

Today's Fishkeeper

DISCUS Problem Solver

All your
questions
answered

Marines
Exploding
the myths

NEW Fish
Paradise
Threadfin

EXPLORATION
Kalbar Extravaganza

BEGINNERS
10 Golden Rules
of Fishkeeping

FROM BEGINNER TO ADVANCED



JANUARY 2002

Today's Fishkeeper

inside this month

BEGINNERS

- 6 Starting point**
Just beginning in the hobby?
Pat Lambert writes especially for you.
- 10 Fishkeeping answers**
All your questions answered.
- 18 Today's guide to a big fish community**
Kathy Jinkings guides you through a selection of large fish suitable for a community tank.
- 48 Today's Surgery**
Our resident vet, Lance Jepson, has some helpful advice on how to quarantine your fish.
- 52 Sea View**
Andrew Caine takes a close look at Aqua Medic's Calcium Reactor 400 and Nitratoreductor 400 and has another fish and invertebrate for you to keep.
- 67 Koi World**
Bernice Brewster takes a close look at the life expectancy of pond liners.

TROPICAL/MARINE/COLDWATER

- 6 Starting point** **COVER STORY**
Just beginning in the hobby?
Pat Lambert writes especially for you.
- 48 Today's Surgery**
Our resident vet, Lance Jepson, has some helpful advice on how to quarantine your fish.

MARINE

- 14 Fishkeeping answers**
All your marine questions answered.
- 22 Shrimp Cocktail**
All Nilsen continues with his introduction to shrimps and prawns.
- 52 Sea View**
Andrew Caine takes a close look at Aqua Medic's Calcium Reactor 400 and Nitratoreductor 400 and has another fish and invertebrate for you to keep.
- 62 The Myth of Nutrient Poor Reefs** **COVER STORY**
Dr Ronald L. Shimek starts a new series on feeding corals.

PONDS & COLDWATER

- 16 Fishkeeping answers**
All your coldwater questions answered.
- 30 A moving experience**
Dave Bevan reports on how Martin overcame a Koi keeper's worst nightmare - moving house and ponds not once but twice.
- 67 Koi World**
Bernice Brewster takes a close look at the life expectancy of pond liners.

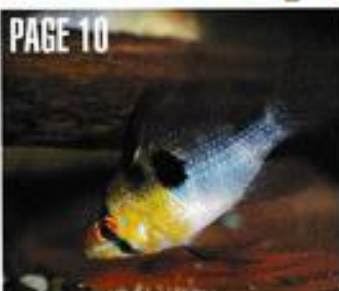
TROPICAL

- 10 Fishkeeping answers**
All your tropical questions answered.
- 18 Today's guide to a big fish community**
Kathy Jinkings guides you through a selection of large fish suitable for a community tank.
- 26 Kalbar extravaganza** **COVER STORY**
Heek Hai Tan goes in search of rare anabantoids in Indonesia.
- 34 The small and beautiful Peacock Goby**
Derek Lambert gives some practical advice on breeding in this extract from his new book.
- 46 Cutting edge** **COVER STORY**
Pete Liptrot profiles The Paradise Threadfin *Polynemus paradiseus*.
- 56 Corys & Cats**
Ian Fuller, chairman of the Catfish Study Group (UK), identifies some of the 'Spotted ones'.
- 60 Discus problem solver** **COVER STORY**
Tony Sault solves some of your problems.
- 82 End Point**
Pete Liptrot introduces one of the more desirable of Dwarf Cichlids - *Apistogramma elizabethae*.

PLANTS

- 66 Seeing Red**
John Tate suggests a beautiful plant to grow in your aquarium and has some vital tips on lighting.

PAGE 10



PAGE 18



PAGE 22



PAGE 26



PAGE 30



tropical marine coldwater & ponds plants regulars

Continued over ▶

JANUARY 2002 TODAY'S FISHKEEPER 3



Happy New Year!

This issue I am pleased to introduce a new occasional contributor to *Today's Fishkeeper* – DR Ronald Shimek. He is a marine ecologist who has studied nutrient processes in marine ecosystems and has some pretty strong views about some of the aquarium literature. When he started to keep reef aquaria and here I quote Ronald's own words "I discovered that most of the reef aquarium 'references' had rather 'entertaining' discussions of

nutrients, nutrient-transfer processes and ecological relationships in general on reefs. Unfortunately, those entertaining discussions had about as much relationship to what is really occurring with coral reef animals, as astrology does with astrophysics". Harsh words, but sadly, often all too true. This issue Ronald explodes the myth of nutrient poor reefs.

We need your help

Later this year we will be launching a new web site for *Today's Fishkeeper*. Obviously we have a fairly good idea of what will be going on the site, however, input from our readers is needed. What do you want to see on there? Send an e-mail to me at aandpeditor@btinternet.com

On another subject, does your local aquarium shop sell *Today's Fishkeeper*? If not, why not? While most magazines are sold through newsagents, it makes far more sense for them to be sold at your local aquarium shop. Take a magazine along next time you visit and suggest they get in touch with us. The number to call is 01673 885352.

Until next month,
Happy New Year,
From Derek and the team at TRMG

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NEWS & VIEWS

- 38 Product reviews**
Eheim's 2010 internal filter receives its final review and we look a look at three new foods from Nishi-Aquaria.
- 39 Trade Talk**
Arcadia revamp their web site, we have some new products from DUPLA and SeaClear Acrylic Aquariums also performs a web site makeover.
- 40 Letters**
- 42 Today's Diary dates**
- 44 Club News**
- 46 Cutting Edge**
Pete Liptrat profiles The Paradise Threadfin *Polynemus paradiseus*.

REGULARS

- 36 Out & About**
Today's Fishkeeper visits Riversdale Fishfarm in Lincolnshire.
- 68 An Aquatic Peter Pan**
Bob and Val Davies reach the letter Y for Young in their A-Z and select a hardy and unusual amphibian for beginners.
- 70 Close Encounters**
John Dawes reports on new strains of award winning Guppies and meat eating tortoises.
- 72 What's in next month's issue**
- 73 Fantastic Subscription Offer**

PAGE 41 COMPETITION
WIN 5 25kg buckets of Red Sea Salt

CUT OUT & KEEP

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

- 9 Black Phantom Tetra
- 81 Clown Rasbora

KEY TO SYMBOLS:

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

	COMMUNITY		MID WATER
	NON COMMUNITY		BOTTOM
	CARNIVORE		TEMP
	INKFISHER		SIZE
	NESBORE		NOT SUITABLE FOR KEEPING IN CAPTIVITY
	BURDOCK		



Starting Point...

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

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



OVER THE PAST FEW MONTHS IT'S BEEN GREAT TO MEET many readers of the magazine. We've been able to talk and discuss the pleasures and anxieties that you have as beginners in the hobby. It seems that the slogan 'Relax- Keep tropical fish' makes little sense to many a beginner, but it should. Fish are much harder than you might think. After all, most of them have had to endure long, arduous journeys before they reach your tank. This settling in period is the most critical but if you have kept the 10 golden rules losses should be minimal. Look out for 'Itch' commonly known as White Spot as this is easily cured if found early enough and newly introduced fish are susceptible. Signs are flicking against rocks and other surfaces in the tank and white spots that are easily seen on the fins. You always need to have a treatment in hand. This disease can cause a wipe out if not spotted early enough, but don't be alarmed it is easily treated.



