

# Today's Fishkeeper

MAY 2003 £2.95

FROM BEGINNER TO ADVANCED

**BEWARE!**  
FISH THAT BITE, SPIKE  
AND SHOCK

**TROPICAL**

New imports –  
Small Barbs  
from Zambia

**PLANTS**

How to fix  
plants to  
bogwood

**TROPICAL**

Build a Congo  
tetra community

**MARINE**

Alf Nilsen Introduces  
the Great Barrier Reef



**Keeping  
Christmas  
tree worms**





Designed &amp; Published by

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Colour Repro  
**DIGITAL CONCEPTS**

Printed by

**WILLIAM GIBBONS & SONS**

Distribution

**COMAG** (01895 444055)

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This publication is declared for purposes of Zoological Nomenclature in accordance with the International Code of Zoological Nomenclature, Fourth Edition, Articles 8.2 and 8.4. No new names or nomenclatural changes are available from statements in this publication. ISSN 0003-7271 © TRMG Magazines Ltd 2003

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# Welcome

Well May is here, the sun has been shining and the garden is looking great - shame about the pond! Last year I did a major overhaul and got the edges looking decent, added some nice water lilies that won't smother the whole pond and topped up the other aquatic plants. It all looked lovely. This year things look a little different. Weeds have started to spring up in the marginal areas and duckweed is already covering much of the surface. Time for some regular maintenance to keep it looking good. It only took half an hour (Don't tell Pat she thought I was at it for 2 hours!) and then I could sit down in the sunshine and sip a glass of cool white wine whilst watching the newts cavort in the pond - bliss.

If you have never tried digging a garden pond, now is a great time to do so. To give you all the information you need to make a success of it, we have produced a *First time Fishkeeper* guide to garden ponds. This covers all aspects of making a garden pond in a simple and understandable fashion. If you need any more help then we have a great subscription offer. If you subscribe to the magazine this month you will receive a free copy of Hagen's pond video, 'Create your own living ponds & water features'. This actually shows you what to do to make a successful pond. For added ideas about design check out Peter May's article this month and in the coming months for great ideas. You will be amazed at just how easy it is to make a wonderful pond in your garden.

As usual this month's issue is jam packed with articles on all sorts of aquatic subjects. *Points of view* is a new (old) column chaired by Dick Mills. This originally started life in *Aquarist and Pondkeeper* (*Today's Fishkeeper's* original name) during the 1960's as *What's your opinion* chaired by Billy Whiteside. It became so popular that at one time it ran over 20 pages of the magazine! Looking at some of the letters we have been receiving recently, it is obvious our readers have some strong opinions, great ideas and really good tips to share with other readers, so I decided it was time to give you somewhere to air them. As a former editor of *Aquarist and Pondkeeper* Dick Mills seemed like the obvious choice to chair this new column. Like the original version, shopkeepers and other members of the trade are welcome to take part, as well as aquarists with many years experience and dozens of tanks to their name. Most importantly, so too are readers who only started keeping fish a couple of weeks ago. Just to calm Dick's nerves a little, I don't intend the column to end up covering 20 pages of the magazine!

Happy fishkeeping,





## TROPICAL/MARINE/COLDWATER

- 6 Starting point**  
Pat Lambert introduces a great little Rainbow fish, some Spiny eels, and has another batch of definitions for those who are a little lost for words.

Cover Story

## MARINE

- 22 Fishkeeping answers**  
All your marine questions answered.
- 38 A Land called "Oz".**  
Aif Nilsen transports us to the world's greatest reef.

Cover Story

- 60 Sea View**  
In this month's column Andrew Caine has a great fish and invert for you, and he hands over to one of his good friends - a tropical anemone!

Cover Story

- 70 Take Shelter**  
Anthony Calfo explains the types of Refugia available for a natural marine aquarium.



## PONDS & COLDWATER

- 14 Fishkeeping with style**  
Peter May looks at the many different styles of garden pond you can create in your garden.
- 25 Fishkeeping answers**  
All your coldwater questions answered.
- 64 Ponderings**  
In the month of May a wildlife pond may have a swarm of dancing Mayflies above the surface. What's going on? Dave Bevan explains.
- 88 Gasping for air**  
Bernice Brewster highlights a common problem in many Koi ponds at this time of year.

# 69 DISCUS PROBLEMS SOLVED





# Issue of Today's Fishkeeper

## TROPICAL

- 10 Prisms of reflected light**  
Mary Sweeney creates a community around Congo Tetras. **Cover Story**
- 18 Fishkeeping answers**  
All your tropical questions answered.
- 28 Searching for Botias**  
The first part of a new in-depth series, in which Dr. Peter A. Lewis gives a general overview of Botias.
- 32 Top of the Pops**  
Everyone has their own "Top of the pops" in the fish world. Here is Pat Lambert's personal choice.
- 34 African Bush Babies**  
Paul Skinner tries his hand at breeding the Leopard ctenopoma.
- 37 Humpback limia**  
Kathy Jinkings profiles a great "Golden oldie" of the livebearer world.
- 54 New introductions**  
Top German aquarist Erwin Schraml features some small barbs from Zambia. **Cover Story**
- 69 Discus problem solver**  
Tony Sault answers your questions.
- 74 Today's surgery**  
This month Lance Jepson, our resident vet, explains which diseases are associated with anabantids.
- 76 Monty who?**  
Derek Lambert unravels one of the most tangled webs of misidentification in the aquarium hobby.
- 98 End point**  
Puffers are some of the real characters of the fish world. Kathy Jinkings has picked one of her favourites.

Cut out and keep  
57 Sterba's Corydoras

## BEGINNERS

- 6 Starting point**  
Pat Lambert introduces a great little Rainbow fish, some Spiny eels, and has another batch of definitions for those who are a little lost for words.
- 10 Prisms of reflected light**  
Mary Sweeney creates a community around Congo Tetras.
- 18 Fishkeeping answers**  
All your tropical questions answered.
- 37 Humpback limia**  
Kathy Jinkings profiles a great "Golden oldie" of the livebearer world.
- 60 Sea View**  
Andrew Cairns had a great fish and gives it for you, and he hands over to one of his good friends - a tropical anemone.
- 82 Woody wonders**  
Peter Hiscock shows you how to turn an ordinary piece of bogwood into the perfect home for plants.
- 86 Colourful Heads and Spiny Tails**  
Bob and Val Davies are focusing on some of the family Agamidae which may be available in reptile outlets.

page 60

## NEWS & PRODUCTS

- 44 Top Gear**  
All the new products and product reviews.
- 49 Today's guide to Aquatic suppliers**
- 50 Today's Diary dates**
- 52 Club News**
- 53 Shop visit**  
Today's Fishkeeper visits Anglia Aquatics in Norfolk.
- 56 Letters**  
Share your news and experiences through Today's Postbag.
- 58 Selecting pond pumps**
- 80 In a Giant's Footsteps**  
In "Points of view Dick Mills is "in the chair" for your opinions."

page 82



## PLANTS

- 82 Woody wonders**  
Peter Hiscock shows you how to turn an ordinary piece of bogwood into the perfect home for plants. **Cover Story**

## REPTILES & AMPHIBIANS



- 86 Colourful Heads and Spiny Tails**  
Bob and Val Davies are focusing on some of the family Agamidae which may be available in reptile outlets.

## REGULARS

- 3 Editorial**
- 89 What's in next month's issue**
- 90 Subscribe to your favourite fishkeeping magazine**

### KEY TO SYMBOLS:

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

	COMMUNITY		NO WATER
	NON COMMUNITY		BOTTOM
	CARNIVORE		26°C
	OMNIVORE		20°C
	HERBIVORE		10cm
	DWARF		NOT SUITABLE FOR DISPLAY IN CAPTIVITY





# Starting Point...

Pat Lambert introduces a great little Rainbow fish, some Spiny eels, and has another batch of definitions for those who are a little lost for words. PHOTOS: MAE GIBBS

Some time ago I was visiting an aquarium shop on the lookout for something a bit different when a young lad came in to buy his first aquarium. He had come in to buy everything he needed (except he didn't really know what he needed) all at one go, and this included the fish. The retailer, with a shop full of customers at the time, and with the best will in the world, could not spend all his time with the one customer to the exclusion of all the others. The boy, being totally oblivious to the needs of the fish, just wanted to pick whichever fish he fancied and place them in the cheapest set-up he could buy.

The retailer patiently answered his questions, recommended one or two of the books he had on his shelves, and told him to go home and read all he could about his

proposed hobby before buying anything. This was not what the boy wanted to hear, but it was a first lesson in patience which is an essential attribute for any good fishkeeper.

This same retailer, when he sold fish that had special needs, always asked the customer about the tank the fish were going to and even dissuaded the customer from making a purchase if he thought the conditions were unsuitable. What a good retailer this was, a person who genuinely cared about his stock and was not in the business of making a fast buck. His fish were well cared for and the tanks were clean and not overstocked. It was not a superficially glamorous or large outlet, but he was definitely my kind of retailer as was endorsed by the many satisfied customers that regularly came into his shop.

## WHAT YOU NEED TO KNOW ABOUT SPINY EELS

These are unrelated to the true eels and the only resemblance is in their shape. In some species the dorsal, caudal and anal fins are adjoined to become one long continuous fin. A spiny eel's nose projects forwards and is quite mobile. The nostrils are extended tubes on either side of the nose. These predatory fish use these extensions to feel their prey which is then taken up and sucked in a jerky manner. Many of them are attractively coloured.

Spiny eels can be kept with other species that are as big or bigger than they are. You have to be VERY careful which species you buy as some are huge but whatever their size they share many of the same attributes. They are usually aggressive with their own kind (Spiny eels should not be kept together) they like pots, hollows and caves in which to hide and they are crepuscular species which will only come out when the lights are dimmed. Sandy bottomed tanks suit them best, they can bury themselves in this with only the eyes and the nostril extensions showing. Spiny eels are quite cute and there are a few smaller ones like the 16cm Mottled Spiny eel (*Mastacembelus moonii*) or the 15cm long Ladderback Spiny eel (*Mastacembelus frenatus*).

## A RAINBOW FOR YOUR AQUARIUM

I haven't featured too many Rainbows in the column but I think these are ideal community fish. Peaceful, colourful, lively fish which adapt well to community aquarium conditions, are not fussy feeders and given well filtered, good water conditions they will enhance the aquarium. The problem with some of the larger ones is that when small they do not display their magnificent adult coloration so you're not tempted to buy. However, some of the smaller ones show their colours much earlier.

The Dwarf rainbowfish (*Melanotaenia maccullochi*) was one of the earliest Rainbows to be imported. This very pretty little Rainbow only grows to 8cm. In the wild it shows great variability in coloration, there being different colour forms in the different river systems where it has been collected. The usual background coloration of aquarium specimens is silvery and there are a number of dark stripes along the sides. The Dwarf rainbow has the twin dorsals commonly associated with Rainbowfish, the second dorsal fin being very broad based. Males have brighter colours than the females and the colours heighten when the fish is in breeding condition. These are shoaling fish, so buy a group to keep them happy. They are very accommodating fish and will also shoal with other Rainbows of a similar size.



Dwarf rainbowfish like these are among the best community fish you can buy.

### WARNING

There are many different species of Spiny eels available and you really do have to be careful which one you buy.



## LOST FOR WORDS

- Bellysliders:-** These are newborn livebearer fry or baby egglayers that slide along the bottom of the tank, or try to rise in an unstable manner because they have defective swimbladders which normally give them buoyancy. They do not survive for very long because of it. They should not be confused with fry of bottom dwelling species for which this kind of behaviour is the norm.
- Bristle worms:-** Annelid worms with bristles. Freshwater species are introduced in plants or among wild collected live foods. Marine species sneak their way in on your live rock. They live on the detritus and are often found to live in the substrate. A large population indicates poor water quality due to pollution.
- Metals:-** Copper, iron and lead may be found in water supplies having leached out from metal pipework. Iron and lead are toxic to fish and may cause damage to the gills and internal organs or cause sudden death. A water purifier will remove heavy metals from the domestic water supply.
- Osmotic shock:-** This occurs when a fish is moved into water that is quite different in the concentration of dissolved minerals from the water it has come from, such treatment can lead to death. Fish should be quarantined and the water gradually changed over the 2 weeks quarantine period to that of the main aquarium which will be its home.
- Plankton:-** These are small organisms that drift or float in the water. If the small organisms are animal it is called zooplankton. If the small organisms are plants, it is called phytoplankton.
- Proboscis :-** The long, flexible snout of a fish such as that of the Spiny eel
- Vegetable filter :-** Water that has been filtered mechanically and biologically is passed through a bed of fast growing plants such as watercress to remove nitrates and so discourage algal bloom.

A Bristleworm wends its way along the ocean floor.



## FIERY BY NAME BUT NOT BY NATURE

Fire spiny eels grow to 100cm so need a BIG tank. A single specimen in a tank can become very tame and learn to recognise its owner. A friend had a magnificent one of these which he kept on its own in solitary splendour. The lights had a dimmer switch to simulate twilight, at which time he came out and displayed for us. Alan had him for a few years and he was a real pet (I think it was a he). It escaped from the tank while

All Spiny eels love worms and Fire eels are no exception.



we were there without coming to any harm, so a tight fitting lid is the order of the day.

## A PLANT FOR LOWER LIGHT LEVELS

Cryptocoryne affinis is a plant which is suitable for tanks with moderate lighting. Can be kept successfully in a stable environment and has very attractive leaves which are lighter green above and darker velvety green below. Its height ranges between 10-30cm. The height reached and the speed of growth are dependent on light levels.



## THE FIRST TIME FISHKEEPER BOOKLETS

The First Time Fishkeeper booklets for Freshwater Tropicals and Marines are a good place to start. Published by TRMG they are available for the price of postage and packaging. You will also need a good encyclopedia of fishes to help you with your choices.



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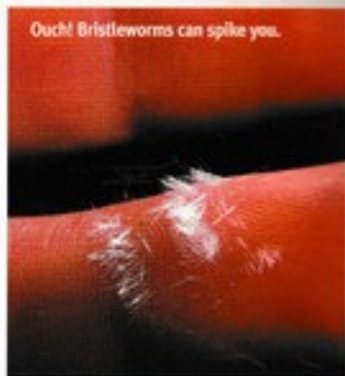
## BITES, SPIKES AND SHOCKS



We need to be aware that some fish can inflict injuries to fishkeepers by biting, spiking or even by electric shock. We need to be sensible in our husbandry of these species and be aware of the risks. Bites occur in the aquarium when a fish is provoked or it mistakes a finger for a meal.

Most bites from aquarium fishes are easily dealt with, but a bite from a Moray eel can be very severe. Some fishes have venomous spines like the Lionfish which has spines on its dorsal. The freshwater stingray has spines in the tail. The injury inflicted by a sting can be very severe and, in extreme circumstances can be very dangerous to humans. Stingrays are feared as they lie buried in the substrate in Amazonian waters. If trodden on the tail whips up like that of a scorpion. Some catfish have a single spine on the leading edge of the dorsal which can cause pain to humans but is rarely fatal. A sting from a Stone fish is extremely serious,

Ouch! Bristleworms can spike you.



causes intense pain and can lead to death. Electric eels can generate enough electricity to fell a human. The best cure for all of these things is not to get bitten, stung or electrocuted and this should be relatively easy when dealing with aquarium fishes. It's important to understand that many, though not all of these creatures, are only protecting themselves. ■

## The ten golden rules of fishkeeping

### Read all about it

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

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

### THE WATER

**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 & 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<sup>2</sup> 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](http://www.aquarian.com)

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**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

**5 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.

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

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

**7 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.



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# Prisms of reflected light

Mary Sweeney creates a community around Congo Tetras. PHOTOS: MAX GIBBS

CONGO TETRAS ARE THE HIGHLIGHTS OF this month's article and when I say "highlight," I'm not exaggerating. These natives of the upper Congo basin in the Congo Democratic Republic in Central Africa (formerly known as Zaïre, formerly known as the Belgian Congo) are but one of about 200 species of characins found in Africa. They are adorned with large, highly reflective scales that make the most of all available light, with each individual scale becoming a prism that reflects all the colours of the rainbow. Add to this a unique tail shape graced with long feathery appendages at the middle of the caudal fin and you have the makings of a very fine fish indeed.

## A fish of many colours

The current scientific name of the Congo tetra is *Phenacogrammus interruptus*, and you will find it called *Microlestes interruptus*

in older references. The Congo tetra is also known as the Congo salmon. It has a typical tetra shape with an elongated, torpedo-shaped body. The rainbow of fluorescent colours of the fish range from blue on top changing to violet to red to gold and back to blue. There is a horizontal gold band from head to tail just above the midline. There is an overall metallic blue-green sheen on the body of the fish. The unpaired fins, with their elongated filaments, are nearly clear and the elongated middle rays of the caudal fin are black bordered in white. The females are a uniform soft green colour. The males have considerably more colour than the females and are graced with extended dorsal and anal fins. The dorsal fins of the males are particularly attractive with a distinctive curved shape that can reach all the way back to the tail fin. They also possess a small adipose fin behind the dorsal fin that is characteristic of many characins.

## Personality

Congo tetras are consummate schooling fish and will be quite timid and shy, at least initially. As they grow familiar with their surroundings and tank mates, they will become more outgoing, but don't be surprised if your school is quite skittish in the early days. Floating plants and a secure glass cover help prevent bailouts. Be sure to put their tank in an area without a lot of household traffic or excessive vibrations. Next to the tweeters and woofers is probably not the best place for a tankful of Congo tetras. Congos are absolutely non-threatening to any other fish unless it is very small and available as a food item. This fish doesn't have a territorial or aggressive bone in its body.

## Aquarium Conditions

Congo tetras are best appreciated in natural sunlight in an aquarium with a dark substrate and shadowy background. Floating plants are ideal for the Congo tetra aquarium, as they are not damaged

Tetra





## DIET

Congos are omnivores. They eat any suitable food that will fit into their perky little mouths. They are especially fond of small insects, crustaceans, and worms, but will also make do with some plant material if that's what happens to be available when hunger strikes. They are not deliberately destructive of plants, but a good school of Congos will reduce soft-leaved plants to the stem in short order. Live adult Brine shrimp are a favourite treat as are tubificid worms. As most of the Congo tetras available in the shops today are captive-bred, there is no problem with feeding them on flake and other high quality prepared foods of suitable size. Wild-caught fish may be reluctant to take prepared foods initially, but will eventually adapt to a strange diet as long as the ingredients are consistent with their natural diet.

by the Congo's occasional desire for a salad snack. Congos will eat small, soft-leaved plants, so it is best to stick with floating plants like Riccia, water lettuce, duckweed, and the like for the cover that Congos do best with, and to use tough, low-light plants elsewhere in the aquarium.

Water conditions should mimic the rainforest using soft, slightly acidic water with some peat added. A pH of 6.2 is just about right. Hardness should be minimal, between 4 and 18 dH. Frequent water changes with fresh water of the same character are greatly appreciated. Without

these water changes, you will never see the true colours of the Congo tetra. Good water circulation and extra aeration enhances the good water quality necessary to keep this fish properly. The temperature should be 23 to 26 °C.

The aquarium should be fairly large, as Congo tetras are active swimmers that occupy all levels of the aquarium. Plant along the sides and back of the aquarium to leave ample room for the school to stick together.

Lights should be on a 12-hour cycle and dimmed by floating plants at the water's surface. Filtered sunlight on the aquarium

reveals their often praised, but rarely photographed luminescent quality.

## Breeding

Congo tetras are not the easiest of the egglayers to breed, and this probably has a lot to do with the average water quality in the average aquarium. If a pair of sexually mature Congo tetras is properly conditioned with live foods and kept in suitable water conditions there is no good reason why they should not be ready spawners.

The spawning tank should be long enough, at least 50 cm, to permit the vigorous courtship and spawning ritual. The pair swims side by side and after an energetic spawning act will scatter about 300 light brown eggs into the substrate. The eggs and sperm are released simultaneously. Loose peat or other protective substrate is recommended.

Light is an important factor in breeding Congo tetras and they will usually initiate spawning activity at sunrise. The parents have no regard for the eggs and should be removed from the spawning tank as soon as spawning is completed. They will not hesitate to devour any eggs they can



The best way to keep Congo tetras is in a large shoal like this.

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





# Fishkeeping with style

**Peter May looks at the many different styles of garden pond you can create in your garden.** PHOTOS: PETER MAY

LAST MONTH I INTRODUCED YOU TO THE Japanese garden style, which can be a 'garden consuming' passion in its own right and a perfect style to set off Koi carp. But it may be that you haven't even yet decided how big it is going to be and where it will be yet, let alone whether your pool is going to be a formal or informal shape.

## Formal pools

Well, formal pools tend to be closer to the house linked or within a formal setting, for instance in a separate 'garden room'. Formality in a garden can mean more to us now than it did 100 years ago. Originally, classical formal gardens had a strict geometrical layout that was mirrored each side of a central axis. This was an essential prerequisite for perfection and harmony. Water could feature centrally on the axis or in the mirrored compartments. The size and layout and rules of proportion for the formal garden layout should have corresponded to the proportions of the house. Therefore the size of water feature would correspondingly relate to the pattern in which it sat, although many of the grandest schemes

related more to the importance, wealth, power or ego of the owner of the house. For the full appreciation of a large garden laid out in true classical formality, you need to be able to view from a high point.

Nowadays the idea of symmetry even in formal gardens is not considered essential or even desirable. Instead designers talk about balance and form. For areas of formal paving or geometric pieces or lawn or planted beds, units that correspond either to the house, or to an obvious feature of the house like the patio doors or the size of the big windows. These are used to make up a pattern of areas, all with different textures, at different heights, or containing different levels of structure like shrubs. Water is an ideal element in this, making a reflective surface that brings light and a mirror to the ground surface. Not only that, sound can be added that will mask noise like traffic and the surface can be animated with a cascade or a fountain. In this way a formal pool can be a focal point quite some way from the house and be used to draw you towards it, but it needs to be linked to the house with these units of geometrical shapes or a formal path.

Above: Chelsea Flower Show 2005, the Marquee display of Hilliers Nurseries, an old boat sets off the imagination and the atmosphere.

## The 'hard cost of landscaping'

Formality in large measure equals, what we call, 'hard landscaping'; this means hard materials like stone, brick, and gravel put in place with the correct footings and preparation. Even the cheapest materials need a relatively large amount of labour to install them properly. In fact if you are going to the expense of a lot of hard landscaping and you are having it done for you, it can be false economy in opting for cheap materials, since once you get the bill for the labour, you would hardly notice that bit extra on the slabs or stonework. What formality also requires is planning, and many of us are not very inclined to forward planning. We fly through our lives fairly whimsically, choosing many of the things we bring home on impulse. It's how garden centres make most of their money.

## Informality rules

Most people seem to lump for the informal approach, it's only natural! In effect a natural pool is a little world that is self-sufficient and





Modern formality by Hilde Wainstein in the Bradstone Garden at Chelsea Flower 1995.

