *Cat-e-Log* (Planet Catfish) an albino specimen is shown which must be a rarity. The only possible confusion is with *S. smiti* Boulenger 1902 (this name is not to be confused with *S. smithi* Gunther 1896, a synonym of *S. schall*), which was also described from the Ubangi River. Perhaps the picture of *S. smiti* in the *Aqualog Photo*

Collection shows a juvenile *S. soloni*.

S. soloni is from the Congo (DRC formerly Zaire), from rapids at Pool Malebo (formerly Stanley Pool), and from Libenge (at the Ubangi). The achievable total length is about 15.5cm (11.3cm Standard Length). The Congo River has a temperature between 23-25°C, pH fluctuates between 6.9-7.2 and the dH between 3-8.

Keeping conditions

When kept in the aquarium they will tolerate greater degrees of hardness but breeding attempts require softer water. It is sometimes mentioned that when breeding the species the temperature needs to be raised as well (e.g. in Mayland). This seems doubtful because for a species such as this that lives in constantly shadowed rainforest, higher temperatures would not be conducive to breeding. As *S. soloni* originates from areas with rapids, higher oxygen levels will be required and as a



spawning trigger perhaps a stronger water flow will be needed (this being supplied by an additional power head). However, nothing has been published about breeding them in the aquarium. Housing them is relatively easy as all the current foods will be taken. The animals are relatively peaceful with each other, yes even sociable, but so far I have only made my observations in a fish tank in the trade.

The 'true piranha'

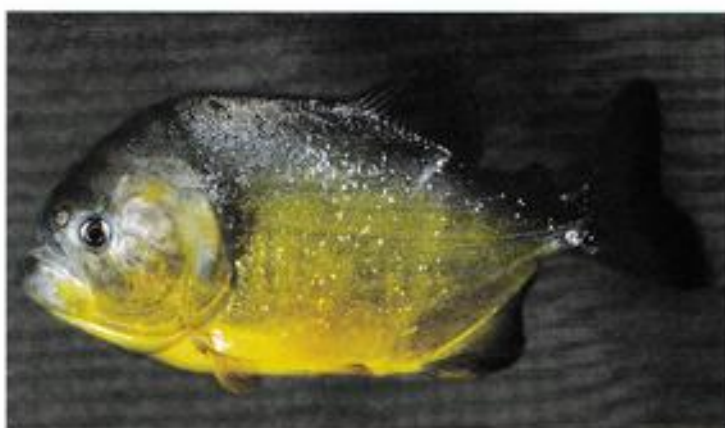
I'm often telling you about fish species which are new in the trade but this is not the case here. The 'true piranha' has from time to time in the past been introduced to the aquarium hobby but it is still a rarity in the hobby. Those who keep piranhas tend to keep other smaller species. Different data exists about the length attained by *Pygocentrus nattereri*. FishBase indicates relatively low measurements of 34cm long and a weight of about 3kg. Some internet pages report a length of 60cm.

Few other fish species have such a bad reputation as this one, because this piranha is counted simply as a man-eater. Their importation and aquarium keeping is forbidden in some countries. *Pygocentrus nattereri* only occurs in the Rio San Francisco and its affluents in Brazil. It was described by Cuvier in 1819 placed in the genus *Serrasalmus*. Synonyms of this species are: *S. piranha*, Agassiz 1829, *S. ferox*, Swainson, 1838 and *Pygocentrus bidorsalis*, Kner 1860.

In its home the species is a popular food fish because its meat is tasty. Anglers like them because they are pugnacious and catching them requires technical subtlety as they easily bite through netting and fishing lines.

Tank requirements

The fish is not difficult for the hobbyist to house, they require the same water parameters as other piranhas but perhaps they need more space (at least a 2m tank). They are really a shoaling fish but it is known that some individuals of this species can suddenly become tremendously aggressive and apparently for no reason attack their conspecifics. These hyper aggressive animals must be removed as otherwise they will kill the other shoal members one by one. A piranha basin needs cautious handling as these fish are allured by the smell of blood – you should never put hands with open wounds in the aquarium. Otherwise they are quite timid and most likely will flee. In the wild their diet consists predominantly of meat, mainly fish of all sizes and naturally the legendary cattle herds which reach the bank as skeletons. The latter should not be taken too seriously, but it is certainly true that single sick and especially bleeding animals are attacked. Smaller mammals, mice and



rats are also on the menu. In the aquarium feeder goldfish can be a good choice, however, other foods such as beef heart and earthworms are eagerly accepted.