Observation and immediate treatment gets rid of White Spot

This poor Black Phantom Tetra is covered in White spot

A shoaling fish. Best kept in small groups



Glowlight tetras have a charm all of their own

A charming fish and a pretty plant

There is a beautiful little tetra, the Glowlight tetra, that is not so highly coloured as the Neon tetra but it has a particular charm of its own. It was named the Glowlight because of the reddish, glow along the lateral line and it has a body suffused with

a pinkish hue. This is a peaceful community dweller best kept in a group of at least six. Not quite as commonly kept as the Neon tetra but one of the finest of all the small characins, the family to which it belongs. These were the first tetras I kept and they lived for several years.

Do not plant Pygmy chains closely, allow for a spreading root run

Last month I recommended the large Amazon sword but this month I'd like to introduce the Pygmy chain sword that is a lovely low growing plant which sends out masses of runners. It only grows to about 4" and it makes a grassy carpet in the foreground of your tank, it's a very pretty plant.

Pygmy Chain swords make a grassy carpet in the foreground



Lost for words

Acclimatisation - The adjustment of a species to a new environment. This very important period is less stressful if water conditions are similar to those the fish came from.

Adipose fin - Situated behind the dorsal fin on some groups of fish this is a small spiny projection with an attached membrane.

Artemia sp. - This is commonly called Brine shrimp. Baby brine shrimps can be hatched from dried eggs and is the very best live food for young fry.

Gonopodium - This long modified anal fin is found in male Poeciliids and is folded over to form a groove along which sperm packets are channelled towards the vent of the female during mating.

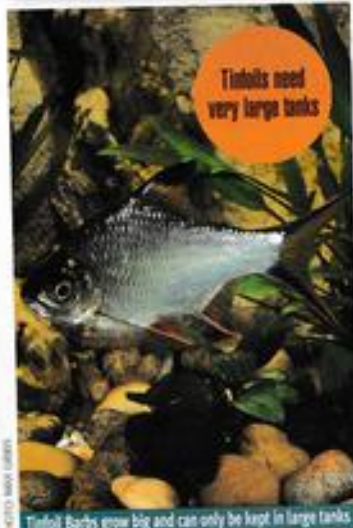
Nomenclature - This is the scientific naming of a species. Scientific names are changed as new ideas and discoveries are made. This can be very confusing to fishkeepers, this is why common names are frequently used. These can also be confusing as different common names are sometimes used in different countries or even in different parts of a country.

Shimmying - The slow side to side weaving motion usually on the spot that is an indication that the fish is unhappy.

Spawning medium - Mops, plants, slates and any other material used by fish for deposition of eggs during spawning.

Water column - Vertical height of water from the surface to the substrate. Food falls through the water column and fish in different strata of the tank pick up the food as it reaches their level in the water.

Pretty big - but still a baby at 5' (15cm) long. Red-tailed Catfish grow far too large for a normal aquarium



Tinfoils need very large tanks

Tinfoil Barb's grow big and can only be kept in large tanks

Big homes for big fish

When it comes to buying fish, all is not always as it seems. From little acorns mighty oaks do grow and some small fishes that you see in the shop grow into mighty big ones. This can cause stress to the unsuspecting buyer when, several months down the line, he discovers that the little beauty has outgrown its living quarters and it's difficult to find a new home for it. In the March 2000 issue of this magazine there was a cautionary tale about a Red-tailed catfish. These magnificent creatures can be bought at a smallish size by a newcomer who is totally unaware that this fish can reach 6' (1.8m) in size and is totally unsuitable for the home aquarium.

The Tinfoil barb is usually sold at a comparatively small size and you might be tempted to buy. This could be a fish for you. But think is it? This beautiful barb with its

silvery gleaming scales and bright red finnage can grow as large as 14" (35cm), though 10" (25cm) is more usual. This peaceful, shoaling fish looks wonderful in a group in a very big tank. It lives quite peacefully in a community of large fishes of comparable size and temperament. It is not for you, however, if you have the normal 2', 3' or 4' community tank. If you have a very large tank and want to keep large fish read Kathy Jinkings article on page 18 of this magazine.

Pat's tip

Take an I.D. book with you when choosing fish. This will give you adult sizes. Beware of vague labelling 'African Barb' is not enough.



Fishkeeping Answers: Tropical

BROUGHT TO YOU BY
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star letter



Pete's Rams have spawned

Two days ago I bought a pair of Rams. I put them in my community tank consisting mainly of Tetras and Corydoras. The Rams have already laid eggs on a piece of bogwood. I know that they will eat the eggs or fry if they feel unsure or panicked, so, will regular tank maintenance be all right? Is there anything I can do to make them feel secure and would it be advisable to put them in their own tank in the future. When would be the best time to remove the fry from the tank and how?

Pete Tudor, via email

If you bought the original wild Rams, they are beautiful fish. If you have a pair that goes well together, then they will spawn again. Personally, I would leave the fish with the eggs. This is because I like to watch the fish do everything right. If they eat the eggs after several spawnings, however, I would siphon up the eggs/fry out of the aquarium when they hatch. Or put the fish in their own tank in the future, together with some swordtails or Platies to keep them occupied. The Swordtails won't harm any fish but will keep the Rams busy. I usually keep up regular tank maintenance, but one thing would be wise to do if the fish is in a community tank. Put a lamp with only a 15 watt bulb in the top of the tank, to give a dim light at night. Then the parents can keep an eye on what the other fish are doing at all times.

Alf Stalsberg



Male Ram caring for its eggs

Kelvin wants to keep Stingrays with his Asian Arowana

I have a beautiful Asian Arowana (*Scleropages formosus*) housed in a 180g tank. I would like to add a tank mate, and a freshwater Stingray seems ideal, as it could occupy the lower region of the tank. Also I believe rays are peaceful fish and big enough not to be bothered by my Arowana.

I would like a ray that doesn't grow too large and which is also attractive. What ray would you recommend that is available in the UK?

Kelvin, via email

You could indeed consider a Freshwater Stingray as a tank mate for your Arowana, but there are a few points that need to be looked at. Nearly all the Freshwater Rays brought into the country are South American in origin, the Asian species are rarely imported and grow large. There are African



Potamotrygon henlei is reported to reach no more than 35cm across the disc and would make a good companion for an Arowana

species but I have never seen these in the trade. Your aquarium is certainly large enough to accommodate one of the smaller species of *Potamotrygon*, but the problem will be ascertaining what species are available. Many of the ones imported look quite similar, particularly as youngsters. One species that is available (but

expensive!) and should not outgrow your aquarium would be *Potamotrygon henlei*, this is not reported to reach much more than 35cm across the disc. Another couple of species that should remain at a manageable size would be *Potamotrygon orbignyi*, which shows signs of sexual maturity at a size as little as 20cm across the disc, and *Potamotrygon*

magdalenae, appropriately enough called the Dwarf Stingray. These smaller species of Stingray seem to be primarily insect feeders in nature. One reference I have read showed a diet of mostly Dragonfly larvae. Obviously this would be impractical to replicate in the home aquarium! It is essential when purchasing a young Stingray to ensure that it is feeding well on a variety of foods, and has fully recovered from its journey.

Pete Liptrot

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

Matt would like to know the correct scientific name of his Crescent Zoes

I purchased a pair of fish labelled as *Zoogoneticus quitzeensis* 'Crescent'. They certainly don't look anything like the picture of *Zoogoneticus quitzeensis* in my book, being much more attractive fish with a bright orange crescent in the tail. Can you tell me what this fish is correctly called?

Matt Peterson, via email

The fish you have is the Crescent Zoe *Zoogoneticus tequila*. I discovered it on a scientific collecting trip in 1990 and it was described as a new species a few years ago. It is a typical goodeid that can be flock bred in a well-planted aquarium. Feed a good quality flake food and some live or frozen food every other day. Sadly it may already be extinct in the wild but captive stocks are healthy and it is being maintained as part of a conservation programme both in the U.K. and in its native Mexico.