### WARNING

About a dozen children a year are drowned in domestic ponds, and they are generally little boys, ranging in age from about 18 months to 3 years. Most importantly, they are quite often other people's kids visiting, with or without permission.

self-sustaining, it is a fascinating eyeball on nature that can be viewed at any time and you don't even have to turn it on. For gardeners, it is another habitat for plants to grow in, creating a micro climate around itself that has an invigorating effect on all the plants near it. In other words it is not only a visual focal point, it is a centre attraction to a myriad of plants and animals.

For this reason the garden needs look as though it wants to nestle around it with plants from all four corners to get a look in of the action. A backdrop of evergreens helps for the winter as long as they don't detract from the available sunshine. It needs full sun to work properly and should be kept away from the leaf fall of trees in general but especially the likes of yew, oak, elder and willow. I would say that it is probably best that it is at least partially visible from the house, since for the six months of the year you don't get out into the garden, and won't see it.

### Reason for existence

Now unless this feature is going to contain some art or artefact like an ornament, it still needs a purpose to be there. The fact that it is the dampest boggiest part of the garden is not a good pond precisely for that reason. The dampest place in the garden is to where nitrates and phosphates runoff, and the water table after every rainstorm has the power to come up under the pool liner giving

the impression of a school of visiting Hump-backed whales.

As a landscaper I found that a piece of casually planted machinery or hewn stone created the right balance of purpose and romance. A piece of old pump, a trough, even a piece of an old pillar would be just enough to get the imagination going on what this pool may be a relic of, perhaps a mill? Watering hole for farm animals? An old bathing pool? A bit of boat, it needs to be something that relates to your district. If there is a waterfall and or a stream then it can quite easily be a rock pool at the end of a mountain stream.

### Functional compromise

But life need not be all either or. There is the classic British compromise that gives you everything and something else beside. On the edge of your formal patio area, nothing seems to make a better boundary or introduction to the more informal part of the garden than a pool. The patio works as a perfect edge viewing area into the wilder elements of the garden. The far side can be rustic or rockery, with streams, waterfall or whatever the imagination devises. If you have a decking area as an edging to a pool, it hardly intrudes on even the wildest pools or ponds. A place that man hovers in Olympian luxury, at the same time observing the busy mêlée in nature within arms reach.



Don Quixote's Backyard by the Garden Gang at the Hampton Court Flower Show 2006. A style of formal pool that would have been popular even in Roman times. This courtyard garden has a Spanish influence. An influence derived from the Moors of Africa.





Marginals and other plants seem to cluster round the water garden top, get a look-in on the action.

### NEXT MONTH

"How Far Out Can You Go! A modern approach to style" which will also include a number of other items you have got to consider before you go out and launch into a career as a water gardener.

### MATERIAL QUESTION

The choice between a good pre formed pool 'off the shelf' and a good flexible liner is down to the design or style you have in mind. At pence per square metre of material, there is very little to choose between them. There are not many formal shapes to choose from, but for the informal look, there is generally one that fits into the 'minds-eye-view' of your future pool. If your project is still of a fairly whimsical nature, you see a shape you like on the racks and you are desperate to see the project through, despite everyone telling you to plan it properly, then the pre formed is probably the safer bet. You can take it home and try to see how it fits or looks in different parts of the garden. The fish are not really going to notice the difference. You will find though that these huge looking pools on their racks in the garden centres look quite diminutive once installed in the ground. Not only that, if you had chosen an informal shape, it seems virtually impossible to try to make the pre formed plastic pool look like anything else than what it is; a great sheet of non-biodegradable plastic in a hole in the ground.

A flexible liner, however, can fit any allotted space. Mark out your pool shape



Pre formed pools can look quite small once installed in the ground.

on the ground and measure it. Add double the depth to the width and the length and go out and buy it off the roll. If you use a flexible liner to line your pool excavation, stone or paving placed around the top-level edge seems to sit much more comfortably and can be cemented much more effectively into place. You can face the inside of the pool with rockery stone or building stone, have a beach, or as wide a planted area as you want that will look great with a bog garden backdrop. And what's more, the pool can be as big as you want and any shape. The garden is your oyster.

Budget obviously is going to be a major factor in all the decisions you make in regard to your pool or water garden. If it is going to be a permanent installation that will be a major presence in the garden then the materials that you use for lining it need to be of a durable nature and of a quality that reflects the seriousness of the project. So I would say for pools say larger than 15 square metres, you want the most durable materials: either EPDM rubber or Butyl or the most ultra-violet resistant PVC that has a minimum 20 year guarantee. ■



Q&A

Tropical

BROUGHT TO YOU BY NUTRAFIN & FLUVAL

Star Letter

Pearl danios (this is the Rainbow colour form) are a great beginner's fish with pretty colours and lots of character.

## Suitable fish for a beginner

Please could you suggest some suitable fish for a beginner who has a 75 x 30 x 30 cm tank (with a sand substrate) which already houses 6 *Corydoras metae*. Some fish that might also clean off any algae forming on the leaves of the (real) plants in my tank would also be useful. The local water is not hard and my ammonia, nitrite and nitrate levels are minimal. The tank has been set up for nearly two months.

Andrew Turpin, via e-mail

The aquatic world is very much your oyster with this starting point. First of all I would include a Bristlenose plec to clean any algae off your

plant leaves. Then I would start with a group of Danios (Pearls would be my choice but there are plenty to choose from). A species of Tetra to follow. Neon's are tough enough to survive most new fishkeepers mistakes. Personally I don't think a community is complete without a livebearer and with your water conditions I would go for a trio (1 male to 2 females) of Guppies or Platies. Both will do well in most water conditions although very acidic water will cause the Platies some difficulty. You don't say what your pH is but providing it is not below 6.8 you should be OK. A Gourami species could also be added. Stick to Dwarf or Honey gouramis rather than the Blues, Golds etc. These two species stay at the right size for your aquarium and don't become aggressive

with age like some of the larger species can. By now your tank should be nearly full. Remember it is vital to add the fish over a period of time. Buy no more than 1 species at a time and leave it 2 weeks between purchases. Always keep an eye on your water quality. Ammonia and nitrite should be zero at all times (I hope your "minimal" means zero, if not, do not buy any new fish yet since your filter is not fully mature). These are a few choices of my own but there are literally thousands of species to choose from. Always read up on a new species before you buy it. We cover plenty of species in the magazine but you could also buy yourself a book to widen your horizons further.

Derek Lambert

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## Setting up a Malawi cichlid tank

 I am thinking of setting up a Malawi cichlid tank. I want to get a 120 x 45 x 37.5 cm tank with an external filter, 300 watt heater and lighting. I am unsure about nearly everything. Which are the best species for a beginner (the most colourful ones if possible) and how many? I have bought a couple of books, but they seem to be more about the fish than about their requirements and needs. If you could give me some simple information on setting the tank up and which products to use I would be truly grateful. I need to know about plants, rocks, substrate and water quality, though I would prefer a few plastic plants if possible. How long would I need to run the tank before I could buy any fish? Please help because I want to get it right first time.

Andrew Hind, Northwich

 To start with your tank - it's a good size but be careful not to overcrowd it. An external power filter with a capacity at least

twice your tank size should be used for filtration. Plants in a Malawi tank are not very easy to keep because the fish is very fond of eating them! So to give the fish the vegetable matter in their diet they need, you can feed them green peas and also parboil some spinach. There are also specialist foods for Malawi cichlids that provide all the nutrients they require. Rock work is best purchased from an aquarium store unless you know which ones will not affect the water quality.

The temperature should be around 26°C, but can vary a couple of degrees up or down. The pH in Lake Malawi is 8.3 but the fish will tolerate a lower pH, so a pH between 7.6 and 8 should be good. The hardness of the water should be around 10°dH, but this can vary a lot and does not seem to harm the fish. The pH seems to be more important. If you have a strong light on the tank, then use dark sand, because this will make the fish feel better and show better colours.

You can use some plants in a Malawi tank, Vallisneria, Crinum, Ceratophyllum, Microsorium and Anubias. The Microsorium and

Anubias can be planted among the rocks, the Ceratophyllum can be floating at the surface. Vallisneria can be planted in the substrate, and I think I would use the Giant Vallisneria or Crinum instead of the usual varieties.

I would wait two weeks, for the water to clear, check the heater is working and you have the plants settled in the tank. I personally am not very fond of plastic plants, but they are needed when fish eat all your real plants all the time.

Fish species? I would suggest starting with Mbunas, like *Pseudotropheus zebra*, *Ps. tropheops*, *Ps. fuelleborni* etc. Here your books should help you, but don't overcrowd your aquarium as this will cause you problems later. Aim to change 1/3 of your water every week, good water quality means everything! I would also recommend you make contact with the membership secretary of the BCA (British Cichlid Association) or look at their website.

Alf Stalsberg



Some Malawi cichlids would put even a marine fish to shame! This is *Metriacima zebra* from Luŵi.

### Today's Answers Expert Panel

**Alf Stalsberg** Cichlids.

**Pete Liptrot** General questions on tropical fish and oddballs.

**Andrew Caine** General questions on Marines.

**Ben Helm** General questions on Coldwater plus equipment and technical advice.

**Lance Jepson** Health.

**Tony Sault** Discus.

**David Armitage** Anabantids.

**Derek Lambert** Livebearers, Rainbows and Breeding fish.

**Ian Fuller** Catfish.

**Andy Gabbutt** Killifish.

**Stephen Smith** Goldfish.

**Bernice Brewster** Koi and Ponds.

**Bob & Val Davies** Reptiles and amphibians.

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[www.hagen.com](http://www.hagen.com)



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All Stalsberg



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www.hagen.com



# Q&A

## Tropical



Rainbow emperor tetras are a pretty community fish well worth seeking out.

### Where can I get some Rainbow emperor tetras?



I am looking to keep a number of Rainbow emperor tetras but am having difficulty in finding an aquarium to help me. After finding them in *Today's Fishkeeper* (April 2003) I contacted my local aquarium shop who told me that they had not heard of the Rainbow type before. They said that these may be artificially coloured in which case I would not like to keep them. Please could you tell me if indeed these are artificially coloured, and if not, where I may be able to find some (Approx. 25) ?  
Toby Rainbow (Yes, that is my real name!), via e-mail



The fish pictured in the magazine is *Nematobrycon lacortei*. It is a true wild species which has not been dyed or messed with in any way. The problem your local aquarium

shop has is so many "Rainbow" this or that have been dyed. This species, however, comes from the Rio Atrato, in western Columbia. They were first collected by Heiko Bleher in 1967 and were described by Weitzman & Fink in 1971 and named after a famous American aquarist. Once your local aquarium shop has these details they should be able to track some down. Most good wholesalers stock them from time to time, so aquarium shops can obtain them if they want to. Columbia is not the most reliable of suppliers, so you may have to wait a few months for the fish you want, but they will live at least 3 years in your aquarium so it is worth the wait. You might also like to try your hand at breeding them as there is a good market for these beautiful fish and they are no more difficult than the standard Emperor tetra.  
Derek Lambert

### Starting a Tanganyika biotope aquarium



I have got a 60cm aquarium. I would like to set up a small Lake Tanganyika set up with fish of around 10cm. Would my tank be big enough and could you tell me of a few species?  
Nathan Peters via e-mail



Of course you can make a small Lake Tanganyika biotope. You will need rather hard water, I would say 6-10°dH. More important

is the pH, I would say that the pH should be around 8 - 9.5.

Fish species to put in such a small tank are limited, but I would suggest fish from the Genus *Julidochromis* or the small *Neolamprologus*. For decor use a pile of stones, making a lot of caves for fish like *Julidochromis*. A lot of snail shells are important for the small *Neolamprologus*.

Alf Stalsberg

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# Water clarity problems



Following a period during which I was losing fish for no obvious reason, I was advised that the conductivity of my tap water supply was very high. To overcome this problem I purchased an API, cartridge based, water purifier for my weekly 20% water changes. The fish fatalities stopped. I start the water preparation one or two days in advance of use. I use 'Electro-Right' with the filtered water. I lower the pH (7.5 to 8.5 from the tap) to 6.5 - 6.8; I have experimented with various powder based pH adjusters. I boil water in a kettle to adjust the temperature. I use a quality wine making fermentation bin to hold the water. Despite all my efforts, and however I manage the water preparation, I always seem to get white, cloudy water. After around three hours in the actual aquarium (filtration via an external Eheim) the cloudiness completely disappears. It does not seem to affect my fish (even *Corydoras fry*), but something must be wrong.

Maria Lavender via e-mail



I would not be too alarmed by what you are seeing, as your fish sound as though they are thriving. I can suggest 2 possible causes of the short-term cloudiness that you experience after a partial water change.

1. A temporary precipitation of salts out of solution when you mix your newly made-up water and the mature aquarium water. If there is a difference in the temperature or chemistry between the new and mature aquarium water, then they may interact causing your newly-dissolved 'Electro-Right' minerals to temporarily come out of solution, causing a milky-type suspension that disappears once the minerals re-dissolve. Try carrying out a water change but without the 'Electro-Right' to test this theory out.

2. Dissolved Oxygen. There may well also be an interaction between the new and mature water that causes the dissolved oxygen to come out of solution temporarily. This may be due to differences in temperature between the two waters, the force of new water entering the aquarium during the water change, or the effect that existing mineral loading may have on the water's ability to hold dissolved oxygen. This is less likely than the first suggestion and is more difficult to test. Also, ensure that you are not disturbing any substrate during your water change as this could also lead to temporary cloudiness.

The main consolation is that, as you say, the cause of the temporary cloudiness is not affecting the health of your fish, with your Cory's even breeding (probably in response to the frequent water changes).

Ben Helm

## Star Letter Prize from Hagen

This month the writer of our star letter wins a selection of Nutrafin Max foods and a handy feeding ring.

Nutrafin Max with Pre-Digested Plankton provides balanced nutrition for aquarium fish. Pre-Digested Plankton is a 100% natural additive high in protein that enhances colours and is very palatable. Nutrafin Max's low fat content makes it the healthy choice.

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# Q&A

## Marine

### FIRST TIME MARINE KEEPER



This Royal gramma picture has spurred Kevin on to try keeping marines

Star Letter

PHOTO: MARK JONES



I have five tropical fish tanks but would like to have a small marine fish only set-up. After racking my brains for over a week on where I could set one up I found that the best place is in my kitchen. This is the only place left in the house. The tank will be 120 x 37.5 x 37.5 cm with an undergravel filter, coral gravel, gravel tidy, coral sand and a small protein skimmer. The questions may seem stupid but marines

are new to some of us, so here goes. Is the kitchen a good place to have a marine set-up as when cooking the temperature in the room will change. Would this affect the fish?

Will my spare 200w heater be big enough? Will a Fluval 3 plus be of any use in a marine tank? Maybe it could be altered to take some marine filter media to work alongside the under gravel filter. Now I have a feeling that you will say that internal filters

have no place in a marine but why? My next question is, why can't you have an internal power filter in a marine tank? Could you recommend a good power head? Would it be easy to build an internal or external filter? Now this is all Today's Fishkeeper's fault, I was quite happy with my tropical fish. I used to bypass the marine pages until my "Missus" picked up the February issue and turned to the Marine Q&A star letter and said "now that's what I call fish". The Royal gramma. Well she's right they certainly have more colour and must be more challenging. So here I am starting my new and expensive hobby. Thanks for the brilliant magazine but can we have more pages for marine fish keepers?

Kevin Barrow via e-mail



Sorry to have caused you such trouble, but having the good lady on your side in this venture is a great plus, it really is- but slam on the breaks as you could be heading for trouble. There is a big myth in this hobby that fish only set-ups do not have to have the same water quality as reefs. For your fish to thrive, display great coloration and health, the water quality has to be high. Kitchens can be great places for aquariums but, have the aquarium out of the way as this is a busy place in the house, all the activity and noise can stress out fish. As to temperature you may need to keep that down, fill a tank and measure the fluctuations during the day and night.

Under gravel filters have no place in marine aquatics today, 2 x large internal filters would do the job, one filled with high quality biological media, not the foam pads that come with them. The other for chemical filtration. You should also utilise live rock. External filters are better due to the higher capacity of filter media. A small air driven protein skimmer could do the job but you would get slime algae as they are not the best, Prizm by Red Seator Bio Filter by AB Aqua Medic would be far better choices. They cost a lot more, but do the job properly. Powerheads, my favourite make is Maxi jet as they are small in size, have good suction cups and they run and run and run. Your 200w heater should be coupled with another as a fail safe.

Andrew Caine

**AQUA MEDIC**

for all your marine keeping answers



## New feeding method



Your Sea View article in April's edition on a natural feeding method, is I'm sure, a milestone in reef keeping methods. I hope you will soon be providing follow up articles on Mark's aquarium as well as more details of how the more typical smaller tank hobbyist can simulate this feeding method. In the meantime I would really appreciate your wisdom/advice on a couple of points from the article which will help me in trying to adopt this feeding method. I buy frozen Brine shrimp and when I add a cube and tank water to a glass, they look great and fresh but within 5-6 hours the shrimps turn black, but the water is still clearish. I know that this time can be a bit more or a lot less - I assume depending on how they have been stored before they get to my freezer!

Last night I repeated the exercise with more water and this time aeration but with the same results. You say you mix up a supply for two days, but how come you do not end up with putrefying gunk? Also regarding the food mix, I noted

that you did not include frozen Red Plankton, which seems the ideal sized food. I know it seems to leave a greasy film on the top of the water - I wondered if there was some specific reason you did not use it?

About a year ago I did experiment with the deep frozen phytoplankton (in small 10ml syringes) dosing it into the sump twice a week - as per the instructions. Over several weeks I could see, in the sump, a dramatic increase in minute life forms, so it was working to some degree but I never saw any noticeable effect on my corals which are 95% soft. (typical mixed soft corals). If I adopted the continuous phytoplankton feeding method, would you expect my soft corals to show the same marked improvements as did Mark's hard corals?

Richard Crossman,  
Huddersfield



Thank you for your kind words, and yes more research is ongoing at this present time. In fact, since the article was written the improvements are still quite dramatic. We are doing more work on the Phytoplankton side of things

Mark Howarth's beautiful reef tank which has been dramatically improved since this new method of feeding was adopted.



as this we feel is one of the major aspects to the coral growth and health, but that's another story and it's looking to be a good one. You can adopt such feeding at home without any cost (see P.O.V. in this month's issue). Most frozen foods will turn colour over time, we did experiment with the time span of holding the food in suspension. We found that 48 hours was the maximum time before the food started to degrade to an unhealthy state. The food starts to break down as soon as it is thawed, we

just choose that point for ease of use without causing a danger to the tank. We did trial Red plankton once but the horrendous smell after 4 hours was more than anybody could bear.

Regarding phytoplankton, I know that you would see a huge improvement in your soft corals if you dosed during the day, and a big increase in zooplankton if you dosed at night. Just get a bottle, attach an airline with tap, fill and drip in the phytoplankton.  
Andrew Caine

## pH problem



I wonder if you can help me please. I have been running a 455 litre set-up for 7 months and everything seems to be going OK. Although I have tested the pH and it seems to be a little low at 8. I have calcium plus in the sump, but obviously this isn't dissolving at the right pH. I don't want to use chemicals to get the pH up; I think the rising and falling of it due to adding chemicals every water change would be more stressful to the fish than leaving it as it is. Is there anything I can put in the sump which would keep my pH higher?

Paul Leeman, Grimsby



pH drops are associated with marine aquariums due to the constant secretion of acids by the animals contained within the aquarium. Your biggest culprits are the denitrifying bacteria in the filter and liverock. There are many ways of maintaining the pH balance, from buffers to dripping in Kalkwasser, the subject is vast and you will have to add something to maintain the balance.

An algal bed in the sump helps a great deal in balancing the pH if it by a tube at night, the algae then utilise carbon dioxide taking it from the water and thus reducing the acidic content in the water body. This is a more natural approach, but it isn't as simple as that. Regarding algal beds and pH I must recommend that you refer to recently published books as the subject is too much for me to cover in this section.

Andrew Caine

### Star Letter Prize from

**AQUA MEDIC**

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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



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# Q&A

## Coldwater

### Switching to breeding Fancy goldfish



There is always a good market for Fancy goldfish.

**Q** Owing to the increasing cost of electricity I have decided to give up breeding tropical fishes and turn to coldwater ones. I have six tanks ranging from 120 x 50 x 37.5 cm down to 75 x 37.5 x 30 cm. I thought of using the largest tank as a display one and the others for breeding Fancy goldfish. Which types do you suggest I should breed? I have electricity available in the fish house.

**Simon Wilson, Via e-mail**

**A** You have a good set-up for breeding Fancy goldfish and I suggest that you try Veiltails or/and Orandas. If you keep to one variety you will find it easier to keep up a good strain and the possibility of crossbred fishes will be avoided. Good Orandas will always command a good price and so if you are

thinking of recovering some of your outlay these will suit you well. Keep your breeding fish in the large tank and then you can keep one or two of the other tanks for breeding purposes. You can then take a good pair from the large tank and transfer them to a spawning tank. When sufficient eggs have been laid the parent fish can be returned to the main tank. As the fry grow they can be sorted and the best placed in other tanks, always making sure that the youngsters have plenty of swimming space. This is most important as few fishes thrive well unless they have enough space. As you have electricity available you will be able to use a little for hatching and rearing. There will be no need to use heat for the large tank and as the fry progress the use of electricity may be discontinued. In fact the fish house may get enough warmth from the sun to be able to dispense with the use of much electricity.

## Blanket weed problem

**Q** How can I get rid of blanket weed in my coldwater tank?  
**Ken Best, via e-mail**

**A** It is not easy to clear a tank of this weed once it gets a strong hold. It has been introduced on water plants and should have been seen when added. You can pull off much of the weed but if it is very thick, you may have to scrap all the plants, sterilise the tank and substrate and make a fresh start.

## What are these?

**Q** I have found thousands of tiny creatures in my pond which I use for breeding Shubunkins. They are very tiny and I have never seen one much larger than the sample I have sent you. They look like recently hatched water snails but I have no adult snails in the pond. What are they and will they eat fish eggs?  
**John via e-mail**

**A** The creatures you sent are Nerites, a very tiny Mollusc. Those sent are probably Neritina

Rugabilis. They do not grow more than about 5mm high, and so you are not likely to find any larger than that. They are usually found in running water attached to stones. They lay their eggs, enclosed in a gelatinous blob, on stones, etc. I do not think that they could eat fish eggs as they may not be able to pierce the skin. I cannot see any easy way to get rid of them but small fishes like Bitterling or Minnows could eat them. Those sent were certainly no larger than a goldfish egg.

## How can I extend my pond?

**Q** I have a pond constructed with concrete blocks and intend to make another pond along one side of similar length. I want to have a small part of the dividing wall between the two ponds about 30 cm or so lower so that fishes can swim from one pond to the other. I am wondering if the dividing wall will be strong enough?  
**Brian Lister, Cornwall**

**A** As there will be approximately the same pressure of water on each side of the dividing wall I see no danger of anything going wrong. Make sure that the concrete is sealed with a concrete pond sealant before adding any fishes.



## Starting with coldwater fish



PHOTO: GARY FRYMAN



I am still at school and don't have much money but want to start an aquarium for coldwater fish. What size tank should I get and which fishes will be the best for me?