True piranhas like subdued lighting, a

slight current and sufficient open areas for swimming around. Breeding in aquaria has not yet been described. Corresponding statements about piranhas are based on other species.



The teeth in unharmed specimens are chiefly hidden by the lips. Photos in which the teeth can be seen are taken of animals whose lips have been cut off



The Southeast Asiatic river-tongue

On several occasions Aquarium Glaser has received a flatfish of the genus *Cynoglossus* from Thailand. This species is probably *C. feldmanni* (Bleeker, 1835) or *C. microlepis* (Bleeker, 1851). If the drawings in FishBase can be trusted *C. feldmanni* is the most likely species for it has the same course of sense lines at the head as the imported animals have. Besides which, I could count less than 90 fin rays in the dorsal part using the photograph, while 117-119 fin rays are indicated for *C. microlepis*. Unfortunately, the fin rays counts of *C. feldmanni* are unknown to me. The imported animals measured 6-8cm approximately. *C. feldmanni* should reach 25cm and *C. microlepis* more than 32cm. It is known that mature specimens of *C. microlepis* should be monochromatic brown on the eyes side which also applies to *C. feldmanni* although one could also consider a juvenile coloration. *C. microlepis* has a distribution area from Thailand to Vietnam and also occurs in Borneo and Sumatra like *C. feldmanni*. The latter species also hails from Cambodia. Both species live in pure freshwater habitats and live on soil

dwelling invertebrates. In their home countries both species are food fish freshly offered in the markets.

Very little is known about the degree of their ability to reproduce in freshwater, but some species (e.g. *Euryglossa harmandi*) occur in the Mekong and in large tributaries at least 2,000km from the river mouth. It is unlikely that these species have a marine life stage because none of the species are strong swimmers capable of migrating such long distances. Larvae and small juveniles of several flatfish species have also been collected by AMFC in Vietnam's An Giang province so far from the sea that they must have spawned in pure freshwater.

Salt or freshwater?

This means that one should try to keep *Cynoglossus feldmanni* in a pure freshwater aquarium but it really depends on which population (nearer or further from the sea) the aquarium animals have originated from. The fish only requires a sandy substrate and a nourishing supply of food which sinks to the bottom. There is a good chance the fish will accept living and frozen bloodworm and efforts should be made with other kinds of foods. ■



Responsible reef keeping

Anthony Calfo is a great advocate of maintaining a self-sustaining marine hobby. Here are his suggestions...

The phrase 'responsible reef-keeping' means different things to different people and with good reason. Millions of people enjoy the wonderful hobby of marine aquarium-keeping from various perspectives. Many of us are simply hobbyists enjoying a personal slice of the ocean. We are also inevitably using our aquariums as learning centres, teaching our children, family, and friends about the wonders of the sea. Numerous academic and zoological organisations also exist to



PHOTO BY ANTHONY CALFO

For many species, successful propagation techniques are as simple as a careful hand with a sharp knife. Fragmentation is currently the most common form of 'coral farming'

study the same sealife for formal contributions to aquatic science. And a very hard-working group of people across the globe work with the handling of marine organisms to supply us all. Regardless of which level(s) of the trade you participate in... from the collectors and the importers to



PHOTO BY M.F.S.C. PREONON

This stunning *Chaetodon semilarvatus* is testament as to why we should think about the longterm good of our reefs

the resellers and the consumers... we all have one thing in common: we want to see the hobby continue to succeed. The challenges that our industry faces on a daily basis are numerous and sometimes formidable.