Derek Lambert

Phil wants to know if his Red tailed Shark is a killer

I have only recently become an aquarium addict and have had a Jewel 70, that has been established for about 4 months



Red tailed sharks can hound other fish to death

now. In it I have got 5 Neon tetras, a pair of Rainbow gourami's, a *Plecostomus*, a Red tailed shark, an angel fish and a pair of *Apistogrammas*. Recently the male *Apistogramma* died. I had the water tested which was OK, so a week later I replaced it with another male. I have noticed that the Red tailed shark was quite aggressive with this fish yet fine with the others. Within 4 weeks the new *Apistogramma* died again. I think that basically the Red tailed shark has hounded them both to death.

With this in mind I went to my supplier who suggested a Peruvian pufferfish. This lasted less than 12 hours before it died. What am I doing wrong? I think the water is fine, plants are

thriving and the rest of the fish all seem very happy. Should I just resign myself to keep what's in there and not try to replace it. I have lost a bit of faith in my supplier now as I am not entirely sure his knowledge is as good as it's made out to be.

Phil Mardin, via email

Red Tailed Black Sharks can get very territorial and will hound any fish out of its area. With large fish this can reach the stage where it considers all the lower part of the aquarium its territory and will attack any fish which ventures into it! Male *Apistogramma*'s are also territorial although they are much more gentlemanly about it. They just want enough area based around some cover to call their →



The Crescent Zoe *Zoogoneticus tequila* was discovered by Derek Lambert in 1990 and it was described as a new species a few years ago

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



Questions by Post

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

Internet Service

Fishkeeping Answers is also available via e-mail. Most of our experts can be contacted via the Internet. A few are still not on-line so we will have to pass your messages on to them by snail mail (we will tell you when this happens) but otherwise you should receive a reply to your questions in a few days rather than weeks. Send your e-mails to: askap@btinternet.com

www.hagen.com

Fishkeeping Answers: Tropical



A female *Xiphophorus moorei* from Rio Jamapa. This platy species is unusual in having three different types of female and two different males but none of these are thought to change sex.

own. Sadly it sounds like the only place suitable for him to take up residence was in an area considered by the Red-tail as his/hers. In the end the constant attacks would have killed your Apistogramma. I would ask if the shop would swap your Red tail shark for a male Apistogramma. That way you will solve this particular problem.

What went wrong with the Peruvian pufferfish? I can't really say. It may have been the shock of moving from the shop's tank water into yours (pH shock will kill fish in this way) or once again the Red tail shark was the culprit. One good blow could well kill a small pufferfish.

If you are wondering why the other fish are not being attacked it is because they are aware what a mean tempered fish the Red tail shark is and tend to keep a wary eye out for it. Also they have been with it from the start and it is used to having them around so is less prone to attack them. It would probably be safe to add in other midwater shoaling fish like Danio's and Rasboras that are fast enough and soon get wise enough to avoid trouble but any territorial bottom dweller will soon be in trouble.

Derek Lambert

Mr Coombes would like to try keeping Humphead Cichlids

I would like to try keeping Humphead Cichlids if they are available and are suitable for a tropical community tank.

Mr. Coombes, via email

I'm not quite sure which one of the Cichlids you refer too, when you say Humphead. We have several Cichlids called that, but, I guess you refer to the West African Humphead, *Steatocranus cassuaris*. It is a lovely cichlid that you can keep in a community tank providing the tank is not too small. It should be at least 100 litres or larger. You must build some caves for the fish with rocks or bogwood, this gives them some places to hide, and also to spawn in when the time comes. The water should have a pH between 6 to 7, the dH is not that important, temperature around 25-26 degrees celsius will do fine.

The fish is quite easy to keep, but it's important to have good water quality, if you change 1/3 to half each week, then this will be OK.

The fish eat nearly everything, a good quality dry food and of course frozen and live food will benefit the fish and induce spawning. Even though this fish can be kept in a community tank, please don't keep it with fish with long fins like Guppies or Siamese Fighters.

All Stalsberg

Maurice has a question for Derek about sex reversal

On numerous occasions you have been asked a question concerning fish changing sex from female to male. You have consistently answered that you believe that it is a late developing male. I am in the process of reading and digesting 'The language of the genes' by Steve Jones - professor of genetics and head of the Gaxton Laboratory, University College, London. On page 104 in a chapter entitled 'The battle of the sexes' he states that 'in certain fish... a shoal of fish is guarded by a male. If he is removed there is a period of confusion until one of the females changes sex and assumes his role' Prof Jones does not say how this can happen but from what he does say one might suggest that

when a shoal has a dominant male, other fish possessing the xy or xxy chromosomes (which normally determine maleness) have the y chromosome lying dormant until lack of male hormones in the area of the shoal triggers the y chromosome in one such fish to become active. This might support your view

With sex reversal you need to be sure which species the author is actually discussing. A number of marine fish regularly go through sex reversal in just the way Dr Jones says in his book. This is well documented and an example of functional sex reversal i.e. A female that produces viable eggs becoming a male which can produce sperm and fertilise eggs or a male which has sired offspring becoming a female able

West African Humpheads, *Steatocranus cassuaris* are lovely cichlids that you can keep in a community tank providing the tank is not too small



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to produce viable eggs. The question I have been asked many times is 'Can members of Poeciliidae change sex?' and as you say I have consistently replied no. All the scientific research shows these fish are born either male or female and remain that sex throughout their lives. These sexes are determined by their genetic makeup that has been studied for some species of Poeciliid. Most have the classic XY (male) and XX (female) makeup. A few, such as *Xiphophorus maculatus*, have WY, WX, and XX females and XY or YY males. However, even these are born one sex or the other and are not believed to undergo functional sex reversal.

What we do see in many poeciliids is females past reproductive age may occasionally

develop male characteristics, however, they can not produce sperm and are not able to sire offspring. Likewise young males look like females up until they become sexually mature. These fish, however, are not able to produce eggs and do not give birth to fry. Some of these fish may take years to sex out and become functioning males, but throughout that time they never produce babies, although they are often courted by adult males that attempt to mate with them. Hence it would be easy for a hobbyist to think a female had changed sex into a male.

For more information on this subject you should obtain a copy of *Ecology and Evolution of Livebearing Fishes (Poeciliidae)*, published by Prentice Hall, Englewood Cliffs, N.J. 07632, USA. ISBN 0-13-222720-7. This book is edited by Gary K. Meffe and Franklin F. Snelson, Jr., and gathers together work by many of the world's foremost authorities on Poeciliid fish. It includes information on unisexual poeciliids as well as those that reproduce by true clonal inheritance, and how P factors control at what size and age a male will mature. Fascinating reading for aquarists who want to understand their fish in greater depth.

Derek Lambert →

Star Letter Prize from Hagen



This month the winner of our star letter wins a Nutrafin Master Test Kit from Rolf C. Hagen worth RRP £59.99

The kit comes in a handy plastic case and comprises Ammonia, Nitrite, Nitrate, pH Low range, pH High range, Carbonate & General Hardness, Iron, Phosphate, and Calcium test kits. Each one comes with its own instruction book which explains why you need to test for each substance and what the results mean.

When breeding fish it is often necessary to adjust either the pH and/or the hardness. With this Nutrafin Master Test Kit these parameters are easy to monitor and adjust so the optimum conditions are created for the fish you are trying to encourage to spawn.

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Fishkeeping Answers: Marine

star letter



Tony wants to convert a tropical set-up to a fish only marine tank, but does he have enough equipment?