Charlotte Smith, Gainsborough



If you can afford a tank, 60 x 30 x 30 cm this will be fine. Do not get one less than about 50 x 25 x 25 cm as the smaller the tank the more difficult will it be to keep in good condition. Common goldfish will be the best type for a

Common goldfish are the best choice for your first coldwater aquarium.

start and if you are very successful with these you can try fancy goldfish, but remember the fewer fishes in the tank the easier it will be to keep in good order.

## Swimming pool conversion



I am proposing to convert a swimming pool 10 x 5 x 3 m into a lily/fish pond. Can you give me any tips on how to do this?

Albert Brown, Via e-mail



You should be able to convert the pool into a very good fish and lily pond. Your trouble may be with the depth as there are no shallows on which to set water plants which do not need much depth of water. You may have to construct a type of shelf along the side so that plants can be set thereon. Some types of water lily will grow in deep water but when they are planted in their containers, they must be raised from the bottom on bricks, etc., so that the growing crown is not too deep in the water.

## Garden shed conversion



I am thinking of turning a garden shed into a fish house. Can you give me any advice on this please? It should hold about twelve tanks.

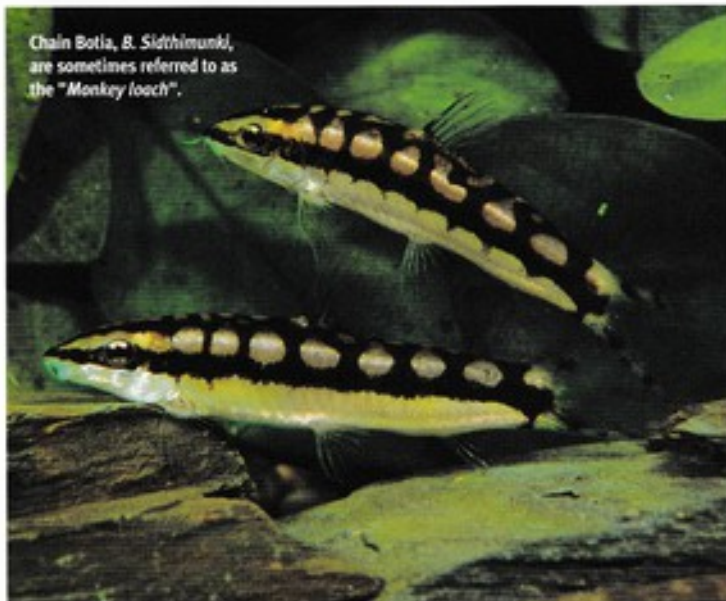
Frank Meyer, Via e-mail



It will be a good idea to have a concrete base to the shed. I suspect that the shed is a timber constructed one and so it will be necessary to line it with hardboard and polystyrene or something similar to keep out much of the cold in winter. With coldwater tanks it will be necessary to have some form of heating in winter to prevent tanks from freezing. If you have the tanks in rows see that you allow plenty of space between the top of one tank to the one above. This will make it easier for servicing them. If possible run electricity to the shed for necessary lighting at night and perhaps for warmth during the winter. A small table or shelf at the end of the shed will be useful to store accessories. ■



Chain Botia, *B. Sidthimunkl*, are sometimes referred to as the "Monkey loach".



### Hidden blades

All of the Botias we see in the hobby possess a two-pronged (bifid), posteriorly pointed, pre-orbital spine that is normally kept in the "down" position concealed in a groove barely visible either immediately under or below the eye. Once erect this needle like spine can be used very effectively to inflict a serious wound on any would be aggressor. This spine is also something to consider when netting these fish since a coarse net can rapidly become entangled with the spine requiring that the fish be removed by cutting a hole in the net with possible damage to the fish. This spine also offers loaches some protection and defence against their natural predators. Both dead snakes and fish have been found in the wild with a partly swallowed Botia species lodged in their throat. I suppose the Botia hopes that the aggressor is choked and falls back into the water to enable the fish to escape from the throat of the doomed predator.

### More Botia features

All are oviparous but little is known or has been revealed about their breeding habits. What is known has often come from the pages of hobbyist publications since these fish have little commercial value other than that associated with their place in the aquarium hobby.

Members of the genus Botia have relatively small eyes that lack a protective covering of skin and possess at least two rostral pairs and one maxillary pair of barbels they each have two eye spines located in a fleshy pouch beneath each

eye. Their shape is varied but is basically a compressed oblong overall with an arched back. Certain species, such as those from the *B. hymenophysa* complex, have an elongated snout that serves them well in their never ending exploration of their environment in search of food. All members of the genus have a deeply forked caudal fin and their dorsal fin begins above or beyond the root of the pelvic fins. As inhabitants of stagnant waters they possess a very large swim bladder that lies in close contact with their

### COLOUR PATTERNS

The majority of loaches we see in the hobby are patterned with some form of stripes or spots that provide them with a degree of camouflage in their native environment. The more common markings can be described as follows :-

**Margins** :- Colours that are present at the edges of fins.

**Patches** :- Markings that are irregular both in shape and colour.

**Rings** :- Coloured rings or eye spots that are, for the most part, circular.

**Bands** :- Bars that completely encircle the fish's body.

**Stripes** :- Approximately parallel horizontal lines as opposed to vertical bars or bands.

**Bars** :- Almost parallel, vertical markings, generally dark on a light background.

**Spots** :- Generally small, round or oval markings with a random pattern.

body wall. The central ventral location of the swim bladder, the same position occupied in primitive forms, indicates that the bladder was originally used as a respiratory organ.

If I am asked for my advice by a hobbyist looking for something out of the ordinary to keep that presents no particular maintenance problems and that offers a wide range of habits and sizes I will always have the same comment "try keeping Botias, who knows you may also get hooked." ■

### NEW SPECIES

In this series I will attempt to summarise what I believe to be a complete listing of the currently accepted species alongside the type location and common name of each species. Undoubtedly, over the last five years, there has been a mini "explosion" of such fish available within our hobby, more often of "Chinese origin" as opposed to Thailand or India which makes keeping up with all the new introductions difficult.

The Black line botia, *Botia nigrolineatus*, is just one of many new species arriving in the hobby over the last five years.





# Top of the Pops Tropical

Everyone has their own "Top of the pops" in the fish world. Here is Pat Lambert's personal choice.

PHOTO: MAX OWBS, OLIVER LUCIUS, DIKKE LAMBERT

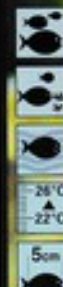
## What are your "Top of the pops"?

Send in your own list of "Top of the Pops" fish to Today's Fishkeeper and say why they are your personal favourites. We will then create your very own "Top of the Pops" feature. Send your list to: "Top of the Pops", Today's Fishkeeper magazine, TRMG magazines Ltd., Winchester Court, 1 Forum Place, Hatfield, Herts. AL10 0RN.

## Wagtail platy

### PAT'S VERDICT

Platies are great community fish and a Wagtail was the first livebearer to breed for me.



Male Red wagtail platy.

Scientific name:	<i>Xiphophorus hybrid</i>
Aquarium type:	60 x 30 x 30cm
Distribution:	Man made cultivar.
Diet:	All commercial foods, plus any live foods they can get hold of.
Companion species:	Other small to medium sized fish.

## Dwarf gourami

### PAT'S VERDICT

One of the first tropicals I ever kept. I bought it with my first group of six fish. Always curious and a great character.



There are lots of different colours available but this is the original one.

Name:	<i>Dwarf gourami</i>
Scientific name:	<i>Colisa lalia</i>
Aquarium type:	60 x 30 x 30cm
Distribution:	Borneo & India.
Diet:	Flake, granular, frozen, and live foods. Easy to feed.
Companion species:	Other small to medium sized fish. Males become territorial when spawning but still make good community fish.

## Panda cory

### PAT'S VERDICT

This was the first Cory I ever bred. With its cute panda pattern this is "Top of the pops" in the Cory world for me.



Corydoras are very popular community fish.

Scientific name:	<i>Corydoras panda</i>
Aquarium type:	60 x 30 x 30cm
Distribution:	Peru
Diet:	All foods which sink to the bottom including some live.
Companion species:	Other small to medium community fish.



## Checker barb



A lovely pair of Checker barbs (the lower fish is the male).

### PAT'S VERDICT

Less colourful than many barbs but very easy on the eye – a neat fish. Size and compatibility make it a "Top of the pops"



Scientific name:	<i>Barbus oligolepis</i>
Aquarium type:	60 x 30 x 30cm
Distribution:	Indonesia & Sumatra
Diet:	All foods including commercial flake and granular.
Companion species:	Other small to medium community species.

## Sailfin molly



A beautiful Orange and black sailfin molly.

### PAT'S VERDICT

A lovely fish especially when it displays its magnificent dorsal fin. A hot favourite with me, I suspect it could be a "Top of the Pops" with many fishkeepers.



Scientific name:	<i>Poecilia hybrids</i>
Aquarium type:	90 x 30 x 30cm
Distribution:	Man made cultivar
Diet:	Flake, granular and pellet foods plus all types of live foods and vegetable matter.
Companion species:	Other medium sized peaceful species.

## Jamaican killifish



The blue on this male is even more intense in sunlight.

### PAT'S VERDICT

I caught this fish in Jamaica in 1991 and have successfully bred and maintained the species ever since. A lovely, hardwater killifish for a community tank.



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

## Dwarf rasbora



Dwarf rasboras are pretty but slightly delicate fish.

### PAT'S VERDICT

This tiny fish is one of the smallest fish in the world. It is, however, a "Top of the pops" for me.



Scientific name:	<i>Boraras maculatus</i>
Aquarium type:	60 x 30 x 30cm
Distribution:	Southeastern Asia.
Diet:	All foods small enough to fit in their mouth.
Companion species:	Other small sized community fish.



# African bush babies

PHOTO: MAX GIBBS

Paul Skinner tries his hand at breeding the Leopard ctenopoma.

Leopard ctenopomas make a worthwhile addition to a large fish community.

AS A POTENTIAL INHABITANT OF A TYPICAL community tank the Leopard ctenopoma is a definite nonstarter. One look at the large eyes and mouth tells you at once that this fish is a predator. It can and will eat just about anything that will fit into the cavernous gape of its mouth.

## First introduction

I first came across these interesting fish when visiting a local wholesaler to collect some fish for my father's aquatic shop. I knew in that moment that I had to buy some of these fish; so 6 *Ctenopoma* were added to the order. I knew exactly where I was going to keep them as I had a 90 x 45 x 50 cm tank at home which was home to some Comb-tailed paradise fish, Snakeskin and Kissing gouramis. The Leopard ctenopomas were introduced into this tank and quickly made for the cover of the rocks and plants that made up the tank's decor.

Leopard ctenopoma are a deep-bodied fish, with a very chunky appearance. The head is large and pointed with a large mouth. The body is a brown-yellow to olive-brown in colour and is covered with numerous dark brown blotches, which often appear almost black. These blotches extend into the fins. The dorsal, tail and anal fins are separate but give the impression of a uniformly complete surface when erected. The edges of these three fins are totally clear, whereas the pectoral fins have orange

leading edges. At the base of the caudal peduncle there is a black blotch which is often rimmed with orange. At the time of purchase there were no obvious differences between males and females.

My fish took about a week to settle properly and slowly began to explore their new home. They did not seem at all interested in any of the other occupants of the tank; they seemed uninterested in anything they could not eat. They proved to be very voracious feeders, taking pieces of prawn, frozen bloodworm and live white worms with relish. After a few weeks they started to take pelleted food from the surface of the water and always obtained their fair share.

Over the next twelve months all the inhabitants continued to grow steadily, while fairly peacefully co-existing. By the end of this period the largest of them was just under 15cm long with the smallest being about 11cm. There were still no obvious sexual differences, although I assumed that the largest fish was a male and a couple of the middle-sized individuals were considerably stockier. These I thought might prove to be females.

## First signs of breeding

After a further period of six months or so, the largest individual (the male?) started to act in a more belligerent manner to his tank mates, claiming one corner of the aquarium

as his own and defending it from the other fish. It was at this point that he started to construct a very loose bubble nest among the floating plant, thus confirming his sex. I decided that I would like to try to breed these fascinating fish and so I embarked upon reading as much as I could find about their natural habitat.

I read that they are found in weedy forest streams, quiet backwaters of large rivers and also ponds, swamps and irrigation ditches. With this in mind I decided to use a standard 90 x 37.5 x 30cm tank with a

## FACTFILE Leopard Ctenopoma

**Scientific Name**  
*Ctenopoma acutirostre*

**Family**  
Anabantidae

**Distribution**  
Congo Basin, Zaire

**Size**  
20cm although usually smaller in captivity

**Temperature**  
22 - 27 °C

**pH**  
6.5 - 7.2

**GH**  
5 - 20 degrees



## HOW THEY EAT

The way that they take their food is interesting and reminds me of marine Lionfish. They drift, slowly, close to the food item, watching it continuously with their large eyes until they decide to suddenly lunge at it. Their large, funnel shaped mouths open wide and they Hoover up the food in one rapid movement. This method of feeding could cause problems if they were to be kept with faster, more voracious feeders such as large barbs. However, this did not seem to present a problem with the other fish in my tank and the *Ctenopoma* started to increase in size.

## AQUARIUM SETUP

Water Conditions:	Soft, pH 6.8 and temperature 27°C
Tank:	90 x 37.5 x 30cm
Substrate:	2.5cm layer of sand
Filtration:	Two air-powered sponge filters
Decor:	Three pieces of bogwood
Plants:	Cryptocorynes, Vallis and Indian Fern (floating)
Food:	Prawn, pellets, frozen bloodworm and Whiteworm
The fish:	6 specimens all about 7.5cm when purchased

2.5cm substrate of aquarium sand. In order to replicate the weedy forest streams, I used three pieces of bogwood and densely planted the sides and the back of the tank. I also added floating plant in order to help the male with his bubble nest.

Not all *Ctenopomas* are nest builders but it seemed that these were. I used two air-powered sponge filters as I did not want too much water turbulence in the tank, and the water was heated to 27°C. It was at this point that I introduced the largest fish with one of the stocky ones. Big mistake!

## Thuggish behaviour

Within two days the larger fish had given the smaller one a considerable beating, so I had to remove it. What had gone wrong? It turned out that the smaller fish was just a smaller, heavily built, male. I decided that I would introduce another stocky specimen, in the hope that this one was a female, but this time I would use a different approach. I partitioned a third of the tank off using a piece of glass, fitted with split air-tubing down the edges to prevent any rupture of the tank's silicon seal.

This seemed to do the trick, as four days later the male began building his bubble nest. This was a very loose, flimsy, affair but after two further days it seemed that this was the best it was going to be. Shortly after switching off the lights that night I removed the partition, hoping against hope that this time the smaller fish was a female. I had my heart in my mouth as I looked into the tank mid-morning the following day. I need not have worried as the bubble nest was still present and there were very visible eggs floating in among the bubbles. The parents were totally ignoring the nest and so they were

removed in case they decided to look upon the eggs as a meal.

After a further two days the eggs hatched, and after two more days the young were free swimming. Due to the size of the youngsters they accepted newly hatched Brine shrimp and were soon feeding well and putting on size. After the first week I introduced Microworms to their diet and then slowly gave them larger live and frozen foods as they grew. Many of the smaller fry were eaten by their larger brethren but I managed to raise 34 from this spawning. The fry grew rapidly with regular partial water changes and reached a size of 2.5cm in just over three months.

Although they can prove to be difficult to track down *Ctenopomas* are much more readily available these days. They proved to be hardy and quite peaceful when kept with fish of their own size. If you fancy trying something different then I would highly recommend them. ■

## WARNING

If you have to handle these fish care should be taken as they have serrated edges to the gill covers and they tend to raise these when frightened. They use these sharp edges when sparring with each other but did not seem to cause each other any damage. They could, however, damage themselves when being caught in a net as the serrations can easily catch. Never try to pull them free but leave them to free themselves in water, cut the net. Always make sure that you keep your fingers away from danger.





# Humpback limia

This male Humpback limia has less blue in it than some of the more recent collections.



## Kathy Jinkings profiles a great "Golden oldie" of the livebearer world.

ALTHOUGH THE HUMPBACK LIMIA IS ONLY occasionally seen in aquarium shops, it is well worth watching out for by anyone with an interest in livebearers who would like to try something different from the standard Guppies, Platies and Swordtails. Although not particularly brightly coloured, it is still a striking fish, with a yellowish background marked with the vertical black bars that give it both its scientific and one of its common names. The reason for the more widespread common name, of Humpback limia, becomes apparent only as the fish matures, when the male develops a clearly arched back. Younger fish can still be sexed by examination of the anal fin - the female's is the normal triangular shape, while in the recently matured male the anal fin has changed into a long thin gonopodium. This rod-like structure is used to inseminate the females.

Although they are small fish, with the females growing to about 6.5 cm, the size difference often seen among livebearers is less marked - the male grows to nearly as big as his partner. Like many livebearers, these are hardwater fish, and make a good choice for those fishkeepers (like many of

us in Britain) whose hard water often limits their choice of fishes. In the wild Limias are usually found in large schools, and although a pair can be kept, a group is better. As with most livebearers, a preponderance of females will mean that the males' attention is shared out and no one female is constantly harassed. Since both Limia sexes are equally attractive, this should not pose a problem.

Limias are easy to breed, and the females will produce up to thirty fry at each spawning. Plant cover is necessary if you want to rear any of the fry, as the parents are not above having a tasty snack of their own offspring! In a community tank some dense planting will usually ensure that one or two fry survive. If you want to rear more, then a spawning aquarium is a necessity. Like most livebearers, the females find small spawning traps that are sold stressful, and once she has given birth the female may well eat the fry confined with her in the trap anyway. A larger area with lots of plants (plastic ones work too) will be a less unpleasant experience for the mother and ensure a higher survival rate of the fry. They grow quickly on powdered fry

food with additional meals of newly hatched Brine shrimp and will soon be able to join their parents without fear of becoming dinner.

Peaceful, easy to keep, breed, and striking in appearance, the Humpbacked limia deserves a much greater popularity among fishkeepers. If you see some in your aquarium shop, take the opportunity to try a 'wild' livebearer that is ideally suited to a beginner's community. ■

## PROFILE

<b>Name</b>	Humpback limia, black-barred limia
<b>Scientific name</b>	<i>Limia nigrofasciata</i>
<b>Size</b>	6.5 cm
<b>Aquarium type</b>	Community of similar sized fish
<b>Distribution</b>	Haiti
<b>Diet</b>	Flake, granular, and other commercial foods. Additional vegetable matter and some live foods
<b>Temperature</b>	22-26°C



# A Land called "Oz".

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AUSTRALIA IS THE WORLD'S LARGEST island and smallest continent. It is a land of geographical superlatives. The hot, dry "red centre" of the country is composed of four great deserts occupying about 2 million

## RIBBON REEFS

The ribbon reefs lie on the very edge of the continental shelf, which results in depths dropping rapidly to 1000 metres or more on the seaward side. Inshore of the ribbon reefs are well developed shelf reefs and Halimeda sand banks. Here we can see to the leeward side of "Ribbon Reef #9" which has a very diverse growth of corals.



PHOTO: ALF NILSEN

square kilometres of wasteland. In the middle is Ayers Rock, the greatest monolith in the world. Running some 2000 kilometres along the eastern coast is the Great Barrier Reef, the largest coral reef of the World, a living structure visible from the moon! The winter snowfields of the Great Dividing Range in the south-eastern part of the country are greater than those of the alpine Switzerland - contradictions coexists in every corner of this multicultural country.

To an aquarist and naturalist Australia is a dream! Being isolated for more than 200 million years, evolution has carried on with life forms that became extinct long time ago in other continents. In columns to come, we shall visit The Land of "Oz" and meet the nature, the famous "Australian outback", some of the animals and its people. Let us start with one of the World's masterpieces; "The Great Barrier Reef".

## What is the Great Barrier Reef?

The Great Barrier Reef stretches for more than 2000 km along the coast of Eastern Australia and covers an area of about 350,000 square kilometres. The name "Great Barrier Reef" was actually first introduced by Matthew Flinders who

explored the northern Queensland coast in 1802. However, the term is misleading, as the Great Barrier Reef is not one reef, but a composition of some 3000 individual coral reefs as well as 540 continental islands!

The origin of the Great Barrier Reef can be traced back some 2 million years, but the widespread reefs of the complex are probably much younger, "only" some 500,000 years. The present and most recent growth of coral is not more than a few thousand years old.

It is common to divide the Great Barrier Reef into three sections. Northernmost is the "northern section", which stretches from Raine Island to the coast off Mossman. The continental platform is not more than about 50 km wide and the reef runs close to the mainland. Highlights of this section are the many "ribbon reefs", typically less than 500 meters wide, but up to 25 km in length and separated by narrow passages. Some places the barrier reef touches the mainland, and this is one of the few places in the world where the coral reef meets the tropical rainforest.

The "central section" stretches from Mossman in the north to the beautiful Whitsunday and Lindeman Islands in the south. In this section the continental shelf gradually becomes wider. Coral reefs are restricted to the outer third of the shelf and the barrier reefs are found further away from the mainland shore. The reefs

  
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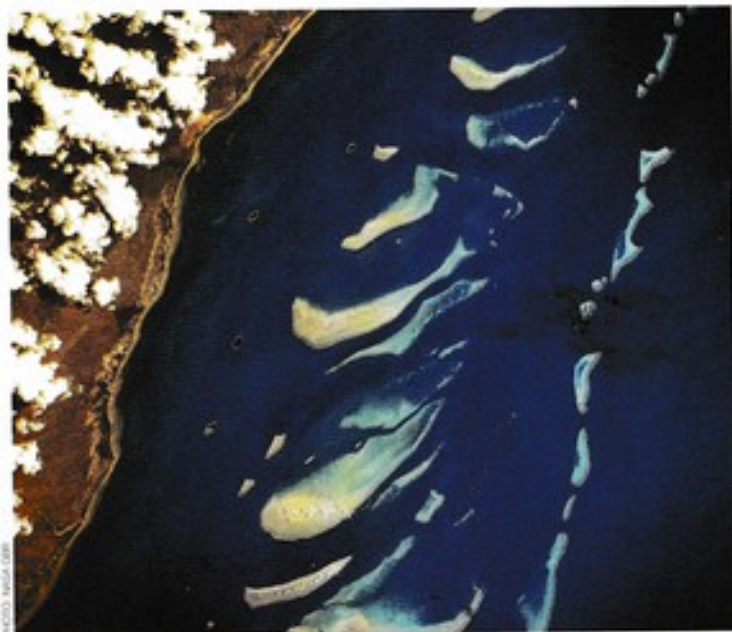
## CROWN OF THORNS STARFISH

Another threat to the Great Barrier Reef as well as to reefs in other parts of the world is the Crown of Thorns starfish (*Acanthaster planci*). Crown of Thorns feed on stony corals polyps. In normal populations the number of starfish is in balance with the other organisms of the coral reef ecosystems, and nothing severe happens. However, since the 1960s the population of Crown of Thorns has exploded in some areas causing great damage to the reefs. Once eaten, a light fuzz of green algae covers the white coral skeleton. Within two weeks this is replaced by various types of encrusting organisms, which give the coral skeleton a grey appearance. Within a year the dead coral skeleton may be covered by a variety of organisms including hard and soft corals. The claim of reef destruction was made during the 1960s when outbreaks were first reported on the Great Barrier Reef. It was feared that the structure of the Reef would be totally destroyed exposing the North Queensland coast to increased levels of wave action and consequent erosion. This clearly did not happen. Whilst



outbreaks of crown-of-thorns starfish may destroy some individual corals as yet they have not destroyed the Reef itself. Apart from the Great Barrier Reef, outbreaks of Crown of thorns starfish also have been reported in such places as the Ryukyu Islands (south-west of Japan), Micronesia, American Samoa, the Cook Islands, Fiji, the Society Islands,

Malaysia, the Maldives, the Red Sea and Hawaii. The duration of outbreaks on individual reefs varies widely: some may last for 4-5 years whilst others may have run their course within 1-2 years. Studies conducted on the Great Barrier Reef and at Guam have indicated that coral cover may return to pre-outbreak levels within 12-15 years.