Supply pressures

Many aquarists live completely unaware of the supply-side challenges like legislative threats and the risks of perishables in transit, not to mention environmental pressures on wild stocks. Most hobbyists innocently enjoy their aquariums solely through visits to the local aquarium shop and fun hobby literature. I'll be the first to say that not only is this acceptable, but I'm grateful for having known it and I work hard as an author and mentor to see that it continues. For so many people, aquariums are a relaxing and peaceful pastime and need not be anymore than that. Still, while we all do not need to be active in political or administrative aspects of the trade, there are some effortless habits we can form that will support the hobby we love so dearly and ensure that the industry thrives.

Our first priority, collectively, is to work

The rise in popularity of frag swaps, aquarium clubs and other trading activities does not concern savvy retailers...it delights them

towards making the marine hobby self-sustaining, or nearly so, much like the freshwater hobby. We are well on our way, in fact, as evidenced by a remarkable number of new coral farms appearing each year and the number of successfully spawned marine fishes rolling into the hundreds. Consumers should ask for and purchase captive-bred or captive-raised (e.g. reared wild-collected larvae) whenever possible.

Captive-bred fish

Indeed, some of these captive produced specimens will be more expensive or perhaps smaller than their wild collected



Euniceella covolinii coral displaying its beauty in its home territory.

counterparts. But this does not mean that they aren't a good value. On the contrary, they are much more likely to be harder and better adjusted to captivity for having been born into or otherwise grown up in the confines of aquaria. You can expect cultured animals to also be 'cleaner' with far less risk

of parasites or disease. This clearly gives aquacultured species a distinct and significant value if not advantage over stressed and riskier wild imports. Thus, hobbyists not only support a sensibly, if not ethically, better choice in livestock, but get quality pets at the same time.

Smart retailers appreciate aquacultured animals for similar reasons. If, for no other reason, looking at their profit and loss figures reveals that the lower rates of mortality and morbidity yields higher profits. Retailing animals that ship healthier and acclimate healthier for customers also leads to happier and more successful customers, of course – this is not rocket science. If more people enter and stay in the hobby (and recruit others with their success stories), then more money is spent and the industry thrives.

This reality extends as far as customers propagating and sharing their own corals

If more people enter and stay in the hobby (and recruit others), then more money is spent and the industry thrives

and fishes. The rise in popularity of frag swaps, aquarium clubs and other trading activities does not concern savvy retailers... it delights them. The "lost" sales of low-profit, wild-caught organisms to successful hobbyists that are setting up more aquariums and encouraging others to do so from livestock trades are a boon for retailers. The increased activity drives an increasing consumer demand for more tanks, sea salt, foods, equipment and other items. Rest assured, my friends, it is in everyone's best

interest to see the hobby take the direction of domestic aquaculture: from basement farmers to commercial growers.

Many species like this *Cespitularia* soft coral are 'rare' among imports because of shipping challenges such as distance from the point of collection



TODAY'S FISHKEEPER - AUGUST 2004

PHOTO BY ANDREW CALIO



It is becoming more commonplace around the world to see reef aquariums filled with domestically grown 'frags' of coral like this beautiful German reef display

PHOTO BY ANDREW CALIO

Another issue of passing but important mention is the crucial need for aquarists to support their local retailers. The increased presence of mail-order companies and large e-tailers has been both a blessing and a curse. As a passionate and dedicated capitalist myself, I cherish the competition and free trade and recognize that in most vectors it benefits both the consumer and industry. In the aquarium hobby specifically, however, we have a bit of a unique situation. Local pet shops are THE place for farming and recruiting new hobbyists. Animal lovers visit such retailers for leisure and entertainment before they buy their first aquarium. Seeing beautiful fishes and aquariums in person is what inspires them. This principally occurs via the mass traffic of a buying public and comprises a far greater number of new recruits to the hobby than any other means. In a nutshell: the local pet shop is the grassroots of our hobby. If the number of new aquarists entering the hobby continues to fall with the number of disappearing local pet shops, there will be less of a market and less manufacturers in business over time to support the lingering intermediate and advanced aquarists. There needs to be a balance. Support all forms of good business in the aquarium hobby and consider the value of quality and service with price. My best regards to all in salty endeavors. ■

Desert dwellers

Val Davies continues her look at reptiles for beginners and says that small desert dwellers can make fascinating pets



A number of small lizards from North Africa to south western Asia are frequently seen in reptile outlets and are relatively cheap and easy to care for. These are all desert dwellers in that they are found in arid, rocky or sandy scrubland. They are fascinating creatures to watch but due to their small size and use of speed they shouldn't be handled too much.