I currently have a tropical set-up consisting of 36" 18" 12 tank with fluval 303 external filter, 150w tetra heater/stat, single power glo tube and aqua air AP3 air pump. I have also purchased some marine sand and tropic marin sea-salt. I wish to set up a fish only marine tank using the above equipment. Will they be sufficient and if not, what else can you suggest?

Tony Mendoza, via e-mail

You will have to purchase quite a few more toys if you are going venture into the wonderful world of marines. Firstly you will have to get another external filter of equal or larger size and fill this with biological media only, for your main filter. Utilise your 303 for

chemical filtration, with space for phosphate removers, and activated carbon. The two filter water returns will create enough water movement for your fish only theme. don't use the spray bars just blast the water back in. You will also need another 150w heaterstat to act as a fail-safe. The biggest protein skimmer you can afford, with a minimum capacity of 100 gallons, 450 litres, you will be producing a great deal of waste that needs to be skimmed out.

Throw away your light tube and acquire a marine white and blue actinic with both on separate timers to create dawn, daylight and dusk. If your hood is made of metal or won't accommodate two tubes, get a wooden one. Remember when maturing the

aquarium do not have the lights on, this only provides food for a hideous algal bloom. You don't need the air pump unless it is used with your protein skimmer. You will need some ocean or live rock for the aquascape, not a lot though, leave plenty of swimming space. Other items include, hydrometer for salinity readings, ammonia, nitrite and pH test kits, bacteria starter culture, to kick start the cycling (don't use fish it stresses them and is not nice), a source of purified water and lastly an aquarium diary where you record everything. It will be hard on the pocket but don't skimp or you will end up in trouble. Go on take the plunge, good luck.

Andrew Caine

Caroline wants to know more about vitamin supplements

We have read somewhere in your magazine that you can get vitamin supplements to put in thawing frozen food. What is this supplement called and who manufactures it? We have looked in our local fish shops and cannot find it anywhere. Can you tell us

more about it?

Caroline Williams, via e-mail

Your aquarium inhabitants will love you when you start adding vitamins, I am only sorry that you find it difficult acquiring some. There are many producers in the aquatic trade I personally use Kent or Aquamedic but others are just as good. However a word of warning, most are quite expensive and due to that you can get stung too. Look at the ingredients label, if

there are only a few vitamins then don't buy it, and even worse if the label is missing, again reject it. You must never add anything to your aquarium if you don't know what it is. So, buy the one with a clear label, the one with lots of writing on it.

Find your nearest stockist of Kent and Aquamedic by contacting Aquatic solutions on 01553 776788 and Aquamedic on 0845 090 3500.

Andrew Caine

Compatible livestock which eat slowly, such as these



James has fallen in love with Seahorses, but what conditions do they require to live happily in captivity?

I have a 2'x2'x2' aquarium that I would like to make a mini reef system. I thought I was going to have anemones AND a few fish, but visited an aquarium shop and saw seahorses. I would like to have seahorses but would like to know what else I can have with them - in the way of fish, coral and anemones. Also can you give me some advise on what filtration system is best for seahorses in an aquarium this size?

James Wiskin, via e-mail

Many people fall into this trap, and unfortunately some retailers do not inform the purchaser about seahorse requirements resulting in a dead beast and a perplexed owner. Thank you for stopping and thinking before you purchased such an animal. Seahorses Hippocampus sp and their close relatives are a separate entity in

Mandarin *Syngnatus splendens* are ideal companions to seahorses

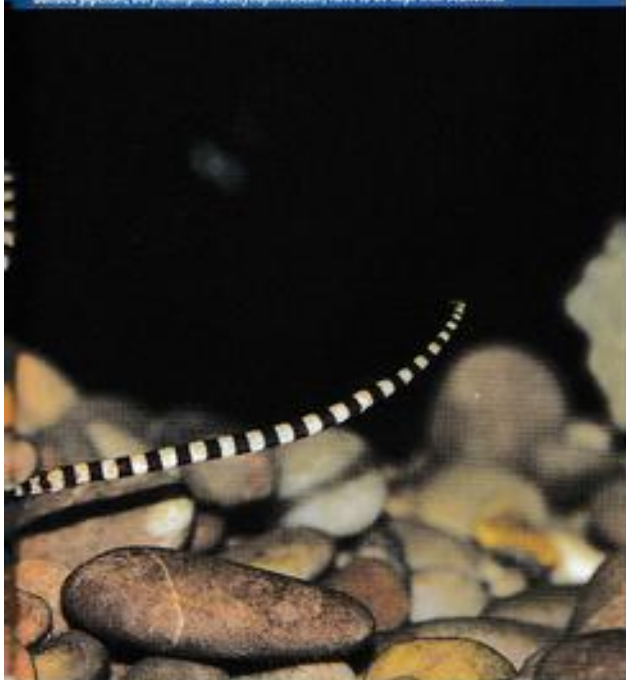


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for all your marine keeping answers

Banded pipefish, *Doryrhamphus dactylophoruscan*, have to be kept with seahorses



marine aquatics and as such require an aquarium created around the needs of such animals. Top water quality, low water movement, sea grass beds or plenty of macroalgae. The correct food is needed with little competition for it in the aquarium, so there are some very big differences from your proposed reef tank.

Filtration, you can range from external filters to specially designed sump systems, but employ biological and chemical filtration, a protein skimmer and live rock. A Seahorse will look at food for what seems to be an eternity before it consumes it, so compatible livestock must not eat fast. Pipefish such as the Banded pipefish, *Doryrhamphus dactylophoruscan* and dragnet fish species like the Mandarin *Synchiropus splendidus* are ideal. You must feed vitamin enriched live brine shrimp, and try to get them to take frozen mysis. Possible corals (all under halide lighting for your depth of tank) would be the Torch coral or any of the *Euphyllia* sp



and Bubble corals *Pterogyra* sp in and around the sea grass with polypstones *Palythoa* sp and mushrooms *Discosoma* sp on any exposed rockwork - Anemones, no. Don't let all this put you off, if you love them, you will create the right environment for them and have a great time.

Andrew Caine

Jan has an algae problem

I have a small fish only system and all is going great, apart from one thing, I have to clean the glass every three days as the algae gets unsightly. There is no other algae in the tank as I employ cleaners and utilise chemical filtration, my nitrates are less than 10ppm and phosphates zero. I know it may sound funny but I keep thinking that something is wrong as I have to keep cleaning the algae off my tank glass.

Jan Goodhall, via e-mail

May I congratulate you on running a successful aquarium with very nice water quality. As to glass cleaning it is one thing we all share

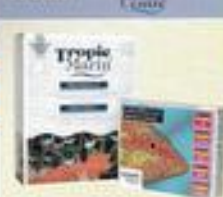


Seahorses have very special requirements and need a system created specifically for them

in common, I know people who have invested huge amounts of cash in their hobby, and guess what, they have to clean the glass too. To increase the time span between cleans make sure your lights are not too old or on too long, white light 10-12 hours per day. If you haven't already done so, get the best protein skimmer you can afford and increase the scavenger cleaning crew.

Andrew Caine

Star Letter Prize from



This month the writer of our star letter wins a 4kg box of Tropic Marin Synthetic Sea Salt, and a Tropic Marin Expert Test Kit, together worth almost £50!

Tropic Marin Salt is the only one used in Tropical Marine Centre's hatchery and is also the preferred salt of many of the world's leading professional institutes, hatcheries, zoos and public aquariums.

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Fishkeeping Answers: Coldwater



Stone loach (*Cottus gobio*) are fascinating native fish that can be kept in an aquarium

Craig wants to keep native fish

I am interested in keeping British native fish. I already keep Roach, Rudd, Tench, Barbel & Mirror carp at home. What other fish are entering the coldwater scene that I should look out for in my local shops? I saw some chub for sale but did not buy them as it was the end of the season but I will be on the look out for them at the start of next season. First, however, I would like to know what conditions they like.