COURTESY OF EARTH SCIENCES AND IMAGE ANALYSIS LABORATORY, NASA JOHNSON SPACE CENTER.

Magnificent aerial photo of the northern Great Barrier Reef section off the coast of Princess Charlotte Bay where Stewart Rivers meets the sea (+140 N). We can clearly see part of the chain of "Ribbon Reefs" to the right in the picture and the larger, more widespread Hedge and Corbet Reefs inside the chain. The light brown colour are corals, the green is sand while the blue is deeper water.

here are not so densely packed as in the northern section and do not form a continuous barrier. There are many fringing reefs along continental islands, such as around Palm Island and the Whitsunday Islands. The water closer to the mainland is influenced by the runoff of many rivers and changes with respect to salinity and turbidity, which in turn affect the development of coral reefs greatly.

The "southern section" is composed of the Swain and Pompey reef complexes and is the section of the Great Barrier Reef, which is furthest away from the shore. The section has many submerged reefs on the edge of the continental shelf as well as a large number of very large reef platforms →

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## AVERAGE YEARLY RAINFALL AND TEMPERATURE (°C) AT CENTRAL GREAT BARRIER REEF

Month	Max. Temp	Min. Temp	Rainfall (mm)	Comments
January	31.3	23.8	305	Summer, wet
February	30.8	23.7	330	
March	30.1	22.4	233	
April	29.4	20.0	61	Windiest
May	27.3	17.3	30	
June	25.5	14.7	24	Winter, dry
July	24.9	13.1	15	
August	26.0	15.0	13	
September	27.5	17.2	8	Calmmest
October	29.3	20.5	19	
November	30.7	22.7	49	Summer, wet
December	31.2	23.6	111	

so km back from the edge. The result is a solid mass of reefs 200 km in length and 20 km wide!

South of the Swain and Pompey complexes, and closer to the shore, is the Capricorn-Bunker Group, which is a small reef complex with well defined reefs about 50 km from the shore of southern Queensland. The group contains famous coral cays such as One Tree Island and Herons Island - the latter, which we shall return to in a later column. The reefs in this section actually traverse the tropic of Capricorn and are influenced by cooler waters from the south, which in turn are responsible for the lower diversity of corals in this section of the Great Barrier Reef.

### Biodiversity

The biodiversity of the Great Barrier Reef is enormous. More than 340 species of stony corals and at least 60 species of soft corals, more than 4000 species of molluscs, more than 1500 species of fish and an unknown number of invertebrates other than corals and molluscs are found here. It is, however, a paradox that this vast number of organisms all co-exist in a habitat that is very poor in nutrients, like an oasis in a desert!

The Great Barrier Reef is also home to other important habitat types than coral gardens. There are large areas of coastal ecosystems of sea grasses and mangroves, both very important habitats for breeding and nursing grounds for many species. 37 species of mangrove trees have been recorded from the Great Barrier Reef with the largest diversity in the northern section of the reef. About 5000

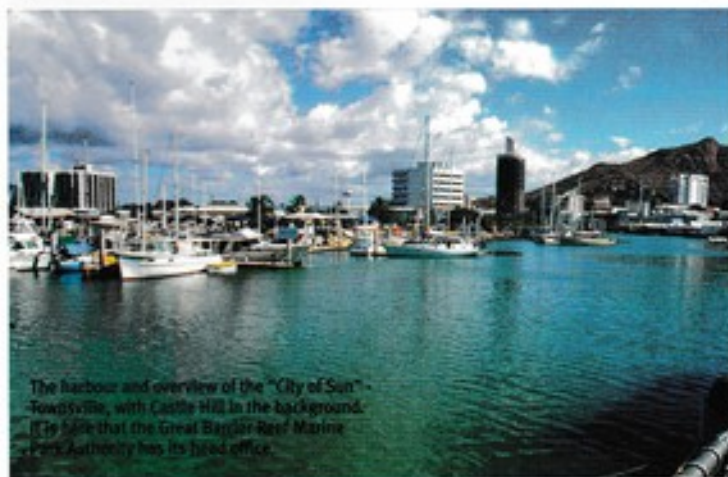
square kilometres of sea grass beds are found in the region. Besides being important as hiding and feeding places for many juvenile reef organisms, the sea grass beds have their own populations of organisms living permanently here. Sea grass habitats are in turn very important to organisms such as sea turtles and dugongs.

26 species of marine mammals are visitors or residents of the reef. Among these are a large number of Humpback whales, which breed in the southern and central waters, and of course the so well known dolphins. Large and important sea birds communities also occupy the Great Barrier Reef, and about 1.5 million birds from 23 species nest yearly on the 55 major nesting islands on the reef.

### Conservation

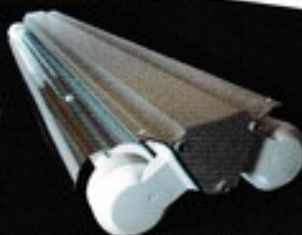
Today the Great Barrier Reef is a World Heritage Site along with other famous sites like Mount Everest, Victoria Falls and the Grand Canyon. The Reef is also a national marine park managed by GBRMPA (Great Barrier Reef Marine Park Authority). It is the lead agency for Great Barrier Reef World Heritage Area issues. The Authority is the principal adviser to the Commonwealth Government on the care and development of the Great Barrier Reef Marine Park. The goal of the GBRMPA is to: "Provide for the protection, wise use, understanding and enjoyment of the Great Barrier Reef in perpetuity through the care and development of the Great Barrier Reef Marine Park"

The park is divided into different zones, which is one of the primary tools for protecting and preserving the Great Barrier Reef. Zoning separates activities that may conflict with each other, such as commercial fishing and tourism. Zoning also allows areas that need permanent conservation to be protected from potentially threatening processes by being placed "off limits" to users (except for the purpose of scientific research) for varying lengths of time. There are 13 different types of zones. "General Use 'A' Zone" is the least restrictive of the zones, this provides for all reasonable uses including shipping and trawling. Prohibited activities are mining, oil drilling, commercial spear fishing and spear fishing with underwater breathing apparatus. "Preservation Zone" is the strictest of all zones and provides for the preservation of the area in an undisturbed state. All entry is



The harbour and overview of the "City of Sun" - Townsville, with Castle Hill in the background. It is here that the Great Barrier Reef Marine Park Authority has its head office.

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Our new lighting Revolution





The luxurious dive vessel "Super Sport" belongs to Mike Ball Dive Expeditions. Here it is anchored at the pier in Port Douglas prior to departure to the outer Great Barrier Reef and the Coral Sea.

prohibited, except in an emergency, with the exception of permitted scientific research, which cannot be conducted elsewhere. You should visit GBRMPA home page (<http://www.gbrmpa.gov.au>) for detailed information on this very important organisation in the protection of the Great Barrier Reef.

Another site to visit for information on the Great Barrier Reef is the home page of the World's biggest marine laboratory - Australian Institute of Marine Science (AIMS) - located in Townsville (with departments also in Darwin and Perth) (<http://www.aims.gov.au/index-le2.html>). The Institute was established by the Commonwealth government in 1972 to generate and transfer the knowledge needed for the sustainable use and protection of the marine environment through innovative, world-class scientific and technological research.

### Threats to the reefs

The tropical coral reefs are under a great pressure these days. Several human activities, including fishing, diving, collecting, tourism, industrial projects, agriculture and many more, can be life threatening to the coral reef ecosystems - so also to the Great Barrier Reef. The Great Barrier Reef is, however, one of the best-managed reef areas in the world.

Still it is not safe! There are several things that threaten this gigantic reef system today. Here we will deal with a few of them only briefly.

Coral Bleaching has been a major problem to many tropical coral reefs ever since the 1970s. During 1997-1998 mass coral bleaching was observed on many of the world's coral reefs caused by the water temperature rising above the critical 29°C for long periods of time. Corals are usually coloured tan, green or blue due to the presence of millions of symbiotic algae (zooxanthellae) in their tissues. In a wonderful symbiosis, these tiny plants utilise sunlight and the coral animal's respired CO<sub>2</sub> to produce energy rich compounds that feed the coral host and release oxygen. However when seas get too warm, the delicate symbiosis collapses, the brown plant cells are ejected, the white skeleton becomes visible through the now transparent animal tissues, and the coral slowly starves.

### Coral diseases

Coral diseases are yet other threat to the reef and are normally caused by microbial pathogens including a variety of bacteria, algae, and fungi. The result is usually small amounts of coral mortality on otherwise healthy coral reefs.

Two groups of diseases dominate: Black band disease was the first coral disease reported from the Great Barrier Reef, and the disease is characterised by a black band or line, 5-40mm wide. The coral tissue on one side of this band is healthy, while on the other side of the band the white coral skeleton shows where the coral tissue has recently died. White band disease is characterised by either a distinct line or a zone of bleached but intact coral tissue between the exposed coral skeleton and the healthy coral tissue. This disease is more virulent than black band disease and results in the rapid death of coral tissue.

### Perhaps tourism is the biggest threat to the Great Barrier Reef?

The reef acts like a gigantic magnet to tourists. More than 2 million people visit the reef each year, making tourism a major earner for the north-eastern Australian economy. Tourists are carried to the reef system by more than 500 commercial vessels, and tourism is permitted through nearly all the Great Barrier Reef Marine Park. All these visitors can - and do - naturally damage the reef in some way or another. But visitors do value the reef's beauty and diversity - that's why they visit after all - and a visit to the Great Barrier Reef becomes a life time experience and gives tourists an insight in a magical underwater world. There is therefore general support from tourism operators and tourists as well as government agencies to develop approaches to tourism sustainable over the longer term.

### How can the Great Barrier Reef be explored?

Being an aquarium enthusiast and a traveller, how can you best explore the Great Barrier Reef? You have several options. The first thing to do is careful planning! Under no circumstances should you expect that you could just travel down under, jump in the water somewhere along the Queensland coast and experience the reef. Remember that although the reef is large, it is in most locations situated far away from the mainland coast. This fact makes the Great Barrier Reef somewhat difficult to explore compared to many other reef locations in the world, such as the Maldives (see Alf's Column in the February 2002 issue).

To explore the Great Barrier Reef you: Either have to plan a day trip on one of the →

T5 tubes with A1 phosphor mix

[www.d-daquariumsolutions.com](http://www.d-daquariumsolutions.com)



## MARINES: ALF'S COLUMN



PHOTO: ALF H. SMITH

For those not ready, able, or willing to dive, the main attraction at The Great Barrier Reef Aquarium is a tunnel that separates the predator and the large coral aquarium. Here you can stay dry but still walk under water!

many dive boats leaving from many of the cities along the coast of Queensland

- Or plan for a several days' stay at a live-aboard dive boat
- Or plan a stay at a resort one of the continental islands of the Great Barrier Reef
- Day trips are available from very many operators. This link

[http://www.queensland-holidays.com.au/pfm/sites/g000000/cairn\\_sdiver.htm](http://www.queensland-holidays.com.au/pfm/sites/g000000/cairn_sdiver.htm)

directs you to a list of dive operators in northern Queensland and is just one example of what can be found on this topic on the Internet. I would advise you to spend some time doing research here. The quality of the operators varies a lot! Some take you to beautiful reef sites, while others just bring you to sites that are over dived and of poor quality. Some boats carry too many tourists to one and the same spot. With hundreds of divers or skin divers in the water simultaneously, you are actually seeing a lot more divers than reefs.

There are several companies offering to explore the Great Barrier Reef while staying on board a cruiser. From my point of view this is the very best way to see the reef, but it is also the most expensive one! Mike Ball Dive Expeditions (<http://www.mikeball.com/>) is one such company - in my opinion probably the very best there is! I joined this company on one of their luxurious vessels "Super Sport" for 10 days travel along the outer Great Barrier Reef back in 1991, and it was a marvellous experience. The boat was equipped with high quality dive equipment, a professional staff and excellent accommodation and food. Although

expensive live-aboard explorations give you the highest possible outcome. The boats move between high quality reef sites and each dive is more exciting than the last. Little time is wasted and the boat often moves the longest distance during the night. You anchor directly on the individual reef sites and it is not uncommon to do 3-4 shallow dives a day.

### Stay on an island

There are a number of island resorts along the Great Barrier Reef that offer you great accommodation directly on the reef itself. Lizard Island in the northern reef section and Heron Island in the Capricorn Bunker Group in the south are two examples. Lizard Island is a green, volcanic island about 1,000 hectares in size with its peak mountain "Cooks Look" rising 259 metres above the sea. "Cooks Look" was the peak James Cook and Joseph Banks climbed when seeking an exit from the Great Barrier Reef, which had hemmed them in for more than 1,500 kilometres. Lizard Island is surrounded by reefs, lagoons and beautiful beaches, and is situated 250 km from Cairns. The island is famous also for being the centre of the annual Black Marlin season, which runs from August to December. There are several famous dive sites close to Lizard Island, such as Cod Hole and the famous Ribbon Reefs with their spectacular drop-offs. Heron Island is perhaps the best known of all of the Great Barrier Reef islands. This coral cay is perfect for a Great Barrier Reef diving holiday.

If you are seeking a holiday that is not primarily a diving holiday, you have the option to stay in one of the resorts at the beautiful Whitsunday Islands. Besides the Whitsunday Island itself, Hamilton, Dent, Hayman, Border, Hook and Molle Islands all belong to the Whitsunday Group and are continental islands surrounded by fringing coral reefs. The islands are found at the same latitude as Tahiti and the climate and settings are spectacular! The visibility here is not always the best, but diving and skin diving can still be good. The Internet again offers a lot of information, such as <http://www.airliebeach.com/diving/welcome.html>

Yet another interesting island is Green Island off Cairns. Best suited for a day trip, though. Although the island is invaded by tourists, it still has some interesting spots to explore. The reef flat at the western side of the island has a varied and very interesting growth of coral. To the north are large sea grass beds where turtles and other interesting organisms are spotted frequently. Further out one reach a luxurious growth of coral and find the Giant clams (*Tridacna gigas*). The Giant clam is also seen off the jetty of the island where an underwater observatory is located. ■

### BOOKS AND FURTHER INFORMATION

When you plan a holiday to the Great Barrier Reef you simply must get hold of the books by Tom Byron, who describes dive sites in detail and give a lot of indispensable practical information. See this Internet site for details: <http://www.netspace.net.au/~tombyron/index.html>.

The following link points you further on to many sites that might help you when planning a trip to the Great Barrier Reef: <http://www.mysteries-megasite.com/main/bigsearch/great-barrier-reef.html>

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## Laguna's new Living Ponds video

We review *Laguna's* new Living Ponds video, feature *Kent's* new plant growing range and *Interpet's* ammonia remover

### THE PRICE

Create your own living ponds & water features video from Laguna is available from all good aquatic outlets priced £8.99 or you can get a free copy direct from Today's Fishkeeper if you subscribe today. For full details see page 90.



While many of us would love to have a pond in the garden, the simple fact is most of us are daunted by the idea of all the work involved in installing one. What if it goes wrong? What if it looks a mess? There are plenty of places to get the basic information needed to do the job but most of it is written. What many of us need is someone to show us how to do it.

This is where the Create your own living ponds & water features video from Laguna comes in. This step by step guide to installing a pond literally walks you through the process. Three different projects are featured. The smallest is a pebble pool water feature installed by Jackie that shows just how easy it is to bring child safe water into even the smallest of gardens. The next project had Joe installing a preformed liner pond. This took a lot more digging but was certainly not beyond the scope of most people to install in just a day. The third project was a lot more ambitious and was a large flexible liner pond in Keith's garden.

The video is presented in a friendly conversational style. Experts like Malcolm Goss stepped in from time to time with practical tips to make sure you avoid the worst mistakes people make when installing a pond. Obviously with a promotional video of this kind Laguna products were the only ones included and there is a sales pitch promoting their range but, ignoring that, you actually have a guide anyone can use to help them create a living pond in their garden. Well done Laguna!

# TOP GEAR

## New Ammonia remover from *Interpet*

Toxic Ammonia is the most lethal killer of fish in aquariums and ponds. Whilst good biological filtration will continually keep ammonia to zero, there are many instances where the ammonia level rises and this can be lethal to fish. These include when the fish system is new, damaged by medication or poorly maintained.

The new *Interpet* Ammonia Remover is an easy to use liquid product that removes the ammonia to a non toxic salt that can be processed by the filtration bacteria, yet leaves the water free of toxic ammonia.

Product reviews and all the new products from the industry



# Kent launch Kent Botanics – their new plant growing range.

Kent marine are well known for their marine products but in recent times they have been branching out into other areas of the hobby. Specialist freshwater foods, freshwater treatments and even some pond orientated products have already been launched. Building on the success of these products Kent have now launched a range of 10 new products aimed at aquatic plant growers. This range is so new that the latest catalogue from Kent doesn't even include all 10 products!

Plants require stable appropriate water parameters, nutrients, a source of inorganic carbon, and proper lighting in order to grow, bloom, reproduce, and maintain health and coloration. The Kent Botanica line presents hobbyists with planted aquariums a range of supplements to help increase growth, coloration, and overall health of their aquatic plants without the use of hormones. The range includes Fe, GH+, Grow, Humic, K, KH+, Micro, Nitro+ (called Accel in their catalogue), Phos+, and Vita supplements.

The latest addition to the range is Kent Botanica Phos+ that provides phosphorus that is readily available to plants. Because there are many modes of entry for phosphorus into an aquarium, it is desirable that this product be used in conjunction with a test kit that measures total nitrogen content



## THE PRICE

The new range retail for £7.99 for an 80z bottle, £12.99 for 160z and £43.99 for 640z. Contact Aquatic Solutions 01553 776788 for your nearest stockist.

of the water, and a phosphate test kit. Then, add Botanica Nitro+ or Phos+ to achieve the desired N:P ratio (50 to 20:1 - 50 to 20 nitrogen atoms per 1 phosphorus atom - ). Kent say this product is designed to be used by advanced hobbyists only since indiscriminate use may result in overgrowth of undesirable algae!



The unique part of this new Interpet Ammonia Remover, unlike other similar treatments, is that the ammonia removal can be monitored using a standard salicylate test kit, such as the Interpet Easy Test. This is vital if the fishkeeper is to keep an accurate eye on their water conditions. The safe ammonia remover formulation is suitable for use in all aquariums, including marine systems, and is so safe; it is used in aquaculture, where the livestock is for human consumption. The new Interpet Ammonia Remover is available in both pond and aquarium formats. ■

## FURTHER INFORMATION

For further information on this and any other Interpet products, please write to: The Interpet Information Centre, Interpet, Vincent Lane, Dorking Surrey, RH4 3YX

## THE PRICE

For aquariums there is a 125ml bottle - RRP £3.99 and a 250ml bottle - RRP £5.99. The pond version is available in 3 sizes, 250ml - RRP £5.99, 500ml - RRP £9.69 and 1000ml - RRP £14.25.



## TOP GEAR

This is the Ocean Light 150+ which combines the benefits of T5 lighting with a metal halide.



The Ocean Light 150 is aimed at bringing metal halide lighting into the affordable price range without stinting on quality.



AB Aqua Medic introduce two new lights, we review Phytoplankton from *Phyto-Aqua* and take a look at *Hozelock Cyprio's* range of pre-formed ponds.

The two new Ocean Light luminaires from AB Aqua Medic aim to bring the intensity and sparkle of metal halide lighting into your aquarium at a very economic price. As with all of this company's equipment no compromise has been made with the quality, so they have an anodised aluminium housing with high quality reflectors and a steel wire suspension system.

The Ocean Light is offered in two models. The Ocean Light 150 has one 150 watt aqualine 10000 HQI lamp, while the Ocean Light 150+ has 150 watt

lamp and two T5 24 watt blue fluorescent lamps. The latter version has 2 power cables for separate control of the T5 tubes and the aqualine 10000 lamp.

### THE PRICE

The Ocean Light 150 is PRICED AT JUST £160 which represents really good value on such a high quality product. The Ocean Light 150+ is so new AB Aqua Medic have yet to set the price!

### THE PRICE

The Cumbrian has a naturally curved shape with a planting margin around the larger end. It has the largest volume of all the Hozelock Cyprio range at 480 lt. RRP £112.49



Product reviews and all the new products from the industry



# Phytoplankton from *Phyto-Aqua*.



For many years a few people have been adding live phytoplankton to their aquariums for feeding filter feeders and soft corals. Over the last two years there has been an explosion of more aquarists

turning to this form of feeding, but why, and what are the benefits?

Basically Phytoplankton, single celled plants, are the basis of the food chain in 99% of aquatic environments. Not only do they feed filter feeders but encourage a natural zooplankton 'animal' population in the aquarium that in turn feeds the filter feeders and hard corals. Most importantly, they are a very rich source (depending on the species) of long or short chain fatty acids which are essential to health.

Many people are home culturing phytoplankton that can be great fun but there are disadvantages to this. Firstly, you will contaminate the culture with fungal spores and air born bacteria that can cause the loss of whole batches. Secondly, you will be adding these and plant growth nutrients to your aquarium which in cases has resulted in algal blooms. Lastly you will not know the cell density of your phytoplankton. However, growing your own is good fun and a very cheap source of aquarium food.

What of those who don't have the time or space to home grow the phytoplankton. Your prayers have just been answered as Phyto-Aqua produce the phytoplankton *Nannochloropsis oculata* under sterile conditions, washing the culture before bottling. This produces a culture of a uniform cell density of 250 million cells per ml, with a high fatty acid profile free from any nutrients, bacteria or fungal spores. It has a shelf life of 2 months if kept in the fridge.

The benefits of this are vast, the individual cell is so small that once added to the system it will

pass through all filters apart from carbon, even surviving the protein skimmer, so it will remain in the system until eaten. Either dripped in continuously or added just before lights out will give you the best result. The other benefit is they utilise nitrates as a food source.

What do I think of it? Growing your own is fun and cheaper, however, you will never be able to reproduce the cultures produced by Phyto-Aqua because of the growing methods and equipment utilised.

Andrew Caine

## THE PRICE

500ml of phytoplankton should **COST £10.00**, with a recommended dosage rate of 1ml per 6 litres in a low stocked system, or 1 ml per 4 litres in a higher stocked system. Your local stockist can be obtained from Phyto-Aqua on 0151 706 0271

## Pre-formed pond liners from *Hozelock Cyprio*

Hozelock Cyprio have a range of five pre-formed pond liners available this season. These are made with HDPE so are resistant to UV light and

damage from frost, stone or roots. They come with a 20 year guarantee and have some rather nice design features such as electric cable exit

channels and locating lugs for a Hozelock Cyprio pump stand. All the range are deep enough to accommodate a submersible pump.