Tropicolotes steudneri

This tiny gecko (5.2cm total length) is often called a sand gecko but so are many other species. Although primarily crepuscular it is frequently seen in the daytime. The basic coloration, as in many desert lizards, tends to match the sand with small patches of darker brown and cream scattered along the dorsal surface. The tail is yellowish, banded with dark rings. Regrown tails are common

Male and female fringe-toed lizards – the female is in front

and in these cases the bands are absent. The feet lack the adhesive quality of many other gecko species so they are poor climbers. This species can be housed in groups with more than one male if plenty of hiding places are available. Inter-male aggression seems to be limited to vocalising when frequent squeaking is heard. Two males often walk along, parallel to each other with tails raised, squeaking before dashing away in different directions for shelter. Lifespan for such small creatures is a surprising five years.

Stenodactylus species

At 7.5cm these geckos are a little larger and more heavily built than the previous species and are also given the common name of sand or desert gecko (this is where scientific names, although hard to pronounce and remember are useful). A rounded head and bulbous eyes give this creature a comical appearance. The eyes have an intricately patterned, vertical pupil and the nostrils are quite protuberant. Coloration is variable – a light fawn

background with small darker markings or vermiculations often interspersed with small white dots. Like the previous species they lack adhesive toes. Males are very aggressive towards each other and must be maintained separately with one or more females. In this species the scales are very smooth, almost like skin. In the wild they are reputed to be strictly nocturnal but in the vivarium they will frequently emerge and bask in the daytime. In Bahrain these little geckos can be seen in enormous numbers at night.

Acanthodactylus boskianus

Fringe-toed lizard is the common name for these 15cm lizards and it comes from the fringe-like projections on the toes which aid locomotion on loose, sandy surfaces. The base colour is light brown/fawn with white and darker spots or marks arranged in longitudinal rows. Males seem to possess darker markings than females. They are a fairly typical lacertid shape – a long



Gravid female *Tropicolotes steudneri* – note normal tail with banding and bulge made by single egg.

Stenodactylus geckos mating

Feeding

All four species thrive on the usual insect diet of crickets, locusts, waxmoth larvae and mealworms dusted with multivitamin/mineral/calcium supplements three times a week. The latter two foods should be used sparingly, perhaps as an occasional treat, as they can be fattening if used in large quantities. Obviously the size of food will vary for each creature. Spiders are devoured with relish.

'whippy' tail (longer than the body) with a pointed snout. Males are more heavily built, longer and have larger heads than females. To avoid aggression males should not be housed together.

Latastia species

This tiny lacertid at 10.5cm is similar to the previous species and frequently sold as desert lizards. The dorsal surface has light and dark spots or flecks on a brownish background. The toes have keeled lamellae on the underside to assist purchase on loose substrate. As with fringe-toed lizards males should not be housed together.

Male *Latastia* – sometimes called sand or wall lizard



Captive care

The set-up for each of these species can be fairly simple. A vivarium, 60 x 30 x 30cm (24 x 12 x 12in) for the smaller species, 75 x 30 x 30cm (30 x 12 x 12in) for the larger species is ideal. A layer of bird sand or reptile sand 2-4cm deep should be provided. If desired the sand can be mixed with small aquarium gravel or even coral sand sold for marine aquaria. A small piece of cork bark or half a clay plant pot will provide cover and a flat stone positioned under a heat source will enable the creatures to bask. A word of caution – when using large stones these should be placed so they rest firmly on the base of the vivarium and the substrate

added around them otherwise animals could become trapped when burrowing.