Craig Mason, Derbyshire

A heavily aquascaped aquarium with a range of diverse niches and stocked with equally diverse native species can prove to be an enlightening experience. It is wonderful to view the different behaviours and strategies employed by each species, adopting a different position, temperament and feeding pattern from the rest.

It can be difficult to source small specimens of many of the native species and as a consequence, I would naturally

choose as large an aquarium as possible - say four feet long and at least 18" deep. One of the greatest problems I have had with a native aquarium is keeping the water sufficiently cool and the aquarium suitably clean for viewing (the front glass in particular). These fish also seem to prefer dimmer illumination than the typical tropical or ornamental coldwater aquarium.

By opting for a real cross section of species from both still water and more dynamic environments, you are making it difficult to please each species, but experiment with external powered filtration with an underwater return. You may even wish to supplement this with an additional powerhead, pointing in the same direction.

A water with pH of around 8 (but definitely alkaline) which is moderately hard should suit a range of species. Try feeding them a mix of live foods (earthworms etc) as well as a sinking dry diet, bearing in mind that they are likely to be 'dry-food-shy' being wild fish. However, depending on the species, they can soon adapt to floating dry diets. Any diet formulated for ornamental carp

species will suffice for their native cousins. However, taming a tank full of native fish seems to defeat the object, where the objective is really to simulate a slice of a river or lake.

Ben Helm



Most Goldfish breeders think a winter rest period improves the next seasons spawnings

Simon wants to breed his Goldfish

I have just set up a new coldwater fish house and plan to breed my Lionheads next season. Can you give me any advice about conditioning my fish?
Simon Carr, London

Experienced Goldfish breeders believe their fish produce better spawnings after a winter dormant period. For this reason you should maintain your fish room so it is just warm enough to prevent your tanks from freezing. During autumn you should feed your fish heavily with good quality flake or pellet foods and chopped earthworms and other live foods. Stop feeding once the cold weather sets in - most years this would be about late November. Keep the temperature warm enough so your fish are active for a couple of weeks afterwards (this allows any food to pass through your fish) and then drop the temperature down for the rest of the winter.

During early spring you should start raising the temperature to bring your adults out of dormancy. Feeding can start as soon as your fish are active. Separate them into males and females until you are ready to spawn them and feed lots of live foods. The first spawning should be attempted once the water temperature has reached 70°F.

Derek Lambert ■

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Silver Shark, *Bolantiocheilus melanopterus*

fish that will ensure no trace of food is left on the aquarium floor during its nightly peregrinations. Growing up to a foot long (30cm), these are easily available; most shops have one or two looking for a good home. Another good choice for the large community is the Red or Sailfin plec, *Pterygoplichthys gibbiceps*. In the wild these fish are often found together, but it will nonetheless settle into an aquarium with other tank mates quite happily. It will grow up to about 20" (50cm).

Slightly more shy and peaceful is Panoque nigrolineatus. It should only be kept with peaceful fishes, and grows up to just under a foot (30cm). These are very striking when young, with a sharp livery of black and grey stripes and red eyes, but the pattern will fade as the fishes grow older. All these suckermouth catfish are primarily vegetarian, and will need algae tablets or another vegetable diet. They are South American, and will prefer soft acidic water, although they will thrive in a neutral pH once acclimatised.

Not a beauty

Another fascinating catfish for a large tank is *Megalodon irwini*, a true gentle giant. This fish cannot be described as a beauty, and grows up to two feet, but will fascinate any viewer with its sculptured appearance. Each of the bony plates along the sides of the fish has a sharp scute projecting backwards, and although the fish is gentle, bloodshed will result if you try to catch it with your hands. These South American fish relish a diet of meat - daphnia, bloodworm, and earthworms will all be received eagerly. If, like me, you find that snails take up residence in a tank from no known source almost as soon as you have set it up, then this fish will happily

crunch its way through the pests for you. Once again, softer water is preferred.

For an aquarium with harder water, one of the *Synodontis* catfish would be an attractive addition. The Leopard *Synodontis*, *Synodontis nigromaculatus*, grows to about fourteen inches, and is a peaceful fish usually most active at twilight. *Synodontis* can sometimes be aggressive towards other territorial fish, but ensuring that yours has its own hideout in the aquarium should avoid problems. These fish enjoy all forms of flake

and tablet food, but do require live food (or frozen food) sometimes to maintain them at their peak. The food should be given just after lights out, since otherwise the other fish in the tank will get a good feed and the *Synodontis* will find nothing when it ventures out. There are a large number of *Synodontis* species suitable for both large and small aquariums, so it is important to check on the size of the particular species you are buying.

A shoaling fish to provide a good aquarium display is the Silver shark, *Bolantiocheilus melanopterus*. Silver with yellow, black-edged fins, six or more of these active fish will provide a fine spectacle. They are fast swimmers, and can be nervous. Their tendency to dart about at any disturbance necessitates a large tank if they are not to bang into the sides and damage themselves. These peaceful fish prefer soft, slightly acidic water with a good oxygen supply, and enjoy a varied diet.

Something a little weird

For a real conversation piece, you could keep one of the bichirs. The Ornate bichir, *Polypterus ornatipinnis* is not only attractive, but also a fascinating fish. These fishes are proficient escape artists; like all bichirs they have a modified swim-bladder which allows them to breathe atmospheric oxygen, and if not kept in a tank with a tight-fitting secure hood are likely to take a wander around the house. Although they are predators, they are harmless to fish of the same size, and can be kept in a community with neutral or slightly alkaline water. They can be quarrelsome towards one another, so only one is recommended for the community tank.



Giant Gourami, *Daphrenemus goryzi*



Pteropoma nigrofasciatum is sometimes called the Royal Plec

Growing up to seventeen inches, the décor for a bichir must be constructed to allow them hiding-holes in caves, rocks and plants. They have been spawned in captivity, although rarely, and a species tank for breeding would be an interesting project for an aquarist. The Ornate bichir grows to around 18" (45cm) and is likely to be quite pricey compared to others, due to its beautiful coloration, but all bichirs are interesting to keep. In the aquarium a meaty diet will keep them in the best of health, and they will relish such live foods as earth worms or bloodworm.

Gouramis are another group of fish that can breathe air, but are far less likely to go walkabout than the bichirs. Although many are suitable for the smaller aquarium, both the Kissing gourami and the Giant gourami are ideal for large tanks. The Kissing gourami (*Helostoma temminckii*) is by nature a green fish of up to twelve inches, but there is also a pink form available in the aquarium trade. These fish acquired their common name not by their affectionate nature, but rather the opposite; the kissing displays are a way of testing their strength

against one another. In the aquarium they often do not reach their full size. They prefer soft water and plant growth, which they will snack on, so plastic plants might be a better bet. If a larger fish is required, there is the Giant gourami (*Osphronemus goramy*), which grows endearingly uglier as it increases in size. Aquarium fishes typically reach about sixteen inches (although bigger is certainly possible, especially in the wild), and are instantly identifiable with their large humped foreheads and protruding eyes. They are gentle giants, being tolerant of most water conditions, and prefer a diet of vegetables such as spinach, peas and similar foods.