### THE PRICE

The Arun is a larger pond (still only 2.1m long at its longest) with planting margins and a volume of 315 lt. RRP £112.49



### THE PRICE

The Cheviot has an unusual clover leaf shape and a volume of 300 lt. RRP £76.49



### THE PRICE

With two straight sides the Grampian fits into corners rather well. It has a volume of 340 lt. RRP £76.49



### THE PRICE

Smallest in the range is the Iris with a volume of just 157 lt. This is a small pond with planting margins. RRP £66.49





# TOP GEAR

OASE launch Pondovac 2 – the next generation in pond vacuuming and TMC launch a new range of specialist marine foods.



The new generation of OASE pond vacuums.

Using 'Intelligent Technology', the Pondovac 2 switches itself off when full, and automatically switches back on once the tank has been fully drained of sludge. Draining the collection tank of the Pondovac 2 takes approximately 25 seconds, making the cleaning process much easier, and with the new larger tank, less time consuming. Pondovac 2 is supplied with various nozzles including a special 'string algae nozzle' and 'non-return' adapter, further simplifying the process. The sludge that is removed can either be used as fertiliser for the garden or can be filtered by the strainer provided and returned to the pond.

One of the main reasons for cleaning ponds is that the sludge and debris builds up and gives off ammonia and other foul wastes that can cause major water quality problems if left unchecked. The silt build up is greater if there are fish, or if the pond is under trees.

The removal of this sludge and debris has never been easier than with the Pondovac 2 pond vacuum from OASE. Pondovac 2 easily removes particles of dirt up to 10mm in diameter, algae, string algae, dead vegetation, fish excrement and leaves, without the need to empty the pond.

## THE PRICE

The recommended retail price of the new Pondovac 2 from OASE is £249.99. For further details, please contact OASE on 01264 333225 or visit [www.oase-uk.co.uk](http://www.oase-uk.co.uk)

## Tropical Marine Centre now distributes the Zoolife range of food and additives.

The Zoolife range of formulated food and additives has been developed to provide essential vitamins and nutrients for all marine fish and invertebrates, resulting in optimal health and colour. Only natural carotenoid pigments and antioxidants are used in the formulations. These veterinary formulated products are widely used in public aquariums, fish holding facilities and retail outlets, as well as by hobbyists. The range includes Fishvits, Colorfin and Optifin which are products designed for mixing with frozen, freeze-dried and other food preparations to ensure a complete nutritional balance is achieved.

The new Zoolife range offers some very useful foods and additives for mariners.



## Fishvits Color Marine

Fishvits Color Marine is said to produce optimal health and colour enhancement for all marine fish and invertebrates.

## THE PRICE

The 500ml spray has a RRP of £8.99 and the 250ml a RRP £7.50

## Dried Flaked Nori

This naturally air-dried flaked food is certified free from contaminants and manufactured to the highest standards.

## Colorfin

Colorfin is said to produce colour enhancement for all marine fish and invertebrates.

## THE PRICE

200g RRP £26.28

## THE PRICE

500ml spray RRP £8.99  
250ml RRP £7.50

## Optifin Response

Optifin Response is an instant gel diet, another veterinary formulated food for omnivores, especially for use during periods of vaccination, disease, quarantine or introduction to new displays.

## Optifin Marine

This instant gel diet, has been formulated by vets for omnivores. These gel diets can be placed in reef and rockwork to provide a naturally appealing food source for omnivorous "pickers" such as Butterfly fish

## THE PRICE

500g RRP £19.99

## THE PRICE

500g RRP £16.99

Product reviews and all the new products from the industry



# Slender betta

*Betta bellica*



# Today's Diary Dates

May's show, auction and club meeting dates.

## Copy for Today's Diary Dates

Copy for Today's Diary Dates should be sent to Today's Fishkeeper, Winchester Court, 1 Forum Place, Hatfield, Hertfordshire, AL10 0BN Telephone 01673 885352, fax 01707 269333 or e-mail derek@trmg.co.uk copy deadline 6 weeks before publication date.



Thurs 1st

Glennrobes meeting; Contact D. Smart, 4 Locky Ave, Kingslisse, File.  
Ratcliff A.S. meeting; Contact 01738 561291 or 07714 188907  
Sandgraves A.S. meeting; Contact 01704 541177  
Lots available for the YCG June auction.  
Contact Phil Oldridge on 09924 367086.

Friday 2nd

North West Child Group meeting; Contact 09922 707593  
Southend Open Show; Contact 01702 309340  
Tyne Trest Area Association Open Show  
Contact 01666 693884 or Tel. 0191 4370768  
Breeders day at Oldham.  
Contact 0161 2813725 for more details.  
Dunstable & D.A.S. Spring auction.  
Contact 01582 707280

Mon 5th

Kirkcaldy A.S. meeting; Contact 01738 634689 or 01592 205565  
Sofway A.S. meeting; Contact 01387 750666  
St Helens A.S. meeting; Contact 01942 671463  
Ayrshire Fishkeepers Association meeting; Contact 01294 605272  
Bulgate & Redhill A.S. Contact 01293 781282  
Meresyde Aquarist Society meeting; Contact 0151 280 3664  
Warrington A.S. Contact 01925 483979

Tues 6th

Southern Leigh & D.A.S. Contact 01702 305740  
Palisley & District A.S. meeting; Contact 01629 505555  
Dunstable & D.A.S. meeting; Contact 01582 707280  
York & Dist. A.S. meeting; Contact 01904 414272  
The Irish Tropical Fish Society meeting; Contact 01658386  
Hullam A.S. meeting; Contact 0151 289680  
North Bucks A.S. meeting; Contact 01908 317333  
Oldham A.S. meeting; Contact 0161 281 3725  
Precision A.S. meeting; Contact 01772 32145  
Lang Town Aquarists and Pondkeepers Group meeting; Contact 01592 595835  
Wyle A.S. meeting; Contact 01482 445543

Wed 7th

Corby & D.A.S. meeting; Contact 01536 790912  
Oasis Fish Club (Sunderland); Contact 0991 3841433  
Perth A.S. meeting; Contact 01738 621704 or 01506 129548  
Claxton Fish Keeping Club meeting; Contact 01255 428005  
Purtonmouth A.S. meeting; Contact 01673 889312  
Bracknell A.S. meeting; Contact 01189 712874  
Ryeleed A.S. meeting; Contact 01774 188907

Thurs 8th

Mid Sussex A.S. meeting; Contact 01924 602407  
Kings Lynn Fish Club meeting; Contact 01553 763743  
Falmley A.S. meeting; Contact 01738 561291 or 07714 188907  
West Yorkshire South East Marine Aquarist Society  
Contact 01279 301542  
Yorkshire Child group meeting; Contact 01924 367086  
Basingstoke A.S. meeting; Contact 0128 970 1461

Fri 9th

West Cornwall Fishkeepers meeting; Contact 01209 614158

Sat 10th

Ryeleed Aquarist Society Open show and auction; Contact 01514 27275  
Massetburgh A.S. Open show and auction; Contact 05875 619188  
Cenby Open Show; Contact 01536 790932

Mon 12th

Kirkcaldy A.S. meeting; Contact 01738 634689 or 01592 205565  
Bristol Aquarist Society (Goldfish) meeting; Contact 01922 207467  
Ilford A.O.A.P. Society meeting; Contact 020 81507320  
Gainsley & Cleethorpes meeting; Contact 01472 349128  
St Helens A.S. meeting; Contact 01942 671463  
Oiley A.S. meeting; Contact 01274 531418  
Robin Hood A.S. meeting; Contact 01460 609721 or 01952 656430

Tues 13th

Darwin A.S. meeting; Contact 01254 709225  
Northwich A.S. meeting; Contact 01606 882966  
Caer Ulla A.S. meeting; Contact 0191 573744  
Telford & D.A.S. meeting; Contact 01952 409721 or 01952 656430  
Lang Town Aquarists and Pondkeepers Group meeting; Contact 01592 595835  
Northern Goldfish and Pondkeepers meeting; Contact 0161 969767  
Greenock D.A.S. Meeting; Contact 01475 704219  
Bangor Aquarists & Breeders Society; Contact 0128 982 3539  
Clyde Aquarist Society meeting; Contact 0141 211111  
Hull A.S. meeting; Contact 01964 662387  
Stroud & D.A.S. meeting; Contact 01594 223291

Wed 14th

Uthelgow Aquarist Society meeting; Contact 01506 510558  
Hullax A.S. meeting; Contact 01274 880471  
Tameside A.S. meeting; Contact 0161 339 6593  
Bradford A.S. meeting; Contact 01274 652542 or 01133 257 7709  
Hounslow D.A.S. meeting; Contact 020 8890 6933

Thurs 15th

June 2009 Today's Fishkeeper on sale  
Glennrobes meeting; Contact D. Smart, 4 Locky Ave, Kingslisse, File  
Tropical Tropical Fish Club meeting; Contact 0147 973 2145  
Sandgraves A.S. meeting; Contact 01704 541177  
Ratcliff A.S. meeting; Contact 01738 561291 or 07714 188907

Fri 16th

Goolemania Weekend Convention; Contact 0983 721246  
Easbourne & District Pondkeeping; Contact 01213 773199  
Discus Ireland meeting; Contact 0661 318593  
Goolemania Weekend Convention; Contact 0983 721246  
Goolemania Weekend Convention; Contact 0983 721246  
Greater Manchester Child Auction; Contact 01922 847155 & 01706 849355

Sat 17th

Goolemania Weekend Convention; Contact 0983 721246  
Greater Manchester Child Auction; Contact 01922 847155 & 01706 849355

Sun 18th

Goolemania Weekend Convention; Contact 0983 721246  
Greater Manchester Child Auction; Contact 01922 847155 & 01706 849355

Wyle Open Show and auction; Contact 01482 445543

Mon 19th

Kirkcaldy A.S. meeting; Contact 01738 634689 or 01592 205565  
Thorpe & D.A.S. meeting; Contact 09933 609394  
Sofway A.S. meeting; Contact 01387 750666  
Meresyde Aquarist Society meeting; Contact 0151 280 3664  
Ayrshire Fishkeepers Association meeting; Contact 01294 605272

Tues 20th

Southern Leigh & Dist A.S. Contact 01702 309340  
Greater Manchester Child Society meeting; Contact 01706 810284, 01706 353163, 0161 766 4457 or 0432 942 155  
Midlands Marine Aquarist Society; Contact 0121 359 4469  
Oldham A.S. meeting; Contact 0161 281 3725  
Lang Town Aquarists and Pondkeepers Group meeting; Contact 01592 595835  
Wyle A.S. meeting; Contact 01482 445543  
South Park Aquatic Study Society; Contact Eric 0208 6792880

Wed 21st

West Yorkshire Marine Aquarist Group meeting; Contact 01924 420101  
Claxton Fish Keeping Club meeting; Contact 01255 428865  
Tongham Aquarists Society meeting; Contact 01252 251086  
Purtonmouth A.S. meeting; Contact Gill Ulling 9, Inverness, Rd, Gosport, Hants.  
Perth A.S. meeting; Contact 01738 621704 or 01506 510558  
Bracknell A.S. meeting; Contact 01189 712874  
Wokingham A.S. Contact 01990 679251

Thurs 22nd

Mid Sussex A.S. meeting; Contact 01273 602407  
West Cornwall Fishkeepers meeting; Contact 01209 614158

Fri 23rd

West Cornwall Fishkeepers meeting; Contact 01209 614158

Sat 24th

Castleford Aquarist Society Open show and auction; Contact 01780 647953

Sun 25th

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

Mon 26th

Northwich A.S. meeting; Contact 01606 882966  
Lang Town Aquarists and Pondkeepers Group meeting; Contact 01592 595835  
Greenock D.A.S. meeting; Contact 01475 704219  
Croydon Aquarist Society meeting; Contact 020 8654 0984  
Stroud & D.A.S. meeting; Contact 01634 223291

Tues 27th

Hounslow D.A.S. meeting; Contact 020 8890 6933  
Hullax A.S. meeting; Contact 01274 880471  
Tameside A.S. meeting; Contact 0161 339 6593

Wed 28th

Hounslow D.A.S. meeting; Contact 020 8890 6933  
Hullax A.S. meeting; Contact 01274 880471  
Tameside A.S. meeting; Contact 0161 339 6593

Thurs 29th

Hounslow D.A.S. meeting; Contact 020 8890 6933  
Hullax A.S. meeting; Contact 01274 880471  
Tameside A.S. meeting; Contact 0161 339 6593

Fri 30th

Hounslow D.A.S. meeting; Contact 020 8890 6933  
Hullax A.S. meeting; Contact 01274 880471  
Tameside A.S. meeting; Contact 0161 339 6593

Sat 1st

Hounslow D.A.S. meeting; Contact 020 8890 6933  
Hullax A.S. meeting; Contact 01274 880471  
Tameside A.S. meeting; Contact 0161 339 6593



## Today's Fishkeeper National Show League 2002

The final results are in for this year's most prestigious show award. And the winners are...

THE RESULTS OF THE 2002 TODAY'S FISHKEEPER NATIONAL SHOW League were announced at the Viviparous spring auction in Chesterfield. This year more competitors than ever took part with the final results reflecting the four main showing areas in the UK. Up in Scotland Gavin Cowan reigned supreme, in the Yorkshire area it was B & S Critch and I. Wright, in the FNAS shows Dave and Lois Speed took the honours, whilst down south at FBAS shows Roy Chapman was top showman.

Overall Brian, Steve and Ian had a bit of a runaway win this year ending up 400 points clear of the second place winners. To achieve this they attended over 25 shows, took hundreds of firsts and not only showed throughout their own area but also attended shows from Scotland right down to southern England. They say they won't be doing so many shows this season (they said that last year as well) so the field should be a little more open.

In second place was Gavin Cowan on 604. His dad, John said he could have won more, but for the fact he is a judge and Gavin can't show when he is judging. With eight bookings already it looks like Gavin will still be held back again this year (if 604 is being held back!).

Third place went to Roy Chapman on 442. His points have only been won at FBAS shows in his own area. With the reduction in southern shows he has not been able to attend so many shows as he used to, so now will be looking to show further afield at other federation shows. One to watch for the future?

Fourth place really turned into a fight. Mr & Mrs Silk came in with 261 points but after several re-counts were pipped at the post by Dave and Lois Speed on 263. With other exhibitors only 20 points away from these, it will be interesting to see what happens next year.

All the exhibitors did really well to amass such a lot of points and they can only be described as the back bone of the aquatic show scene.

Our thanks to Aquarian, A.PI. and Nutrafin Max who kindly sponsored this event.

David Ford of Aquarian presenting B & S Critch and I. Wright with their first prize.



### WANT TO TAKE PART IN 2003

The rules are simple. For any show's results to count towards the show league, it must have its date and contact number published in Today's Fishkeeper prior to the show. This means that the information must be with the editor 2 months before the show. Hopefully, clubs will send this information in themselves, but any exhibitor who wants the show to be included can send the details in.

To register your points (3 for a 1st, 2 for a 2nd and 1 for a 3rd) send a photocopy of your certificates or other proof of your awards to Today's Fishkeeper, National Aquatic Show League, Winchester Court, 1, Forum Place, Hatfield, Herts. AL10 0RN. Joint exhibitors are allowed to enter providing that they keep their fish together. For further details contact the editorial office on 01673 885352.



## A veritable 'Tardis' of a shop

Today's Fishkeeper visits *Anglia Aquatics* in Attleborough, Norfolk.



From the front this shop doesn't look very big but in fact it is a series of rooms which all adds up to quite a large aquatic outlet.



Purified water is essential for marines. At Anglia Aquatics they use Reverse Osmosis water for their tanks.

Anglia Aquatics has been a "work in progress" ever since Craig took the premises over 8 years ago. Over that period he has been steadily opening up new rooms, installing extra tanks and enlarging the product range stocked. That work continues to this day with a pond section underway behind the shop and a major overhaul of the marine section planned for the coming months.

### Family atmosphere

Being a fishkeeper since he was a kid and having parents who ran a general pet shop, it was almost inevitable he would end up running his own aquarium shop sooner rather than later. The shop has a distinctly family atmosphere which is not

surprising since Iris, Craig's mum works in the shop whilst Joan and Tony are married.

Since marines are such a large part of the business, all the staff are experienced marinists in their own right. Simon, in particular, has developed his knowledge of the chemical and equipment side of things so just about any problem can be dealt with. He even has distributors

occasionally ringing him up for advice about their own product range!

Since Craig is a fishkeeper we asked him which were his personal favourites. His reply was "All the little Gobies, Biennies and little inverts that poke their noses out from the rock work". Spoken like a true reefkeeper! ■



Anglia aquatics has a wide range of dry goods including all the major brands.



Just a small selection of the corals on offer at this venue.

**Shop details:** Anglia Aquatics, 20 London Rd., Attleborough, Norfolk. Tel 01953 457150

**Shop opening hours:** 10am - 6pm Tuesday - Saturday, 10 - 5 Sunday

**Proprietor:** Craig Carr

**Livestock Manager:** Craig Carr

**Staff:** Iris Carr, Joan & Tony Swinfen, and Simon Back

**Number of tanks:** 150

**Display tanks and ponds:** 2 Marine & 1 Tropical

**Specialities:** All things marine, tropical plant growing equipment

**Additional services:** Tank & pond maintenance

**Brands stocked:** All major brands, including full range of Aqua Medic, Deltec, Kent and Dennerle equipment

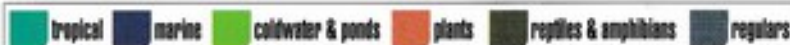
**Which groups of fish do you sell?:** Marines, tropicals and coldwater

### Our verdict

A real 'Tardis' of a shop which is much bigger than it looks from the outside. Whilst it is justly proud of its marines, it also has some nice tropical and coldwater fish for sale as well.

### Wayne's verdict on the manufacturers

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





## Zambian barbs

Top German aquarist Erwin Schraml has been trawling through some recent imports to find more interesting fish. PHOTOS: ERWIN SCHRAML

Aquarium Glaser recently received a shipment of small barbs from an exporter in Zambia. The animals all originate in the Kafue River system, specifically, from the Mwambashi River near Kitwe. I could identify about nine different species in this collection. A comparison with illustrations in FishBase and Skelton (1993a) yielded only an imperfect match for some of them. Unfortunately a systematic reference on the fishes of Zambia still does not exist, and without comparing these fishes to preserved material, it is impossible to make exact determinations. It is also quite possible that this batch of barbs includes some undescribed species.

### ***Barbus eutaenia* BOULENGER, 1904**

The type locality of this species, which grows to 14 cm, is in Angola. Fishes captioned as *Barbus* cf. "eutaenia 1" and *B.* cf. "eutaenia 2" are very similar. Perhaps the former is a male, in which case the second could be a female. The slight bulge of the horizontal side bar on the caudal peduncle, the weaker "break" in the profile of the back below the dorsal fin, the more sharply defined side bar and nuances in coloration in the two animals could all be sexual characteristics. *B. eutaenia* has a very wide distribution across central and southern Africa. It is found in rivers in Rwanda and Burundi, Lake Mweru, the Congo River system, the Cunene, Okavango and upper Zambezi, rivers in the eastern highlands of Zimbabwe, and in the Transvaal escarpment. It is also found in the Cuanza (Angola), the east coast river systems south to the Incomati (Komati) system and in Lake Tanganyika.

The drawing of *Barbus miolepis* BOULENGER, 1902 in Skelton (1993a) looks confusingly similar to *Barbus eutaenia*. According to FishBase, *B. miolepis* is also found in the Kafue River in Zambia. It should therefore likewise be short-listed for the final determination of the species name of the fishes shown below.



*Barbus* cf. *eutaenia* 1



*Barbus* cf. *eutaenia* 2

### ***Barbus* cf. *holotaenia***

*Barbus holotaenia* BOULENGER, 1904 has not yet been found in Zambia. It is therefore doubtful whether the assignment is correct or if the fish in the picture is only a very similar species. *B. holotaenia* was described from the Ogowe River. Its distribution extends over western central Africa: Congo and Ogowe River systems; Mayumbe and Chiloango Rivers, from the Congo to Gabon and Angola. But why not also in Zambia? *B. holotaenia* reaches about 12 cm.



*Barbus* cf. *holotaenia*.



***Barbus brevidorsalis***  
**BOULENGER, 1915**

The type locality of this species is a tributary of the Lukinda River. It is also found in Central Africa in the Laombo River, Lake Bangweolo, the upper reaches of the Okavango, Zambezi, Kafue and Quanza, and in southern tributaries of the Congo system. Skelton (1993a) writes, the species was formerly known as *B. puellus*. In FishBase and Eschmeyer, both taxa were treated as valid (FishBase subsequently revised its classification to conform to mine after my correspondence with them). >From the formulation in Skelton, it was not obviously clear to me whether he considers that *B. puellus* NICHOLS & BOULTON, 1927 is a synonym of *B. brevidorsalis*, or if a misidentification occurred. Therefore I asked him personally. He was kind enough to reply, saying that from his examination of the type specimens of both species, it was evident that both are in fact the same species (see also Skelton, 1993b).

In the drawing of *B. puellus* which was previously shown in FishBase, the middle bar was only hinted at, while it is more visible in the photograph, and is clearly seen in Skelton (1993a). However, the latter source shows the caudal spot separated (as in the fish *B. cf. "brevidorsalis 2"*). By the way, this species reaches only about 4.6 cm



*Barbus cf. brevidorsalis 1*



*Barbus cf. brevidorsalis 2*

***Barbus lineomaculatus*** BOULENGER, 1903

This species was described from the Lumi River in Tanzania. According to FishBase, it has a very extensive distribution in the Cunene, Okavango, Zambezi and Limpopo Systems. It is common in Zimbabwe and Zambia, and is also widespread in Central and East Africa. Given such a wide distribution, it is inevitable that the species does not look the same everywhere. In Zambia it appears to be found in the Kafue River system, Luongo River, Congo River system and in Lake Kariba. *B. lineomaculatus* reaches about 8.6 cm (SL).



*Barbus cf. lineomaculatus*



# Today's Postbag



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

## PLENUM PERIL

Dear Sir,  
I feel I must write to object to the cavalier dismissal of the plenum system in Andrew Caine's Q&A section (March 2003). Firstly, the plenum system is grounded on firm scientific principles and is not a miracle system as quoted. The theory is quite complex, however, the practicality is very simple providing it is set up correctly using 2/4mm sand grains and the sand bed is also cleaned regularly to remove settled detritus from the surface. My own 50 gal system is over 5 years old. I clean the sand bed every month down to depth of 1 inch. I can view the underside of my plenum and can see no evidence of solid detritus under the egg crate separator.

Secondly, Andrew explains correctly, Kalkwasser can be a problem in a plenum system if overdosed and will cause the sand bed to solidify, this is due to the high pH after dosing, this in turn causes the formation of calcite crystals on any calcareous substrate and binds the sand solid as I found out to my cost in the early days. There are other methods of dosing calcium i.e. a calcium reactor or balanced additives, these are the preferred methods.