Daytime temperatures up to 30°C (86°F) can be maintained by provision of a thermostatically controlled spot bulb. Night time temperatures can fall to 15°C (60°F) with a 14 hour photoperiod. In addition fringe-toed and *Latastia* species will require 5% UVB fluorescent tubes but 2% tubes can be used with the two gecko species since they do not bask to the same extent. A small water dish should be provided although drinking is seldom observed. The creatures prefer to lap from their surroundings when the vivarium is given a light spray each morning. Adequate ventilation is essential. This basic set-up can be aesthetically enhanced with the use of dried flowers such as statice. Don't use plants which require moisture as they will raise humidity levels.

If attempting to breed these creatures then all species will need to be cooled to about 20°C daytime, 12°C at night for eight weeks. *Tropicolotes* females produce only one egg every six weeks throughout the season; *Stenodactylus* produce several clutches of two eggs; whilst the other two species lay two clutches of four to six eggs. ■



TOP TIP

During summer heat waves temperatures may rise to dangerously high levels. Even fluorescent tubes can cause vivarium temperatures to rise by an extra 2-3°C. All forms of heating and lighting should be switched off. A large bowl of ice cubes placed near the vivarium and an electric fan will direct the cooler air rising from the cubes towards and around the vivarium thus lowering its temperature to safer levels.

Fauna Import UK – the home of quality herps. Sold only to shops and wholesalers

Fax: 02392 233392 Email: sales@faunaimportuk.com Website: www.faunaimportuk.com



...End Point



INQTO: www.inqto.com.au

The rather odd-looking Mudskipper can make a great pet for the more experienced aquarist, says Pat Lambert

The mudskipper has an elongated body with pectoral fins that look like little legs. It has two large colourful dorsal fins, and when attracting females the first dorsal fin is held erect in display and the colourful throat is inflated. As they come from such a widespread distribution area coloration is very varied.

The mudskipper's gills are stouter than normal and less likely to collapse out of water as the opercular chamber is inflated to hold air and water and the opercular opening is closed. Some breathing takes place through the gills out of water but most of the oxygen enters through the skin. In water they breathe through gills as normal but less so through the skin. They have protruding mobile eyes and lower eyelids. No sexual differences are apparent.

Habitats

Mudskippers habitats extend through African estuaries, from the Red Sea to Madagascar, Southeast Asia and Australia. In the wild mudskippers inhabit the tropical mangrove forests where muddy shores meet brackish water estuaries. This is a harsh environment where extreme conditions are the norm and this is especially so of salinity and temperature.

Mudskippers have adapted to these conditions by the power of movement on land, if conditions are unfavourable in one place they can move to another. The long muscular pectoral and pelvic fins play a

major part in this ability to move, while the strong muscular tail propels it through the air. This leaping motion across the mud gives them their common name of Mudskipper.

They live in shallow pools, mudholes and ditches. As the water level falls they excavate funnel-shaped burrows in the mud. The mud excavated is built up to ring the excavation which makes a high rim. As the tide recedes it leaves these pools of water in which pairs remain until they dry out at low tide. This nesting area houses a pair as mudskippers are territorial species chasing off all intruders including crabs. In the wild they feed on worms, crabs and crustacea.

As the pools dry out they drag themselves out and look round for a suitable place to go. They even drag themselves up fallen trees to have a better view.

Aquarium conditions

The aquarium should be 90 x 30 x 30cm. The tank should contain well filtered brackish water (1-2% sea salt) heated to 25-30°C. There should be a sloping emergent bank of fine sand with stones and roots as decor. The aquarium should be lit and covered to maintain the high temperature above the water level. Moist, humid air is what they like. A small mudskipper can climb up the sides so a tight lid is required.

This is a carnivore enjoying crickets,

shrimps earthworms and other wormy foods. In the Far East mudskippers are cultivated as a food fish.

Due to its territorial nature and the inability to sex them it's best to keep just one. If optimum conditions for captive mudskippers can be maintained they can live for many years and although timid at first they can become tamed pets. These fish are more suitable for the experienced aquarist.

PROFILE

Name:

Mudskipper

Scientific name:

Periophthalmus barbatus

Size:

15cm

Aquarium type:

Brackish water with land area, moist humid atmosphere

Distribution:

African estuaries, from the Red Sea to Madagascar, Southeast Asia and Australia

Diet:

Crickets, shrimps, earthworms and other wormy foods

Temperature:

25-30°C