Most popular pet

If a poll was conducted of all the people who had a 'pet fish', Oscars (*Astronotus ocellatus*) would almost certainly come out near the top of favourites. These large cichlids are quite mild and self-effacing in cichlid terms, and guaranteed to add a fish with 'personality' to the community. Growing

up to around a foot, they prefer softer water but are quite adaptable and hardy. The 'ocellatus' of their latin name refers to the tail markings which resemble eyes. Although the wild fish caught in South America are usually brownish, a range of colour morphs are now available for those who prefer their fish a little more brightly coloured. Oscars are attractive individuals in the community aquarium, when kept with other fish of around 15" who will not bully them. Unfortunately if they spawn they are likely to become more aggressive, and since there is no way of sexing them it is best to choose only one. This popular aquarium fish holds the affection of its owners not only by always being ready for a meal, but by awareness of the world outside the confines of its tank. Oscars who rush to the glass when their owner passes by are common. They require a meat-based diet, and will feast eagerly on live foods, prawns, whitebait, and similar offerings.

For a more colourful fish for the larger community, several of the *Distichodus* species grow large. *Distichodus sexfasciatus* is often seen for sale; although it can grow up to 3ft (0.9 metre), 10" (25cm) is a more likely length. However, its early appeal can fade with its colour as it grows older. *Distichodus lusosso* is a 16" fish with striking vertical black stripes on a gold/brown background, and can be distinguished from *D. sexfasciatus* by its longer nose. Both fish are determined plant eaters, and will devour anything palatable; Java fern or plastic plants may be suitable for the aquarium. These African fishes prefer slightly harder water.

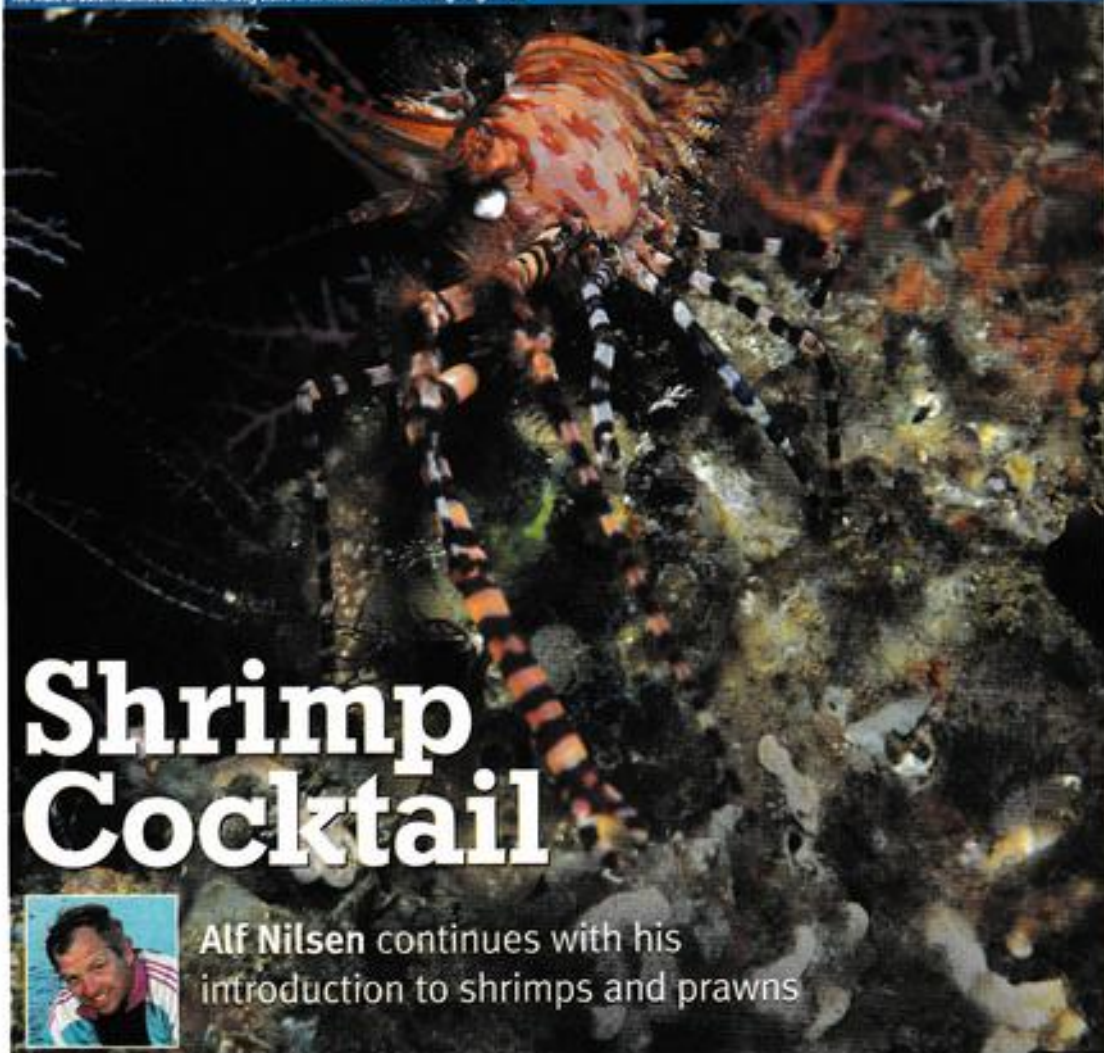
Unfortunately in an article such as this it is impossible to cover all the wide variety of fish that could prove welcome additions to the large fish community. However, by following the normal rules of finding out as much as you can about the fish that you are buying, you too will be able to create a community of fishes that will prove striking in both their appearance and behaviour. ■

Leopard Synodontis, *Synodontis nigromaculatus*



tropical marine coldwater & ponds plants regulars

The male of *Scor marmoratus* with its long claws in an Indonesian reef during a night dive



Shrimp Cocktail



Alf Nilsen continues with his introduction to shrimps and prawns

THE "ANEMONE SHRIMPS" ARE ANOTHER diverse group of shrimps living with anemones and corals. The group is so diverse and contains so many beautiful species that it is hard to know where to begin when dealing with them in an article. Let me start with a small friend, one of the first shrimps I ever kept in captivity and a species that was introduced to me by Peter Wilkens in 1985 - "The Sexy Shrimp", *Thor ambainensis*. Peter Wilkens gave me a pair of these delicate beauties from his aquarium shop in Winterthur, Switzerland back in 1985. The pair was transported for more than a week in our car as we visited fellow aquarists in Germany, and finally ended up in my reef aquarium, where they became an attraction - and this really is a sexy shrimp!

The body, which is less than 2 cm long, is beautifully coloured dark brown with

opalescent large saddle patches and dots. The female is almost twice as big as the male. Living associated with corals and anemones the shrimp is well protected from enemies. When becoming excited or disturbed, the abdomen is held almost vertically and moved back and forward in a "most sexy set of movements" - hence the popular name. Usually several specimens are found on one and the same host, but they are so well camouflaged that one must look carefully to spot them. The Sexy shrimp has a circumtropical distribution and can sometimes be found together with other commensal shrimps of the genus *Periclimenes*.

Cleaning shrimps

Cleaning behaviour is known from many commensal shrimps, but not from the Sexy

Shrimp. According to Debellus (1999) the species can sometimes be found living together with stomatopods (Mantis shrimps), which must be regarded as potential enemies. The tiny shrimp has been observed crawling on the head and carapace of the Mantis shrimp, a behaviour that so far remains unexplained. The coral reefs and the ocean are full of surprises. How interesting it would have been to combine a group of Sexy Shrimps and an anemone in a small aquarium and then introduce a Mantis shrimp to observe what happens!