Thirdly, Quote "Hundreds of plenums have been constructed yet most fail within two years", I totally refute this as I am in regular contact with many other aquarists who use

plenums whether it be friends, through clubs or the Internet. Yes, a few have failed as have a few Berlin systems, but primarily due to lack of proper maintenance and understanding, or the overdosing of Kalkwasser. Let's face it if you did not clean an undergravel filter, open any canister filter or clean any filter equipment they will also fail within 2 years.

Another point, worth mentioning it is now not recommended to use a second screen to separate the two layers of sand as this stops access to the lower levels. As part of the ongoing maintenance of the plenum a blunt knife should be inserted in to the sand vertically to a depth of 4 inches and drawn across the sand bed taking care not to damage the mesh, or expose the lower levels of sand to oxygen rich water, if any lumps are found they can be teased up to the top and broken up by hand, if you stick to the guidelines there is no reason why some very efficient microbes in a well kept sand bed shouldn't go on working indefinitely to your advantage.

As a closing note, if anyone needs info on how to build a proper plenum and maintain it, a good read is *Live Sand Secrets* by Bob Goemans. I set my system up with his guidance and have had fantastic results, much better than the Berlin system I had before.

Regards,  
Roger Phillips



Plenums, like the one in this experimental aquarium, are best left to those who want to experiment.

## Andrew Caine replies

Dear Roger  
First of all may I congratulate you on your system and your obvious success with a plenum. I have never stated that the theory is not sound but as you quite rightly state complex. However, the way in which plenums have been marketed and aimed at beginners shows an irresponsible attitude. Plenums are for research and the advanced aquarist only, it is easy to say they should read, but experience is worth more, and a salesman will give promises that the system cannot keep.

Responsible aquarists will guide people and not promote difficult systems for beginners.

You refute my statement that hundreds of plenums fail within two years, I know this is true because I am the person who has to tell countless people every year that their beloved aquarium has to be stripped, I am the person who sees the look in their eyes and personal devastation it causes, I am the person who sees people breaking down in tears, actual tears, and have to console them because of plenums. It has cost them more than a couple of bags of sand but many many £100s if not a few £1000s as this is the full cost of a system. But what is more devastating is the huge loss of

livestock that increases every year because of plenums.

Please remember we are dealing with inexperienced people here not experts like yourself, never forget that. Never forget how hard it was when you began and when you were inexperienced and the lack of good guidance that was available. I also stated that a system is proven when over 100 systems are over 5 years old and producing excellent results. Please provide me with this evidence of systems in the UK, as you state you can, even with this evidence in hand you cannot say that the plenum is for beginners, who are the ones I mainly guide.

Andrew Caine

## The Editor's pennyworth.

The subject of Plenums has arisen before and was just as contentious then as it is now. The interesting thing about that debate was Andrew's reaction when I asked his opinion on Plenums. He said the jury was still out. Several years on and he has fallen very firmly in the anti category because of the horror stories which both he, and the editorial team at *Today's Fishkeeper*, have heard. If it was a piece of electrical equipment that failed as often as plenums seem to, then the manufacturers would soon withdraw it. ■



STERBA'S CORYDORAS

*Corydoras sterbai*



25°C

21°C

6.5cm



PHOTO: M.P. & C. PIEDNOIR

TODAY'S FISHKEEPER



# Selecting pond pumps

Selecting a water pump for your garden pond can be something of a nightmare these days. There are just so many to choose from and much of the package labelling is confusing with various different figures quoted. So how do you select a pump for your pond?

FIRST OF ALL YOU MUST HAVE A CLEAR idea of exactly what this piece of equipment is going to do. Do you want it to operate a fountain, waterfall, or filter system? Each use requires a pump to do a different job.

## A pump for your fountain

There are lots of systems on the market specifically designed to pump water for a fountain. Many of these are low cost and have fairly slow flow rates. For a small fountain these will be perfectly adequate. Buying larger pumps with a much faster flow rate will cost more to run and will shoot water higher into the air. You might think this looks great but on a windy day it is perfectly possible to almost empty a small pond in a few hours. In general stick with the smaller ones unless you are buying a pump to do more than one job.

## A pump for your waterfall

Here we need to look at the "maximum head". This is the height a pump can push water up to. If the top of your waterfall is going to be 2m above the pond's water level then you are going to need a pump with at least that maximum head. You also need to check the flow rate at that height. Most pumps make a big noise about their flow rates at zero head but that figure will drop off dramatically when it has to pump "uphill". Since pumps with a higher maximum head tend to use more power, if running costs are going to be a concern, then it may make more sense to reduce

your waterfall's height and opt for a smaller pump. You also need to check each manufacturer's figures for flow rate at a specific head, as this will differ according to the pump's design.

## A pump for your filter

Pond filters can be divided into two types gravity and pump fed. In a gravity fed system the pump has to pull clean water through the filter, whilst in a pump fed system it has to push dirty water through the filter. For a pump fed filter system to work properly it must be run by a pump capable of dealing with solids. It should be situated at the deepest part of your pond or be fed by a bottom drain. Your pump may have a pre-filter to make sure only very fine particles are taken into the pump. Whether pump or gravity fed, you should aim for a flow rate through your filter of at least half your pond's volume every hour.



Pre-filters tend to be relatively small and will clog quickly. This causes the flow rate to drop dramatically which affects the efficiency of your filter. To prevent this happening you have to clean your pre-filter frequently.

## WHAT IF I WANT TO RUN A WATERFALL, FILTER AND FOUNTAIN?

Many people like to return the filtered water via a waterfall. This is where mistakes can occur when working out the head. You need to check the very highest point water needs to be pumped to. This is usually the start of your waterfall that may be several feet higher than the filter. Another easy mistake to make is not taking into account the water flow required for your waterfall. In a 2270 l per hour flow through the filter will need to be 1135 l per hour but if you have a 15 cm wide waterfall you will need to have a flow through of 1364 l for it to look effective. The extra flow through your filter will do no harm, and you will have enough slack in the system so that when the pre-filter starts to clog it will show first in your waterfall rather than in the water quality dropping. Fountains, etc., will also add to the flow rate you need from your pump. In general you should add a third to your flow requirement for each fountain and ornament.

Make sure you take the head into account and over estimate your pond volume rather than under estimate it.

## A few pointers to look out for.

It is a legal requirement for manufacturers to display the power rating for electrical equipment. This is done so that you can make an informed choice about which piece of equipment to buy. The cheapest equipment, which seems to be a real bargain, is often a power guzzler that will cost you dearly in the long term. Guarantees are many and various! Check exactly what they cover and for how long. ■





# Sea view

In this month's column Andrew Caine has a great fish and invert for you and he hands over to one of his good friends - a tropical anemone!

## A fish for you



Puffers of all kinds are full of character and intelligence. They make great pets which will live for years.

### SPINY PUFFER DIODON HOLOCANTHUS

IN THIS DAY AND AGE OF MARINE aquatics, when the majority of people have moved from fish only to reef aquariums, we sometimes forget about the unbound beauty that many of us have left behind. Graceful Angelfish, inquisitive Wrasse, amazing Butterflies, fabulous Triggers, the list is endless, but one type of fish seems to appeal to even, dare I say it, non fishkeepers and that is the Puffers.

These are great pets in the most domestic of senses, they seem to recognise you when you approach the aquarium and come to play and feed. The eyes and little faces seem to bring the

most ardent fish hater to their knees in wonder and admiration. The Spiny puffer has all the above attributes combined with the addition of an array of spines which make the fish even more attractive. But what does it require for a home?

Firstly, as it grows to around 30cm big and fat, it needs a large enough aquarium, say around 120cm x 60 cm x 60cm, with large rocks to provide a nice cave or two. Lighting should not be too intense. Twin tubes, one blue moon and a marine white should be enough. Sump filtration if possible, with a large biological filter to turn over the water at least 10 times per hour

## PROFILE

<b>Family</b>	Diodontidae
<b>Name</b>	<i>Diodon holocanthus</i>
<b>Location</b>	Global distribution within the tropical seas
<b>Feeding</b>	Variety of shrimps, cockle in the shells and meaty vitamin enriched foods, 2 - 3 times per day
<b>Reef compatibility</b>	No way!
<b>Tank mates</b>	Peaceful fish of equal size
<b>Size</b>	Up to 30cm
<b>Difficulty</b>	Easy

and a very big protein skimmer, very big indeed!

Feeding the correct food is the difference between life and death. Its beak, which is used in the wild for crushing through crustaceans, will grow and grow until it is unable to feed. To stop this from happening feed whole shrimps with the exo skeleton intact. Cockles in the shell are very good, as the crushing of the hard shell will keep the beak sharp and trimmed. Try to keep fish of equal size with your puffer because, when excited at feeding times, small fish can be mistaken for food! Our spiny friend is a very passive fish and will accept all tank mates but will contract white spot easily if harassed by other aggressive fish.

All puffers puff, isn't that a surprise! However, don't induce this behaviour, for if air gets lodged within the gut it can cause our beast to swim to the great aquarium in the sky. A great fish, great behaviour, a great pet which will live for many years providing you look after it well.



## CHRISTMAS TREE WORM SPIROBRANCHUS GIGANTEUS

When I look at this hobby/obsession the one thing that stands out from all else and really turns me on are the amazing array of little creatures that exist with other creatures in symbiotic relationships. Here we have one of the most visually enchanting relationships that is so misunderstood within the trade and hobby that many will be offered for sale only for the worms with no thought given to the coral it inhabits.

Colour is one of the main goals that reef keepers try to inject into their aquarium. Just look at the variations of vivid colours displayed by the worm crown, the intensity and mix can be breathtaking, mix this with the attractive retraction behaviour, the covering of the tube opening with the opercular plate (trap door) and we can see why people fall in love with them and not that dull brown coral they are boring into.

Now here we have a small problem, for that 'unattractive' pitted surface is, in fact, a coral of the genus *Porites* which is a small polyped stony coral. The sad situation is that often the purchaser sees only the worms and parts with £25 - £75. These are bagged up and off they go home. They are placed in a very nice

aquarium with many soft corals and wonderful fish, but not an aquarium designed to sustain SPS corals. Over a period of time the coral dies and along with it the worms that adorned this wonder of the reef. To keep the worms alive you have to keep the coral alive as well, so you will need an aquarium system that will grow acropora species as well as other SPS corals.

Back to our worms, they are filter feeders capturing particles within the crown. The particle size of the food can be as small as bacteria which are produced within the aquarium itself. They will benefit from daily feeding of live phytoplankton and liquid animal based foods. By keeping them in medium to strong water flow you will ensure a supply of currents carrying food and the rapid dispersal of waste products.

When choosing a piece, look for the number of populated tubes, one with more empty holes than protruding crowns should be left alone. Note the retraction response to shadows, they should retreat to safety within the blink of an eye. Look at the coloration of the coral, should have a nice uniform tan colour, not areas of discoloration suggesting partial coral polyp recession, remember the coral is just as important as the worms.

### An invertebrate for you

### PROFILE

<b>Phylum</b>	Cnidaria
<b>Name</b>	<i>Spirobranchus giganteus</i>
<b>Location</b>	Global tropical distribution
<b>Feeding</b>	Live phytoplankton and other liquid food
<b>Size</b>	Crown from 0.5 - 3cm
<b>Water flow</b>	Moderate to high
<b>Lighting</b>	Intense lighting for the SPS coral
<b>Difficulty</b>	For the more advanced SPS reef keeper

Christmas tree worms must have a healthy coral to live in.



**AQUA MEDIC**

**AQUARIUM LIGHTING**  
- Consciously better



## Meet an anemone

This Carpet anemone has its own Clown fish living within its tentacles.



PHOTO: MARK CORDES

Please allow me to introduce myself and my relatives. I am an animal that can change shape in the blink of an eye, over 15 adults can be produced from one egg, and to top that I also have the ability to clone myself. Think of me as a bag of water armed with the teeth with highly toxic harpoons, for that is exactly what I am - and you want to place me in your aquarium! In fact, we are so successful you can find my relatives in all of the seas and at all depths. I display the most vivid coloration you humans can think of (which makes some of us the most sought after of marine animals), our beauty and mystery is, however, often both our and your downfall. For I am an animal that has caused countless wipe outs in aquariums, an animal that has consumed countless prized fish (very nice when they come along), and an animal that intrigues everyone, and is often so misunderstood, for I am an anemone.

### With or without algae

One big distinction occurs within my family, and that is the presence or

absence of algae within our gut wall, the same as corals. My relatives from temperate, polar and the deep seas are mostly devoid of such algae. As my parents originate from the shallow tropical seas, however, I am packed with algae, giving me great wind problems at times, but also feeding me as well, so high intensity lighting is an absolute must for me.

I am protected by my nematocysts (stinging cells) all over my tentacles, but I am vulnerable on my body stalk, so I normally like to sit close to the rocks or sand. I do wander around but this is only if I cannot settle where I feel safe, so I have to look for such a home. This causes problems, humans do not place foam over the pump intakes which will shred me to bits, and uncharged nematocysts fly around the aquarium like bullets. Sometimes I settle behind the rocks and then you pull on my pedal disc (foot) often tearing my flesh causing a slow death, and then I take revenge by causing major pollution. A bit of TLC never goes amiss.

To reduce the walking a nice natural depression in the rocks will protect my body. I like to be stimulated via fast flow, well do you lot like spa baths or power

showers? Put my foot into the rock and then apply a gentle pressure over my tentacles for around 5 minutes, this gives me time to attach with my foot which ensures I am not blown over the aquarium with the water flow.

I hope you remembered that I am a bag of water, so very slow acclimation to any water is required or you will cause irreparable damage. Just warming me and dropping me in would result in a massive influx or expulsion of liquid through my body wall. To take your human view it would be like you losing 50% of your body fluids through your skin within one minute, quite a nasty mess. After floating, peg the bag to the side of your aquarium and over one hour double the water content in the bag by adding water via an egg cup.

I am a great addition to any aquarium and will give you many years pleasure if you treat me correctly, and remember I do like meaty foods at least twice per week.

I could rabbit on for hours about myself because I can think of no better subject, so please investigate us more and many amazing facts will be revealed. ■

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# Ponderings

In the month of May a wildlife pond may have a swarm of dancing Mayflies above the surface. What's going on?

Dave Bevan explains. PHOTOS: DAVE BEVAN

## Mayflies



A newly emerged Mayfly. The clock is already ticking for it must find a mate and mate before the day is out.

When the hatch is on they dance above the water in their thousands. For the adult Mayfly time is short as they must mate and lay their eggs all in the space of a day. There are many different species and they can hatch in most months of the year, although the majority have their day during the summer months.

After the nuptial dance the female scatters her eggs on the water and they hatch into tiny nymphs which feed on the bottom among the stones. After a year or more when the time is right the nymphs move to the surface and the sub imago or dun struggles free from the nymphal case and leaves the water to rest on the nearby vegetation. Here it moults again and the adult mayfly takes to the air.

Mayflies are an important part of the pond food chain and many nymphs are eaten by fish as they nose about on the bottom but when the hatch is on the emerging duns give the resident fish a real bonanza.

Life in the pond is tough and it is not always easy to catch a meal. Chaser dragonfly nymphs have found a way of making themselves almost invisible by covering their backs with tiny sand grains so that they can hide on the pond bottom, ready to grab any passing tadpole.

**FASCINATING  
Fact**

## Just below the surface

Having spent the winter as a dormant bud, the Water violet roots in the mud on the bottom of the pond and by May has produced a mass of green feathery fronds which literally hang in the still water of a crystal clear wildlife pond. The Water violet is one of our best native oxygenating plants which provides cover for developing tadpoles and is particularly liked by our newts for egg laying.

In fact, it is not a violet at all but a member of the primula family which likes a position in the full sun.

Our native Water violet is not keen on moving water but once established throws up delicate lilac flower spikes in June.



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## RUDD FACTFILE

<b>Species:</b>	Rudd ( <i>Scardinius erythrophthalmus</i> )
<b>Other names:</b>	None
<b>Other forms:</b>	Golden rudd
<b>Size:</b>	Up to 30cms
<b>Weight:</b>	About 800g
<b>Availability:</b>	The rudd is a common native fish and the popular golden variant is widely available from aquatic outlets.
<b>Habitat:</b>	Rivers and ponds, often heavily vegetated.
<b>Identification:</b>	A shiny silver fish whose fins have a reddish tinge. Golden Rudd are a bronze colour whilst retaining the reddish fins.
<b>Habits:</b>	Shoaling fish which swim close to the surface, preferring well oxygenated water. They eat insect larvae and also take flies and midges from above the water. In small numbers they will find natural food but this will have to be supplemented at normal pond stocking levels.
<b>Pondfish value:</b>	The golden rudd will be best for the ornamental fishpond as it is easier to see from above. They start laying eggs after two years, spawning in April or May on submerged plants. Hardy little fish they are peaceful and will happily coexist with other fish making them ideal candidates for the garden pond.



Rudd come in two colours, the wild colour form and this golden variant.

Once established Duckweed and other floating plants may need thinning every week or the pond's surface will become a solid layer of plant matter.



## Plant lore

Fish produce waste products that are broken down by bacteria to form nitrates. High concentrations of soluble nitrates are poisonous to the fish and in combination with sunlight is the main cause of green water.

Floating plants dangle their roots in the water, taking nutrients like nitrates out of the water, growing and dividing rapidly to cover the pond surface and shut out the light. On the face of it - problem solved! No light and no nutrients equals no green water. But the fish continue to produce nutrients and the floaters continue to grow and divide until the pond is covered by a thick layer of plant material and little else.

Our native Duckweeds and the alien Azolla (a pretty red and green water fern) can both kill a pond. Once established they are extremely difficult to remove and may require weekly netting in the summer months.

Less invasive and much prettier are the alien Water hyacinth and Water lettuce, but the catch here is that they cannot survive our cold winters and must be overwintered in a frost free greenhouse or replaced with new plants each spring but their extensive root systems are great for fish and wildlife.

For the wildlife pond our native Water soldier and Frogbit are both maintenance free as they sink to the bottom each autumn and resurface in the spring.

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# Pond problem

It is usually in May that the brightly coloured kingfisher appears at my pond. As a top predator, quite capable of clearing all the small fish, particularly Minnows and Sticklebacks, I view his appearance with mixed feelings. As he sits there, motionless, on a small branch in the early morning sun, gazing intently into the pond he is positive proof that my wildlife pond is a successful pond. On the other hand, as I watch him plunge into the water and return to his branch grasping a fish which he deftly turns and swallows head first, time after time, I wonder if there will be any fish left.

Fortunately he never stays for more than a few days each year and when he has gone there are always a few fish left so in this natural environment he is only maintaining the balance. His appearance at the garden pond at any time of the year can spell disaster for the young goldfish, unfortunately, unless the pond is permanently netted the fish may well have disappeared before you realise he is in the area.

Kingfishers are beautiful birds but can eat a lot of fish in a fairly short time.



# Nibbled lily leaves

Last week I noticed that some of the new water lily leaves had large bite sized semicircular chunks missing from the edge. Surely the work of some fairly large creature, which had taken up residence in my pond? Looking more closely I spotted a semicircular piece of lily leaf floating among the emergent fronds of the Canadian pondweed. In actual fact it was not floating but being carried over the plants!

Reaching over I picked it up and found it was not one piece of lily leaf, but two neatly fixed together back to back.

Placing it back on the pondweed I watched closely and soon a small black head appeared from one end and started to eat the pondweed. It was a China mark moth caterpillar.

The Brown china mark moth always makes its protective home from water lily leaves and starts by neatly cutting out a semicircular piece of leaf about 2.5cm long from the underneath. When it is severed it drags it under the water and positions it under the lily leaf. It then sticks the two pieces together as it severs the second pieces, eventually

floating free in its new case from which it can graze in relative safety.

Although they can disfigure the water lily leaves, numbers of these caterpillars are rarely high, and you can usually leave nature to maintain the balance. ■



Brown China mark moth caterpillar damage on a water Lily leaf

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## EQUIPMENT CORNER

If you keep fish in your pond then there is a good chance that the pond is close to or above its ideal stocking level. As the pond wakes up then this can be a recipe for disaster. Waste products build up more quickly than the bacteria can break them down causing rapid increases in toxic products like ammonia and nitrites. Regular testing allows you to take action before the problem spirals out of control. You will need to check the pH as well as ammonia and nitrite levels.

There are many test kits available, all of which are fairly complex, either involving dissolving a tablet in a measured amount of pond water or adding various liquid chemicals to the pond water. The resultant colour is then matched against a test card to determine the level in the sample. Most kits have comprehensive instructions covering both the method and interpretation of the results together with suggestions for rectifying the problem.

Test kits allow you to test all the major water parameters needed to fully understand what is going on in your pond.



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A pair of Blue diamond discus

I purchased two pairs of Discus from a local aquarist about a month ago, they share the same tank with a small shoal of Congo tetras, Harlequins, Clown loaches, 2 Dwarf gouramis, 2 Serpae tetras, and a Sailfin plec. Until a week or so ago everything was great, however, one of the Discus developed a white fungal infection similar to white spot over the body and in particular at the base of the dorsal fin, also the tail fins were splitting. I was advised to treat the tank with Protozin over a six day period, this I did and noticed a vast reduction in the fungus, however some was still present.

On occasions I have given my Discus a treat of small earthworms and they love these. I would also like to feed them Whiteworms as well as part of their diet with other prepared foods. My questions are:-

1. Are they safe to feed to my fish?

2. Would they be beneficial in their diet?

Most cultured foods such as earthworms and Whiteworms are relatively safe when compared to aquatic-grown ones such as Mosquito larvae (bloodworms) and Tubifex worms and as long as they are used as intended (that is as a treat) can form part of the diet. Nutritionally earth worms are more beneficial as they contain more protein, Whiteworms less so.



Tony Sault solves another batch of your problems

## DISCUS PROBLEM SOLVER

I then carried out a second batch of treatment on the 1st, 2nd and 3rd days on the advice of the shop, the fish died the following day. I took the fish to the shop, they said that one of the gills had closed up and the other was only just functioning and confirmed some fin rot. I have now noticed one of the larger Discus has a single whitish circular mark on its side similar to a verruca (if that makes sense), it is constantly darker than its partner and has not eaten for two days. There are also two patches on the other side about 2mm in diameter where the scales seem to have faded. I don't want to lose any more fish, can you please help? I have carried out tests on the water which are all fine in every respect.

Sorry to hear of your problem, the symptoms you describe lead me to believe that your

fish appear to have a parasitic skin infection which is stressing them, hence the darkening in coloration. This then leaves them open to attacks from other tank nasties such as fungus and bacteria, which can then cause the fin and tail rot, this I think is borne out by the use of the Protozin which appeared to work if not completely. You do not say if any of the other species in the tank are infected which would seem a little odd if they are not. Can you ask your local shop if they stock another brand of medication for skin parasites and try that? Be sure to remove previous medications by filtering through activated carbon for 24 hours first. You should look carefully at the Discus tank mates such as the Congo tetras, the Dwarf gouramis (notorious for carrying skin parasites) and certainly the Sailfin gibbon. I would be very interested to hear from you as to the outcome. ■

## Is my tank BIG enough?

I have been contemplating the idea of converting my community set-up to a Discus set-up for some time. I've been reading a lot about Discus including all your articles in Today's Fishkeeper and the old Aquarist and Pondkeeper. However, the more I read about Discus the more confused I become, since different people seem to have completely different ideas about the subject. My only question at this stage is a very simple one to which I found a variety of contradicting answers. I have a 90 x 37.5 x 45 tank and I cannot buy a bigger one. Is it feasible to house Discus in this tank or is it far too small for this purpose?