Pederson's commensal shrimp, *Periclimenes pedersoni* is found in the tropical western Atlantic and is one of those species of commensal shrimps that also shows cleaning behaviour. The species is particularly associated with the anemone *Bartholomea annulata* where it usually lives by itself or in pairs. A closely related

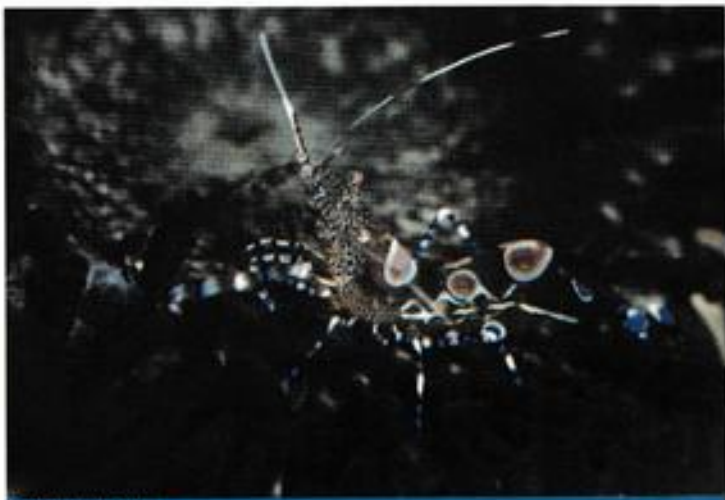
Why do some shrimps cling so tightly to other animals?

One answer is obviously 'protection', another is 'food'. The association between anemones and tiny shrimps are biological relationships that are most interesting to study. The Modern Coral reef Aquarium serves as a perfect tool for studying just such interaction. During the last couple of decades the techniques and knowledge of the captive reefs have developed to such heights that it is now really possible to build a tool for reef research.

species, *Periclimenes yucatanicus* is another species that might mimic the cleaning behaviour of *P. pedersoni*. It is observed leaving its host (preferably *Condyloactis gigantea*) only when a fish approaches it for cleaning, but this behaviour could only be a protection against being eaten and not really a true cleaning behaviour (see Limbaug & al., 1961).

Anemone shrimps

Anemone shrimps are widespread in tropical and sub-tropical seas. *Periclimenes scriptus*, *Periclimenes sagittifer* and *Periclimenes amethysteus* are three species found in the Mediterranean. The best known *Periclimenes* species of the Indo-Pacific is *P. brevicarpalis* which is distributed from the Red Sea and East Africa eastwards to the Line and Marshall Islands. This is yet another spectacular shrimp with a transparent body covered with big white patches. Males have more patches than females, and are also bigger. I have spotted this species associated with a number of anemones, but in particular with the Pizza Anemone (*Cyprodendrum adhaesivum*), which is an anemone with a very powerful sting. Another very delicate anemone shrimp is *Periclimenes magnificus* which is associated with the stony coral *Catalaphyllia jardinei* as well as with the anemone *Dofleinia armata* and tube anemones *Cerionthus* spp. Both these shrimps are closely linked to their host, and rarely leave the anemone except in extreme cases. I once discovered a pair of *P. brevicarpalis* among the tentacles of the very sticky anemone *Actinodendron pulmosum*, growing on a sandy lagoon in the Maldives. This species of anemone lives in a deep tube buried in the sand in which it can completely retract. When the anemone was touched and rapidly retracted into its burrow, the pair of shrimps would still remain inside the hole or close to the edge of the hole, waiting for their host to show up again. Yet other, and often most delicate



Periclimenes yucatanicus



Periclimenes pedersoni, swimming above the tentacles of a big anemone

species of the same genus lives permanently among the branches of corals and is therefore seen only rarely. The less than 2 cm long *Periclimenes imperator* lives in pairs together with many hosts, including the Spanish Dancer (nudibranch of the species *Hexabranchus sanguineus*), many sea cucumbers and some feather stars.

All *Periclimenes* species are excellent shrimps for the reef aquarium, but should definitely be kept in a special, peaceful tank containing host sea anemones or other suitable hosts. They should also be acclimatised very careful.

'I prefer stars...'

...not movie stars, but 'sea stars'! Perhaps the most peculiar of all reef shrimps is the Harlequin shrimp, *Hymenocera picta*. Not only does it look bizarre; its feeding habits

are bizarre too. This species is strictly carnivorous and feeds on starfish only, in particular from *Noroda* and *Linckia* species, but also from the Crown-of-Thorn, *Acanthaster planci*. Without this diet the shrimp dies! The shrimp watches the starfish closely, then attacks and turns the starfish up-side-down, but only a fraction of the prey is eaten. The shrimps do not eat often, sometimes as rarely as once a month, but the reproduction and growth are clearly related to the amount of food.

Hymenocera picta is distributed widely in the Indo-Pacific; occurring from east Africa and the Red Sea to Hawaii. There is an ongoing debate if more than one species exist. Some authors refer to a second species, "*Hymenocera elegans*", which shows some difference in coloration from *H. picta*. In "*H. elegans*", the body is white with patches ranging in colour from red to brown with or →

Kalbar extravaganza



Heok Hui Tan goes in search of rare anabantoids in Indonesia

The recently described *Betta enisei*

PHOTO: OLIVER LUGANES

HAZE... ECONOMIC TURMOIL... CURRENCY crisis... elections... social instability in Indonesia and Southeast Asia were the words that had been circulating. The situation stabilised and reverted with the onset of the much delayed rains so a trip was planned for Kalbar. It rained almost daily, there were clear blue skies during respites from the rain in the day and zillions of stars at night.

It took us a full day to drive up to Sambas, a small coastal town north of Pontianak. It is predominantly occupied by Chinese of the Hakka race, as this had been a gold rush town back in the 18th century and earlier. We proceeded to the floating houses or 'Lanting' that are built upon

several large logs and moored along the bank. Here we could fish right at the front porch for *Rasbora bankanensis*, Halfbeaks and Pipefish.

It was here that we tried out the 'matarbak', a folded pancake usually with sugar and peanut filling. During this trip we tried out many variants on this dish, some to our delight and others to our dismay. The variant of matarbak we tried in Sambas was literally composed of 50% sugar.

Boat trip

We then boarded a boat to sample the waters further upstream of Sambas river. As we chugged along, we saw many fisherfolk

fishing for 'Udang Gala' the zoom freshwater prawn. They sit in their tiny boats and let out several lines with baited unbarbed hooks. A catch of five relatively large-sized individuals weighs roughly a kilogram.

At Sintang, the Kapuas river is joined by the Melawi river and is still as large as it is in Pontianak (about 500m wide). In fact, large cargo ships can still travel upriver to Putussibau, the last large town on the Kapuas river.

We hit the road and sampled the first blackwater stream we came across, about 2m wide, being about the same depth at its deepest. It was also a very cooling relief from the hot sun. The water had a pH of 4.3. We caught many *Silurichthys phosoma*



From Anjungan we walked across the fields and entered a swamp forest. Here we found *Betta nilotica*

amongst the bank vegetation as well as *Rasbora pauciperforata*, *Kribia latilima pristes* (Loaches) *Aristolepis grooti* and *Nandus nebulosus* (Leaf fish). Then we tried a stream near the junction to Nanga Pinoh. The stream was tea-coloured and quite fast flowing in certain sections. There was *Barclaya* and *Cryptocoryne* plants growing in the shaded parts. We obtained an unusual bagrid catfish here - *Nanobagrus armatus*. This is a miniature bagrid catfish maturing at a size of less than 40mm. They were very localised and only found within a two metre stretch of stream among root mats.

Stingrays and speedboats

The food markets were visited the next morning and a surprise lay in wait for us. The type locality of *Alimantura signifer* (White Rim Stingray) is Sintang and here it was on the chopping block. This fish is

highly appreciated and eaten grilled and in curry by the locals.