Via e-mail from Monica Hernandez

You are quite correct. For many years there have been many conflicting ideas about how to keep Discus and how to breed Discus. I have tried through my articles to dispel the myths surrounding this beautiful fish, and hopefully succeeded to a small extent, but one can only relate one's own experiences and therein lies the problem, for someone else's experience's may be different from mine and equally as successful. The best advice I personally received many years ago was to enjoy the books for what they are, then do your own thing.

Now to answer your question. The volume of your tank is approximately 150 litres and I can assure you that it will certainly hold a small shoal of 6 young Discus that should thrive. My advice to you is to go for it, you will enjoy the experience.





PHOTO: ANDY CORN/DAVID

This picture is of a downstream refugium used like a lagoon (forward projecting from under the display and in front of a hidden internal sump).

rubble or a dense artificial matrix may be in order (see 'zooplankton reactors' in part 2). For other aquarists altogether, an ornamental display of rare flowering marine plants may be the goal like seagrasses and mangrove seedlings.

Before deciding on the 'how' and 'where' for your refugium, consider the above 'what'. Contemplate the many possible benefits of different applications, and focus on accomplishing the top one or two most important goals to you. Some semblance of most other benefits will likely follow. There are many desirable organisms that will develop in your refugium almost spontaneously, and in due time. Some will be carried in with living substrates like live rock and sand. Others may be imported as epiphytic matter on introduced plants and algae. Others still seem to appear from unknown locations as juveniles or even larvae. And of course, shipping water with any livestock can carry numerous aquatic 'seeds' of life. Undesirable guests can develop too, without invitation, in your refugium. Pests are often simple fragments of nuisance algae that gain a foothold in the typically higher-nutrient, slower-flow environment of a refugium. Few undesirables are ever outside of your control, however, by the limitation of nutrients, light or other critical parameters. In a worst-case scenario, most refugia can be temporarily turned off-line or bypassed to rectify the problem. All told, far more desirable organisms appear than nuisance organisms. Most will delight you with all of the magic and wonder as that first batch of sea monkey *Artemia* you hatched as a child... or as a child-like adult!

## Refugium Essence

Above all, it is very important for you to remember that the word 'refugium' is not to be identified with any one specific

strategy, group of organisms, or application. There are many different combinations of livestock and hardware that can be assembled to work as refugia for a wide array of purposes. For the new marine aquarist beginning to read hobby literature it is a disappointing reality that some avenues will lead them to believe that *Caulerpa* macro-algae, for example, is synonymous with refugia. Such advice is misleading and falls woefully short of the tremendous potential of refugium applications. *Caulerpa* is indeed one of the many possible organisms worthy of target culture in refugia. However, it should not be promoted as the only or best organism above all. On the contrary, it is especially challenging and potentially problematic if not dangerous to employ by inexperienced or ill-advised aquarists. Namely, it is categorically a potent, noxious (toxic exudations) and precarious algae (unstable) that can be a wonderful boon or a fearsome scourge depending on how diligently it is kept.

## SOME OF THE BENEFITS OF A REFUGIUM

- Food culture (zoo- and phytoplankton, larger plants and algae)
- Nutrient export
- The mediation of water quality
- Ornamentation (mangroves and seagrass biotopes, eg.)
- The complimentary culture of certain organisms to support or limit the growth of others.

## Today's top tip

Bigger is better in matters of refugium size. Ideally, to make a favourable impact on water quality, use a refugium that is 20% of the display's total volume in size or greater. Indeed, for any application, build the largest refugium that is practically allowed.

For a more stable and less noxious alternative in green refugia seek *Chaetomorpha* (Spaghetti algae), *Ochtodes*, or *Gracilaria* (Ogo), for example. And I should say that *Caulerpa* is not at all "bad" for one's refugium, but simply rather presents special long-term challenges that need to be addressed.

Any plant or animal worthy of inclusion in the aquarium, of course, will have its own unique attributes and limitations. Simply aspire to discover which organisms are best for your particular system, and the husbandry required to sustain them. ■



PHOTO: WILSON/DAVID

This type of hang on refugium is becoming very popular among marinites.



# Today's Surgery

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



PHOTO: MARK CORRIE

Paradise fish and many other species of anabantid can harbour Fish TB.

ANABANTIDS ARE GENERALLY VERY HARDY fish. Most have evolved in very hostile environments (high temperatures, low oxygen levels, lots of decaying vegetation etc) and so the average aquarium is like a five star hotel to them. But some do have specific needs. Chocolate gouramis (*Sphaerichthys osphronemoides*) as an example need high temperatures and soft, acidic water for them to thrive. On the other hand temperate species such as Round-tailed paradise fish are actually more likely to become diseased and breed less often if kept at constantly tropical temperatures.

## Viral diseases

The main viral diseases of anabantids appear to be the Iridoviruses. One that is occasionally seen is Lymphocystitis. This disease appears to be more disfiguring than a serious health risk to the fish. Infections become established through cuts and abrasions. Once inside individual skin cells the virus triggers a massive growth so that these infected cells become very visible to the naked eye as large grey-white or yellowish nodules on the fins. They occasionally crop up elsewhere. This disease is usually self-limiting and will disappear of its own accord.

Another Iridovirus has been isolated from at least two species of gouramis. In the Dwarf gourami (*Coleistia latio*) an iridovirus caused mortalities whilst in varieties of the Three Spot gourami (*Trichogaster trichopterus*) an iridovirus has been linked to darkening of body coloration, lethargy, loss of appetite and abdominal distension. Death usually followed within 24 - 48 hours. There is no treatment for these infections.

## Ectoparasites

*Monogenean trematodes* (Skin and Gill Flukes). These flukes are particularly a problem in commercial gourami production. *Gyrodactylus* (the Skin fluke) may be an irritant if present in large numbers and will often attack anabantids that are otherwise ill or stressed - for example if they are being bullied. Fish sitting on the bottom with fins clamped will often have a high *Gyrodactylus* burden. Infested fish often show a darkened coloration. This fluke is livebearing and so is relatively easy to control. One or two treatments should destroy the whole population.

*Dactylogyrus*, the Gill fluke, can become a serious source of disease especially in young anabantids. These flukes attack the delicate gill lamellae causing damage and providing a means for secondary infections to establish. Affected fish will show gasping behaviour, flaring of the gill covers

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## PROTOZOANS

### External Protozoa

A real problem with anabantids is Velvet or Rust disease, caused by the protozoan *Oodinium*. Parasitic for only part of its life cycle, *Oodinium* contains chloroplasts (like plants) and so it can survive for some time off the host fish, providing it has sufficient light. As a result of this it can reproduce rapidly – so much so that its numbers can build up to a level where newly introduced fish can succumb and die within 12 hours. Infested fish often have a yellowish, dusty appearance due in part to the colour that the chloroplasts impart to the parasite. Affected fish show lethargy, loss of appetite, flicking, loss of normal coloration and uncoordinated, darting movements. Rapid and heavy breathing are common signs as the gills are preferentially infested by the parasite. Treat with metronidazole or quinine hydrochloride, or a proprietary copper based medication. Remember copper can be toxic therefore monitor with test kit.

*Trichodina* is another common protozoan parasite of anabantids. Microscopically it is disc shaped with a circle of rasping teeth that irritate the fish as the parasite feeds. Infested fish often show an excess of mucus production giving a thickening of the mucus coat to give localised areas of skin a grey-white appearance. They are most commonly found in the gills and soft tissues such as between the rays of the fins. Treatment is usually fairly straightforward as no resistant life cycle stage is encountered. One should begin by correcting any predisposing factors. In

freshwater ponds and aquaria these proprietary products containing formalin should be effective, or give the fish salt bath at 10-15g/litre for twenty minutes.

*Ichthyobodo necator*, (also known as *Costia*) is considered a normal skin inhabitant. If the immune function of the fish is affected then the numbers of *Ichthyobodo* increase. Affected fish are depressed, with fins clamped and they may "wobble". Standard protozoan treatments will usually do the job. Raising the temperature to over 30°C will help to eradicate this parasite.

*Heteropolaria* (*Epistylis*) is occasionally seen in Giant gouramis and *Colsia* spp. Groups of this parasite forms whitish tufts on the skin that strongly resemble fungal infections. Diagnose on microscopic examination of a skin scrape. Treat by swabbing the affected area with a povidone-iodine solution and then give a salt bath at 15g/litre for 3 hours.

### Internal Protozoa

Various internal protozoa have been described although their disease significance has not been established. Coccidial organisms *Eimeria macropoda* and another *Eimeria* sp. have been found in the intestines of the Round-tailed paradise fish and Three spot gourami respectively. A cryptosporidium-like parasite (*Piscikryptosporidium reichenbachlinkei*) has been described in the Pearl gourami (*Trichogaster leeri*). This too is of uncertain significance but it appears that this parasite embeds itself in the lining of the stomach giving it the potential to do much damage.

## Fungal Infections

Typical external fungal infections (*Saprolegnia*) are not uncommon in anabantids and are usually the result of secondary invasion of abrasions. Proprietary medications containing malachite green are strongly recommended. Remove visible fungus and swab the affected area with a 10% povidone-iodine solution once daily. Keep in a permanent 1 to 3 g/l salt solution until the problem has resolved. *Ichthyophonus* is an internal fungal infection that strongly mimics fish TB in the disease signs that it causes. Fish become infected after accidentally eating fungal spores. These germinate internally, penetrate through the gut wall and spread throughout the body via the blood circulatory system. There is no effective cure. ■

and irritation. The Gill fluke life cycle involves an egg stage that is relatively resistant to chemical attack and so repeated treatments are necessary for its control. Also useful is the dog and cat tapewormer praziquantel (Droncit, Bayer) as a bath at 10mg/l for up to 3 hours.

## Flagellates

Hexamita-like organisms have been linked to mortalities in anabantids. In Siamese fighting fish (*Betta splendens*) hexamita can cause multi-organ damage, affecting the liver and kidneys especially, whilst in Kissing gouramis (*Helostoma temminckii*) it has been linked to swimming abnormalities, emaciation, white stringy faeces and secondary bacterial infections of the skin. Treatment is with metronidazole at 50mg/l as a bath for up to 24 hrs daily for 10 days.

## BACTERIAL

The Cytophaga-like bacterium *Flexibacter columnaris* can be a particular problem in Siamese fighting fish. In this species it appears to attack the gills and possibly the labyrinth organ itself causing the fish to suffocate. This dramatic effect may in part be as a result of the way male fighters are reared. Each is kept in an individual jar or other container to prevent fighting and fin damage between rival males. This will also prevent exposure to common diseases so that their immune systems will be "naive" when the fish are finally introduced into a normal community aquarium. It is also the cause of "mouth fungus" and fin rot, common consequences of fin-nipping and other aggressions from more boisterous community fish such as barbs. Ulceration of the skin can occur. Proprietary antibacterial products may be of use but there may be resistance to them in some strains of *Flexibacter*. Salt added to the water helps, as does Chloramine-T. Antibiotics may be required.

Fish mycobacteriosis (Fish TB) is commonly due to *Mycobacterium marinum*, *M. fortuitum* or even *Nocardia* (isolated from farm-produced Giant gourami). Anabantids such as the Dwarf gourami and Paradise fish (*Macropodus* spp) do seem to be particularly susceptible to this infection. Signs vary from skin ulceration through to ascites (dropsy), weight loss and spinal deformities. The post-mortem picture will show multiple granulomas (thickened areas of inflammation) throughout the internal organs in which, with special stains, the mycobacteria can be demonstrated. These infections are very difficult to treat and are potentially infectious to people. If suspected or confirmed, infected fish should be humanely euthanased.



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Finally the real Montezuma swordtail was introduced by Don Claus Kallman.



Xiphophorus montezumae females are much more slender than other closely related species of swordtail.

that Donn's "real" monty was in fact another new species! This was described as *Xiphophorus nezahualcoyotl* in 1990, by which time another new "real" monty had been introduced to the aquarium hobby.

This was indeed, at last, the real *Xiphophorus montezumae* and a wonderful looking swordtail it is too. The most distinctive characteristic is the sword itself, in some males it can be twice as long as the body and absolutely magnificent! So far, the black speckled form has only been found in the Rio Gallinas population, but they may not be the only ones which have this coloration. However, what of that reddish to bronze colour mentioned in the original paper? Have any of those turned up yet? Until just last week I would have said yes and no! Several have been spotted in the wild but proven to be impossible to catch. However, I was discussing this colour form with an American aquarist and he said, "Oh yes, my mate's got them", I was stunned! Thoughts of hybrids crossed my mind, but

no, these are true *Xiphophorus montezumae* with red along the flanks. The fish concerned can be tracked back to a specific wild population and have only been kept by reputable aquarists who would not accidentally hybridise fish.

Looking at the pictures (sadly they are all low-res which will not reproduce in a magazine) they are not all red fish like the *X. helleri* hybrids. Rather there seem to be distinct horizontal zones along the sides both above and below the lateral stripe. Apparently this colour does not seem to develop until the sword is fully formed – but even then an algae-rich diet may be required since the colour did not appear in indoor set-ups but only in greenhouse reared fish.

So there we have it, 90 years after the "Montezuma swordtail" first hit the headlines in Europe we finally have the real McCoy! ■

## AQUARIUM CARE

Regardless of which of the "Montezuma swordtails" you have, aquarium care and maintenance should be the same. First of all, despite where Dr Myron Gordon caught Cortez's swordtail, all swordtails need clean well filtered aquaria. Water changes are very beneficial and you should aim to change at least 50% every week, more frequently would do no harm. Water conditions can vary but on the whole hard, alkaline water is best for these fish. Decor can be from nothing very much at all, right through to a fully planted aquarium. Steer clear of bogwood as this acidifies the water over a period of time and since they tend to scuttle around the bottom and hide in plants near the substrate, make sure there is plenty of cover over the bottom of the aquarium. They will eat all foods ravenously but live foods are an essential part of their diet if you want them to achieve their full potential.

## BREEDING

These fish produce broods on a monthly cycle, however, the exact number of days between broods will depend a little on temperature and species. I work on 20 days as a guide and make sure any female I want to save fry from is in a maternity tank at around that time. Maternity aquaria tend to be smaller than normal tanks, have shallow water and are stuffed full of plants. This way the fry have plenty of hiding places after birth. The shallow water is a hangover from years ago when a very experienced aquarist told me that you could reduce the number of "belly sliders" (these are babies with defective swim bladders) by keeping the female in shallow water to give birth. I don't know if it really makes much difference but I have always done it that way and "belly sliders" are something I very rarely see in any of the fry born in such conditions. As soon as the female has given birth, I remove her to the adult tank, take out all the plants and feed newly hatched brine shrimp. Over the next week I raise the water level until the aquarium is full and then move the fry into a 60cm aquarium with gentle filtration. Here they grow on for several months before being transferred to a 90cm or 120cm tank with a power filter. If they are fed well, kept cool (22°C) and enjoy regular water changes, you can expect your fish to reach full size in anything from 10-18 months.





# Monty who?

The real Montezuma swordtail can be found here at Tamasopa waterfall.

PHOTOS: DEREK LAMBERT

It is 90 years since Montezuma swordtails were first “introduced” to the aquarium hobby. Since then we have had 4 different species named “Montezuma swordtails”. **Derek Lambert** unravels one of the most tangled webs of misidentification in the aquarium hobby.

IT ALL STARTED WAY BACK IN 1886 WHEN Jordan and Snyders described the Montezuma swordtail from the Río Frio of the Panuco river system. In that paper they did mention that some males occur with reddish to bronze colour on the body and black spotting, so I suppose it was not totally unreasonable in 1913 for Herr C. Bruening, the editor of the leading German aquarium fish magazine, to think a reddish,

black spotted swordtail was in fact *Xiphophorus montezumae*. Several well known scientists took this fish on board and we were well on the way to establishing a probable platy-sword cross as the “Montezuma swordtail”.

Dr Myron Gordon tried to sort this one out. In the early days of March 1932 he was travelling through Mexico with a Cornell University expedition. After miles of twisting

mountain road our intrepid collectors finally dropped down to the banks of a river at Tamazunchale (known as Thomas an’ Charlie to American tourists at the time). There was no suitable place to seine this river, so they continued north to the Río Axtla where they camped for the night. Next morning they were up bright and early checking for good places to seine. One obvious one beckoned, a 7 x 3m pool. No-



Dr Donn Eric Rosen introduced *Xiphophorus nezahuacoyotl* as the "real" monty.



A mature female *Xiphophorus nezahuacoyotl* like this one can produce over 30 fry in a brood.



Dr Myron Gordon introduced *Xiphophorus cortezi* as the "True Montezuma Swordtail".



one on the trip was really keen to delve into the dark, dank and stagnant waters of this pool, even the tadpoles seemed to be trying to escape by pushing their noses through the oily surface! Still science won out over personal comfort (they probably had enthusiastic students with them and sent them in to do the dirty work!) and a seine was duly run through this most unpromising of habitats.

Once lifted out of the water the sight which greeted Myron and his colleagues left them gob-smacked! Fifty of the most beautiful livebearers they had found on this trip so far were flipping around in their net. Most beautiful of all were the Variatus platies (*Xiphophorus variatus*), with their bright yellow dorsals and scarlet tails. Not far behind them were the "true Montezumas" as Myron was to call them. These had golden fins, small similar like swords and were nothing like the fish already in the hobby as "Montezuma swordtails". These were duly shipped back to America and the "real" monty established in captivity.

Dr Donn Eric Rosen tried to sort this one out. After more collecting trips and proper comparisons with the type specimens it was realised that Myron's "real" monty was in fact a new sub-species! Donn described it as *Xiphophorus montezumae cortezi* in 1960 with it later being raised to full species status. During the research for this paper new live collections were brought back to USA during the late 1950s. These were collected in the Rio Salto and were the "real" monty, with aquarium stocks being derived from these new collections. A later collection came in through Hamburg, Germany in 1964.

Dr Klaus Kallman and others have sorted this one out. After more collecting trips, proper comparisons with type specimens and years of captive breeding with various populations of swordtails, it was realised





Finally the real Montezuma swordtail was introduced by Dr. Claus Kallman.



*Xiphophorus montezumae* females are much more slender than other closely related species of swordtail.

that Donn's "real" monty was in fact another new species! This was described as *Xiphophorus nezahualcoyotl* in 1990, by which time another new "real" monty had been introduced to the aquarium hobby.

This was indeed, at last, the real *Xiphophorus montezumae* and a wonderful looking swordtail it is too. The most distinctive characteristic is the sword itself, in some males it can be twice as long as the body and absolutely magnificent! So far, the black speckled form has only been found in the Rio Gallinas population, but they may not be the only ones which have this coloration. However, what of that reddish to bronze colour mentioned in the original paper? Have any of those turned up yet? Until just last week I would have said yes and no! Several have been spotted in the wild but proven to be impossible to catch. However, I was discussing this colour form with an American aquarist and he said, "Oh yes, my mate's got them", I was stunned! Thoughts of hybrids crossed my mind, but

no, these are true *Xiphophorus montezumae* with red along the flanks. The fish concerned can be tracked back to a specific wild population and have only been kept by reputable aquarists who would not accidentally hybridise fish.

Looking at the pictures (sadly they are all low-res which will not reproduce in a magazine) they are not all red fish like the *X. helleri* hybrids. Rather there seem to be distinct horizontal zones along the sides both above and below the lateral stripe. Apparently this colour does not seem to develop until the sword is fully formed – but even then an algae-rich diet may be required since the colour did not appear in indoor set-ups but only in greenhouse reared fish.

So there we have it, 90 years after the "Montezuma swordtail" first hit the headlines in Europe we finally have the real McCoy! ■

## AQUARIUM CARE

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# In a GIANT'S Footsteps



In *Points of view* our new (old) column, **Dick Mills** is in the chair for your opinions.



MANY YEARS AGO, A YOUNG TEACHER living in Northern Ireland close to the Giant's Causeway in Co. Antrim had an idea. Knowing that fishkeepers anywhere, and everywhere, love an argument (OK we'll call it a debate!) he decided to act as a moderator (you can still find them on Web Forums today) on any fish keeping subject readers cared to send in to the *Aquarist & Pondkeeper* magazine. He was, of course, the much-missed Billy Whiteside who chaired the *What's Your Opinion?* Column.

Never one to let a good idea slip away, the present Editor has decided to re-run the idea and invited me to act as your host. We all come with personal views and preferences (Billy's was rough-service, 40 watt tungsten lamps for best plant growth)

and I suppose mine is now keeping my modest-sized marine tank going, an interest that recently replaced freshwater Angelfish in my affections. I won't be acting either as judge or jury but just presenting **YOUR VIEWPOINT** for everyone else to consider.

I know that the Editor has already drawn up firm guidelines as to what will be acceptable content (*Ed note: You bet I have!*) so please don't let's have any personal (or commercial) soapboxes or acrimonious accusations. Whether this column will expand to the same extent that *WYO?* did will depend more on your participation than the Editor's ability to make room for it - we would much prefer the luxury of editing a long letter than the agony of trying to invent one! So now it's over to you.

### Do fish feel pain?

We start off with a couple of different subject matters - fish physiology and nutrition. Each viewpoint may give you food (whoops! Sorry about the pun!) for thought: one may set your mind at rest, the other may well improve your aquarium's quality of life.

Patrick Hickling from Leicester writes: "*I thought you would be interested in the enclosed article from the Countryman's Weekly. Not being a scientist myself, I don't suppose what I think counts, but I cannot agree with J.D. Rose. I was a fisherman for many years, the fish would always take the bait and hook in their mouths, and as soon as you made a strike with the rod, the fish would take off like a train. These were big*



Carp and Tench, so they must have felt something. I would be interested to hear the views of both your experts and readers on this subject."

Here's an abridged version of the article. **Zoology expert claims fish don't feel pain.** A Professor of Zoology has reported on his scientific research that confirms the views of anglers around the world that fish are incapable of feeling pain. His conclusions show that their brains are not sufficiently developed to allow them to sense pain or fear.

James D. Rose, a professor of zoology and physiology at the University of Wyoming, USA, has recently completed the largest academic study into piscine neurology when he compared the nervous systems and responses of fish and mammals. The research examined data on animals' responses to pain and Professor Rose published his report in the American academic journal *Reviews of Fisheries Science*. He claims that his research demonstrates how awareness of pain depends on functions of regions of the cerebral cortex, which fish do not possess. Pain depends on awareness.

Professor Rose said that previous studies, which had indicated that fish do feel pain, had confused 'nociception' - the action of responding to a threatening stimulus - with feeling pain. He said: "Pain is predicated on awareness". The key issue is the distinction between nociception and pain. "A person who is anaesthetised in an operating theatre will still respond physically to an external stimulus, but will not feel pain. Anyone who has seen a chicken with its head cut off will know that, while its body can respond to stimuli, it cannot be feeling pain."

The professor suggested that, although many people will not agree with his conclusions, none of his opponents have yet to challenge his work scientifically. Rodney Coldron, from the National Federation Anglers, told the *Daily Telegraph* (11.02.03) that he hoped the new findings would vindicate the sport. He said: "I am glad this report has come out and killed off that silly argument. Fish can obviously become distressed but anyone that actually goes fishing knows that they don't feel pain in the same way as mammals."

We fishkeepers know that fish react under stress, caused by many factors - poor living conditions, drastic temperature changes, being chased by a net even; as a result they lose colour, appetite and may even contract disease but do you have an opinion as to whether they can actually feel pain? ■

### Contact Points of view

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

## New method of feeding



Change your feeding method and watch your corals grow!

**Andrew Caine of Aqua World partners** describes a new concept in the way we actually feed our fishes and maybe his suggested practice could benefit all fishes, not just marines.

He says "Your marine aquarium will improve in one simple step, it won't cost you a single penny and it's not another product either. Now you don't hear that every day do you? All it will cost you is a little time enjoying your aquarium. Your water quality will improve, as will all aspects of livestock health and vitality. You're not adding anything extra to your aquarium beyond what you already do, so you are not putting your aquarium at any risk whatsoever.

If, after reading Today's Fishkeeper April 2003 ('A New Feeding Method for the Marine Aquarium' by Mark Howarth and myself) you want to change feeding methods but can't afford computers and other equipment, here's what to do:

Let's suppose a person feeds their reef in the following manner: 2 cubes of frozen food, 2 drops of vitamins and 5 ml of liquid coral food daily. One cube is fed in the morning the other cube along with the coral food in the evening.

Change to the following method of feeding and the results will be astounding. Take the two cubes of frozen and 5 ml of coral food, add 2 drops of vitamins all together in a tall glass, say half a pint size, and allow to defrost and stir. Watching TV? When the adverts come on, get up and tip a small amount of food in, sit down, adverts again, get up, stir and tip a bit

more in. Going to get a cup of coffee? Stir and tip a bit in, coming back with coffee, stir and tip a bit in and so on. Instead of dumping in the food twice a day feed 10, 15, 20 times a day if possible, the more the better the results will be. If you follow my advice you will see a big, if not huge, improvement in two to three weeks.

There are now over 50 people in the North West doing this (people getting the best results feed at least 10 times per day, 5 days per week or more) but we have not increased their food injection, just spread it over time.

Every person, bar one, who has taken this method has reported a distinct improvement in the water quality and health of their livestock. The one person who had to stop did so because they already had Flatworms, and the new method caused a Flatworm population to increase; with this in mind please ensure that you have no such animals within your aquarium. Take more time to feed your animals and, in three weeks, contact Today's Fishkeeper to tell them how your aquarium has improved.

Having got the new column off the ground, here's a subject you might like to consider in the light of the first 'opinion': given that some species not only accept the addition of cooler water but actually find it a stimulus to spawning - how come we're always being guided to take such care over the temperature of replacement water? Additionally, what's your experience of the toleration of your fish to good old fashioned 'neglect' on your part? Do tell us, we promise to keep it a secret!



# Woody wonders



Once complete the bogwood instantly becomes a focal point in any aquarium.



Peter Hiscock shows you how to turn an ordinary piece of bogwood into the perfect home for plants.

PHOTOS: PETER HISCOCK

THERE ARE MANY REASONS WHY PLANTS may not thrive in an aquarium, in most cases it is an inadequacy of one or more of the four major plant requirements: good lighting, nutrient supply, carbon dioxide and a suitable substrate. Additional factors such as water conditions and incompatible fish may also cause problems. One solution to these difficulties is a complete aquarium overhaul and the installation of additional equipment to create an ideal environment. Taking this route is time consuming and expensive but ultimately rewarding, although for the majority of fishkeepers it is the point at which artificial plants begin to look more attractive. There is another option however; through careful selection of plants and an alternative planting method it is possible to add greenery to the

aquarium without vastly changing the environment.

As with fish and other animals, plants have evolved to survive in a vast array of environments and habitats. In some cases this has led to plants that prefer not to root in a substrate medium, but onto solid objects such as rocks or crevices in tree roots and driftwood. There are some advantages to the plant in choosing this method, competition is minimal and the plant is unlikely to be swept away by currents or dug up by fish or larger aquatic animals. The disadvantage is that nutrients must be obtained from the surrounding water rather than a nutrient rich substrate and such locations are often shaded by overhead foliage. To combat these disadvantages, the plants are slow growing and so use less nutrients, carbon dioxide, and light. Many of these plants

Giant red rotala is best placed in the midground area of a well-planted aquarium.





also exhibit dark green leaves caused by an abundance of the light utilising chlorophyll pigment which suggests that they use light more efficiently. These conditions have produced some plants that are perfectly suited to the less than perfect aquarium environment. No complex substrate is needed, the plants require only minimal light and carbon dioxide and in many cases are suited to a wide range of water conditions. Typical plants that fit into this group are Java Fern (*Microsorium* sp.), Anubias sp., and the African or Congo Fern (*Bolbitis heudelotii*).

To prepare these plants for planting on rocks or wood they should be stripped of any pots and rooting medium and the roots trimmed to around 1cm. Trimming the roots will encourage the production of new roots that will attach to the wood or rocks. The plants can then be tied to a piece of wood or lava rock with black cotton. Using a number of different plants on a single piece of wood and placing the planted wood either horizontally across the substrate or vertically towards the surface can create a good display. The finished piece can sometimes look a little untidy, with bare roots exposed and black cotton clearly visible. A good finishing touch that will hide any exposed areas can be created by covering some of the wood with an aquatic moss such as Java Moss (*Vesicularia dubyana*) or for cooler aquariums, Willow moss (*Fontinalis antipyretica*). These mosses also need to be attached with cotton and will root and spread across the wood or rock. All the plants mentioned here are relatively hardy and should need minimal care including occasional removal of dead or old leaves, trimming and regular addition of a liquid fertiliser.

## A plant for any aquarium – Giant hygrophila

There are several varieties of Giant hygrophila *Hygrophila corymbosa* available, each with varying leaf structures. Most of these plants are very hardy and easy to care for and will do well with moderate lighting and nutrients, although they may not flourish in very soft water. The leaves are tough and have a firm stem, giving the appearance of tree branches or terrestrial foliage. Bright light and regular pruning will create a more compact, bushy plant that will take up large areas of the back or midground. If the plant is not receiving enough iron or carbon dioxide, it will produce light green leaves with visible veins that can look quite attractive but may be soon followed by slow growth. Cuttings containing at least 6-8 leaves can be regularly taken and replanted.

## HOW TO ATTACH PLANTS TO BOGWOOD

### Step 1.



Lay out all the ingredients on a suitable work surface.

### Step 2.



Remove the plants from their pots and trim their roots back.

### Step 3.



Fix each plant to the wood by tying it in place with black cotton.

### Step 4.



Use Java moss to cover up any unsightly roots or cotton which is left showing.

### Step 5.



The finished item is now ready for positioning in the aquarium.



## A specimen plant – Giant red rotala

Giant red rotala (*Rotala macrandra*) is a beautiful stem plant which produces numerous small pink-olive green leaves with a papery or silk like appearance. The stunning leaf colour can only be maintained with strong lighting and an iron rich substrate. The stems and leaves are easily damaged so do not be surprised to find that after initial introduction the plant begins to lose leaves before becoming established and starting to grow. The plant can reach up to 50cm although it often looks best when kept to around half this height. Warmth is required (25-30°C) and a good overall environment is essential for this demanding plant to thrive. Best kept in a densely planted aquarium with small fish and plenty of available nutrients. A beautiful specimen plant.



Giant hygrophila is best grown between 20-28°C but will grow in unheated aquaria and can reach up to 50cm.

## Something for the pond – Water hyacinth

Floating plants are as functional as they are decorative in the pond environment. Shade provided by the plants is welcomed by fish and also helps to avoid the pond becoming too warm during the summer. The long trailing roots produced by Water hyacinth (*Eichhornia crassipes*) is a fast spreading plant will also help to quickly use up nutrients in the water, starving algae and acting as a filter to remove harmful waste substances and tapwater pollutants. Water hyacinth has an unusual waxy-leaf appearance and can grow quite large, with leaves reaching up to 15cm. Each central plant will produce several daughter plants on thick shoots and once established, will spread rapidly and may even need regular thinning. Water hyacinth is a tropical species and will not survive over winter in our temperate climate, which is just as well, as its invasive nature can cause havoc in natural waterways. ■

If water hyacinth is introduced to the pond early enough in mid-spring, and experiences a good summer, it may produce beautiful lilac coloured flowers on spikes up to 30cm above the plant.



## PROBLEM CONTROL – WATER HARDNESS

There is a widespread opinion that plants will only thrive in soft water although as ever, the subject is a little more complex. In fact, plants will thrive in both soft and hard water provided that other conditions are met and in many cases, it is soft water that presents problems to plants. Different species of plant will prefer different levels of water hardness depending on their nutrient requirements. Hardwater plants often require high levels of potassium (K), calcium (Ca), and magnesium (Mg) that are deficient in softwater. Hard water, however, is often deficient in carbon dioxide and micronutrients, which bond with minerals and become difficult for softwater plants to utilise.

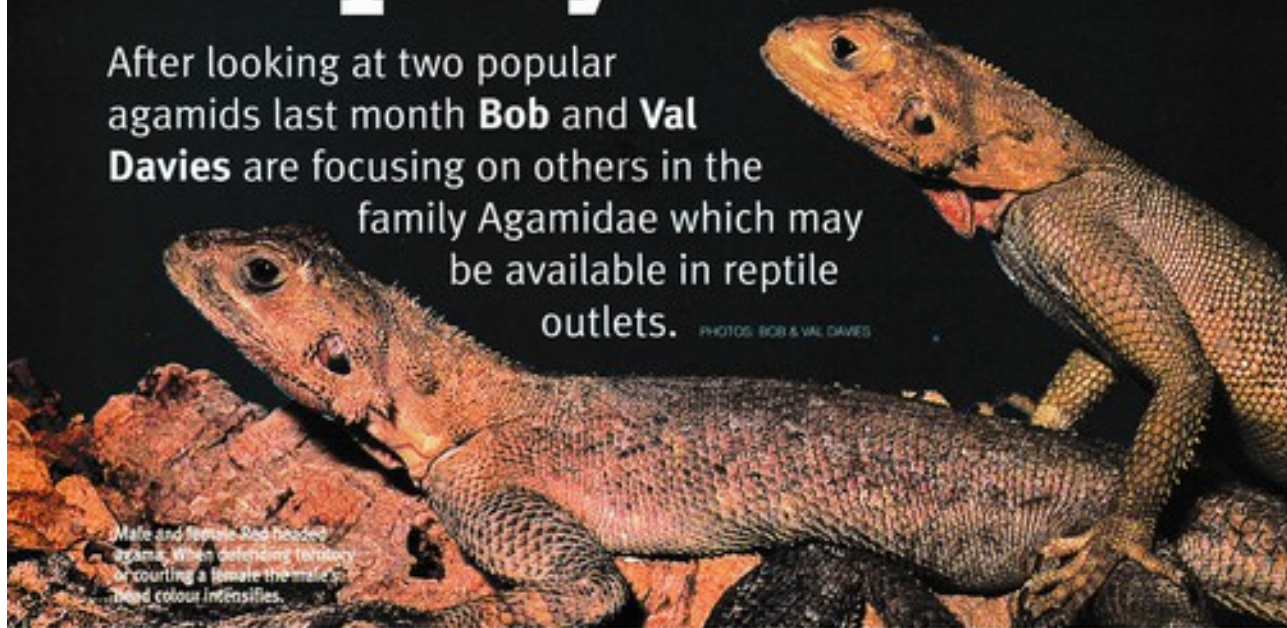
To keep a mix of plants in the aquarium there is a simple solution for both hard and softwater aquariums. For hardwater aquaria, the addition of a carbon dioxide unit will provide a continual supply of carbon dioxide and either a deep substrate with a nutrient rich additive or the use of a liquid fertiliser will introduce micronutrients. Unless the water is very hard (20-30°dGH) the majority of micronutrients should remain in a chelated (usable) form. For softwater aquaria, the deficient elements K, Ca, and Mg will need to be added, especially if plants such as *Vallisneria* sp. or Amazon swords (*Echinodorus* sp.) are to be used. Adding these elements is essentially the same as raising the water's hardness and can be done with a proprietary trace element, mineral or buffer additive. These additives are easily available at most aquarium retailers, sold in powder or liquid form and often used for adding to reverse osmosis water.



# Colourful Heads & Spiny Tails

After looking at two popular agamids last month **Bob** and **Val Davies** are focusing on others in the family Agamidae which may be available in reptile outlets.

PHOTOS: BOB & VAL DAVIES



Male and female Red-headed agama. When defending territory or courting a female the male's head colour intensifies.

THE 60 SPECIES AND SUB SPECIES OF agamas have a wide distribution in the Old World. They occur from Africa and south western to central Asia. They can be found in mainly dry habitats, along forest edges, rocky areas, sand deserts and in mountain regions. However, very few have been or are imported. Agamas have triangular shaped heads, strong limbs and either dorso-ventrally flattened bodies (as in Starred agama) or more laterally compressed bodies (as in Red-headed

## WHAT'S IN A NAME?

There can sometimes be some confusion over some scientific names as there has been a revision of the family and certain genera and certain species formerly in the genus *Agama* now appear in some literature as *Laudakia*.

agama). Although scalation varies somewhat according to species most agamas tend to have rough, spiny scales especially on the tail. In the wild some species such as the Red-headed form colonies where males vie for dominance by head bobbing and intensifying the distinctive head coloration. Regional variations and sub species will exhibit differences in coloration. As well as red there are green, yellow or blue heads. Unless possessing a very large enclosure it is better to keep a single male with one or two females. Two males, in too small an enclosure, could produce a stressful situation for the less dominant one.



A pair of Starred agamas - must be one of the most attractive members of the genus.

## Red headed or Common agama (*A. Agama*)

Probably the best known, these were frequently seen in large numbers in dealers. More recently numbers imported seem to have reduced. In the past they were heavily parasitised both internally and externally; some infested with huge numbers of ticks. Once treated and cleaned up they are not difficult to keep and breed. Major requirements are high



**BLUE HEADED OR TREE AGAMA (*A. ATRICOLIS*)**

Blue headed or Tree agama. These need sturdy branches and a more humid environment than other agamas.

This species from East Africa is semi arboreal and grows to about 25-30cm. Very attractive, males in breeding condition have a coppery green to turquoise blue head, the sides of the body are bluish grey green with a black shoulder spot on each side. The tail is dull green to olive brown. Females and non-breeding males tend to be olive to green brown with the black shoulder spots. This species has thrived in our collection at a temperature slightly lower than that given in the chart above. The problem is that with such a wide distribution conditions in the wild will show some variation so unless its exact origin is known extremes should be avoided. One difference between this and the other species described here is that this tends to require slightly humid conditions - avoid over wetting. A larger water bowl together with a daily misting will provide sufficient humidity.

temperatures and full spectrum light. However because this species tends to be very cheap not many keepers attempt to breed them. Coming from Africa and growing to about 30-35cm the basic colour is greyish brown. The male's head becomes bright red in the breeding season. Although a ground dweller, in the wild they are often found on the walls of houses. Local people don't like them maintaining they carry disease.

**Starred or Hardon agama (*A. Stellio*)**

A popular agama for many years and strongly resembling bearded dragons. This is one species transferred to *Laudakia* together with its more colourful sub species *Laudakia stellio brachydactyla*. Although classed as a sub species it may just be a regional variation. Distribution ranges from Greece, Turkish islands through Lebanon and Israel to

Egypt. Starred agamas have flattened bodies and grow to about 35-40cm. Coloration varies from pale yellowish to orange brown with orange to yellow patches on the dorsum. These patches have been described as star shaped - hence the common name. This is one species of agama that is being bred in captivity in increasing numbers although wild caught imports are found regularly in dealers. Somewhat more expensive than the previous species but rewarding to work with. ■

**CAPTIVE CARE**

**Vivarium size** :- Minimum of 90 x 60 x 60 cm for a pair. Important to note that these are active lizards and require space.

**Substrate** :-Dust free sand.

**Décor** :- A sturdy rock firmly positioned under basking lamp. Cork bark shelters. Other rocks to climb on. Alternatively a strong branch may be used. Small water bowl or lightly spray rocks in morning.

**Humidity** :- Very low (for Blue headed or tree agama see additional note in species text)

**Temperature** :- Day 32°C at hot spot. Night 21°C. 14 hour photo period. UVB light essential.

**Diet** :- Usual insect fare dusted with multivitamin/calcium supplement.

**Breeding** :- A slight reduction in both day and night temperatures and photo period for about 50 weeks.

**Eggs and incubation** :- 8-14 eggs (depending upon species) with 2 possibly 3 clutches per season. A moist area of substrate must be maintained without too much increase in vivarium humidity - therefore ventilation is essential. Incubate in water and vermiculite in ratio of 0.8 : 1 at 30°C takes about 75 to 90 days.

**GROUND AGAMA (*A. ACULEATA*)**

Not as frequently available as the previous ones but worth seeking out is the ground agama from sub-Saharan Africa. Somewhat smaller at 15-20cm it is reddish brown with a yellowish dorsal streak. Several paired darker blotches along the back become bars on the tail. In breeding condition males develop blue sides to the head.



Male Ground agama starting to come into breeding condition.



# Koi world



Bernice Brewster highlights a common problem in many Koi ponds at this time of year.

## Gasping for air

WITH THE ONSET OF THE WARMER MONTHS, a fish biologist's thoughts turn once again to matters of dissolved oxygen. I write about the topic of dissolved oxygen on an annual basis because it is just so extremely important and yet I feel it is still the one parameter that remains untested in our Koi ponds. We are extremely concerned that the water should be free of ammonia and nitrite and whilst not advocating the Koi should be swimming in a polluted pond, they will do their damndest to survive such conditions. On the other hand, neither us, or our Koi can live without that vital gas, oxygen. As the water temperature warms through the summer months, oxygen does not dissolve as readily, the problem is compounded by the fact that the biological filter is the biggest oxygen sink on the pond and the warmth has the bacteria working at maximum capacity. The Koi are also very active in the warm weather and as a consequence, their oxygen demand is at its greatest, when this vital gas is at a premium.

It is always assumed that if the oxygen concentration in the water is a bit low, the Koi will be seen mouthing or gasping at the water surface. In this type of scenario, the Koi are indeed gasping and once seen at the water surface, the situation in the pond is critical and they are within minutes of dying. Typically, low dissolved oxygen concentration is characterised by the Koi becoming very lethargic, very quiet and not feeding. Behaviour that is more typical of mid winter than the summer.

Whilst we may think there is sufficient oxygen in the pond, if we were to test the pond on a regular basis, we might be horrified to discover that we teeter along with just about the acceptable minimum dissolved oxygen concentration of 6 mg per litre, but this value drops significantly throughout a daily period.

A question that is often posed to me concerns the failure of Koi to spawn, even though the females appear to be full of eggs. In order for the eggs to mature and the females to ovulate, their oxygen demand actually increases to 100mg oxygen per kilo body weight per hour. It



Use a large aerator if your pond is densely stocked with fish.

doesn't seem a great deal of oxygen but then when you add on the requirement for all the others in the pond and if we were truthful, we might even admit that we all tend to overstock our ponds. Then, it seems quite clear why our Koi do not always spawn when we think they are ready.

In addition to affecting the reproductive cycle of the Koi, low dissolved oxygen concentrations have profound effects on their physiology, which if permitted to continue could manifest in the form of chronic disease.

So, the first point is to buy a dissolved oxygen test kit and use it regularly, don't assume the venturi fitted on the aging pump is sufficient to adequately aerate the water. If the dissolved oxygen concentration in the pond is unsatisfactory, there are a range of air blowers which have come onto the market that can be quickly fitted to the pond to rectify the situation. It may even be worth considering replacing that elderly pump. As they age, they work less efficiently, which is compounded by friction and scaling in the pipe work, all factors that can contribute towards low dissolved oxygen.



# ...End Point

Puffers are some of the real characters of the fish world, yet they are certainly not for the beginner. **Kathy Jinkings** has picked one of her favourites.



PHOTO: MIKE OBER

Mbu puffers must have shell fish or snails in their diet to help grind their beak down to the correct length.

THE MBU PUFFER IS A STRIKINGLY BEAUTIFUL fish, with a yellow stomach and yellowish white upper body marked with black reticulations. It shares the fascinating characteristics of all the puffer fishes, but unusually is only found in fresh water. It is also found regularly in aquatic outlets, usually as small specimens, and is guaranteed to resolve any small problem that you may have. With all this going for it, it sounds a wonderful fish to keep, and many people often end up taking one home. Unfortunately, the Mbu is suitable only for a dedicated fish keeper, and most of these Mbus are destined for homes where they will rapidly outgrow their tanks, their growth fuelled by having eaten all their tank mates!

All this group of puffers have a powerful mouth with four crushing teeth which are

## CAN THEY BE BREED IN CAPTIVITY?

The Mbu puffer lays eggs, but as they are impossible to sex and a tank large enough for breeding would need to be vast, a puffer breeding project is best left to public aquaria.

nearly fused to make a beak, designed for crunching shellfish. This makes them ideal as snail devourers, as no snail shell is proof against these crushers. Unfortunately, no other fish are proof against them either, and the Mbu is an irritable and aggressive fish which is listed in aquarium literature as growing to 30 cm long, but can in fact reach over double this, and reputedly a weight of 6.5 kg.

For the serious keeper who is prepared to give this undeniably attractive and fascinating fish a home, this means not only a large tank, but a large supply of shellfish (including snails). Earthworms are also enjoyed – basically if it is alive and small enough, the Mbu will eat it. Hefty appetites result in equally hefty wastes, and a powerful external filter will be an essential. The water should not be too soft, and of a neutral pH. Either a sand or gravel bottom can be landscaped with plants and large pieces of décor, but be sure to leave plenty of swimming space. Do not irritate your puffer to try and make it puff – all you will end up with is a stressed and unhealthy fish. It is unlikely many fish keepers would consider eating their charges, but this is especially unwise in the case of the Mbu, whose flesh is poisonous. The Tetraodon puffers contain tetrodotoxin, a lethal alkaloid of which a single milligram is enough to kill an adult.

For anyone who has the room to provide a large tank for a single fish, a Mbu puffer is a good choice. They are not hard to feed or keep, will provide a spectacular display, and are on occasion known to become quite tame (although caution should be exercised, as fingers can also be crushed). However, for anyone who is looking for an interesting community fish, or has been told this would make a good snail cure... keep looking, away from the pufferfish! ■

## PROFILE

<b>Name</b>	Mbu Puffer, Giant Puffer
<b>Scientific name</b>	<i>Tetraodon mbu</i>
<b>Size</b>	75cm
<b>Aquarium type</b>	Large tank as a single fish
<b>Distribution</b>	Middle and lower Congo river in Africa
<b>Diet</b>	Live foods, meat and shellfish or snails
<b>Temperature</b>	22-26°C