A 40HP speed boat had been prepared and we boarded it for our destination - Ketungau river, a tributary of the Kapuas river about 70km upriver of Sintang. The trip was marred by a near disaster - engine break down. The motor stopped for apparently no reason and we drifted for about ten minutes before we encountered another boat by that we sent a message for a new boat to be sent. The driver then sorted out the problem by leaving the cover off, apparently the motor was overheated. We then halted yet another boat to abort the earlier message!

We stopped at the mouth of Ketungau river. After refuelling and hiring a local guide, we continued upstream into a blackwater tributary where a purse seine or Jamal had been set. This fish trap literally catches all the fish for a section of the river, as the net stretches across the whole width. We encountered two locals of the Danau tribe paddling downriver with a net full of Kissing gouramis *Helostoma temminckii* and some Snakeheads *Channa pleurophthalma*.

Lady luck smiled on us

Next, we tried out another smaller blackwater tributary. Here Lady Luck smiled on us because we caught the recently described *Betta enisae*. The colours of this fish were gorgeous, the iridescent blue on the opercle, anal and caudal fin margins and the black striated pattern on the caudal had to be seen to be believed. The next interesting fish we found was also gorgeous, *Anabantoids*, *B. dimidiata*. The adult male was bright purplish all over with a bright green band on the anal fin.

The next day we started out for Nanga Sayan really early at 5am because the road is pretty bad in certain parts. On the way, we had a splendid bird eye's view of the Schwamer range that forms the border



We collected the miniature gem, *Betta nilotica*. It has a deep red body and piercing bright green eyes.



Nemocheilus annotatus is a miniature bagrid catfish maturing at a size of less than 40mm

between Kalbar and Kalimantan Tengah. Sadly it was disheartening to see the surrounding hills all deforested, with only the higher hills and further uplands covered with primary vegetation. We forged ahead along the winding and often very twisting road. At the base of a range of low hills, we stopped at a hill stream. It had clear, fast flowing water of pH 6.5. The bottom was sandy with rocks. Our efforts were not wasted, as we managed to catch a recently

described catfish - *Silurichthys marmoratus*, a large species, up to 12cm long that inhabits fast flowing streams.

Sticky time

We then hit the bad stretches of the road. To make matters worse, it had rained the previous day and we were driving over red, soft and sticky mud. However, our driver was quite experienced and we forged through. At one kilometre before Nanga Sayan, we became truly stuck but luckily could reverse out. We all got out and dumped some logs and sticks left by the road side into the deeper mud area. Little did we know that this only aggravated the situation. The car surged forward and was promptly stuck in the mud. The logs thrown in earlier had only obstructed the wheels and there was no possible forward or backward movement. Opportunely, a van came along in the opposite direction. The driver took one look at the situation, removed the logs. The car was restarted, engaged into reverse gear, the wheels caught and we rolled out. Then the driver was advised to go into the deepest part of the mud and to floor the accelerator. The car surged through like a ball-bearing on grease. We were so elated to break free although we had red clay all over us.

netting from boats. The water around the banks were not deep and we tried it out. Only one specimen of the Gourami *Osfronemus goramy* was obtained before we were called to a local's boat to try out the cataracts.

The next day, we made another visit to the markets at Sintang before we headed back to Sanggau. On the trip back we tried out a clear stream with tea-tainted coloured water of pH 6.0. We were near the bathing platform, but luckily no villagers were using it. The water was up to our necks in the deeper parts. Here we caught some loaches - *Pangio kuhlii*, *Pangio cf. shelfordii* and *Nemachellus saravacensis*. As dusk fell, we called it quits. We checked into our hotel. Unfortunately, our room faced the main street and a road side stall played loud Indian and Indonesian music till the wee hours.

Pandas and another speedboat

We were up as the cock called because we had a busy day ahead. The Tayan river, another tributary of Kapuas, had been recommended as a good fishing ground. It took about an hour to reach the town of Sosok. We met up with a contact in Tayan and were shown his pets, which he called



Ketungas habitat of *Betta dimidiator* and the newly described *Betta enboe*



P. ornaticauda, lipourica gourami exhibited an orange dorsal stripe over a black body with dominant males being jet-black

We entered Nanga Sayan and headed towards the town centre. There we had a lunch of 'Mee Bakso' again, as this was the safest food to be had. The water level was very high and only the tips of the rocks of the cataract were visible. We saw some villagers fishing from the bank and cast

Pandas that turned out to be a mother and child pair of Slow Loris. It also turned out that he sold Clown Loach to our Pontianak contact. We were then shown his catch of *Borla macracanthus* and *Colius microlepis* that were kept in cages next to the floating toilet and pier.

We sped further up the Tayan river in his speedboat in search of the rich fishing grounds. Frustration spelt itself in full before us. The water level was too high, little fishing could be done with waters up to our neck. In the clear slightly tea-tainted waters, we could see schools of *Rasbora* swim by. Nevertheless our efforts were not futile, we caught some Barbs, *Puntius anchisporus* and *P. Endeconalis*, *Rasboras*, *Rasbora kalborensis* and *R. gracilis* and Anabantoids, *Betta dimidiata*, *Belantia hasseltii* and *Trichogaster leeri*.

We stopped by at a bend of the river and there was another boat there, a hunting party shooting forest birds for meat, mainly wood pigeons. We followed a footpath into the bank vegetation before coming onto a

secondary peat swamp forest. We tried the ditch that ran under the road. After a few initial forays, a true blackwater gem was obtained. A pygmy species in a dwarf genus of Ligorice gouramis - *Parosphromenus ornaticauda*. Freshly caught specimens exhibited an orange dorsal stripe over a black body. Dominant males are jet-black with a most spectacular red centre to their caudal fin that is bordered by iridescent blue; the dorsal and anal fins are edged with iridescent blue. This species was found amongst the submerged grasses and ferns.

Another blackwater river was Sungai Kepayan. This was relatively large, about five metres wide and over two metres deep at certain parts. The water was quite fast flowing in the main channel and of pH 4.5,

warmer parts. The *R. axelrodi* was found only in the fast flowing deeper parts of the stream and could be caught in their hundreds.

Last site and another miniature gem

On our return to Anjungan we walked across the field and through some muddy patches before entering a swamp forest. The water was slightly tea tinted and rather stagnant. There were also plenty of mosquitoes buzzing around. Here we caught another miniature gem - *Betta rutilans*. It had a deep red body and piercing bright green eyes. Only a few other species were caught - The tiny *Rasbora Bororas merah* and two loaches



Barbs were caught in many different habitats. This is *P. rhombocentrus*.

small oxbow lake filled with water-lilies. The water was warm and stagnant, except near the drain-out point. The bottom was very soft and composed of thick layers of plant debris. The fish fauna was almost identical with the previous place, except for another Anabantoid, *Betta edithae*. *Betta dimidiata* preferred the cooler and flowing parts of the drain-out point, whereas *B. edithae* was found amongst the vegetation in the warmer stagnant parts of the lake. Schools of Snakehead fry, *Channa striata* and *C. Lucius* were chanced upon and given a wide berth, given the ferocious nature of their brooding parents. We travelled back to Pontianak where we met up with our contact and he recommended us to visit his suppliers in Anjungan, a small village just before Mandor.

Anjungan swamps

It took about an hour to reach Anjungan, the car was loaded and along with some helpers, off we went to the peat swamps of Anjungan. When the road ended there was

It was a welcome change from the hot weather to enter into the cooling blackwaters. Here we caught our second and third gems, another Ligorice gourami, *Parosphromenus anjunganensis* and a very beautiful *Rasbora*, *Rasbora axelrodi*. The *P. anjunganensis* was red all over and found in the deeper and cooler parts of the stream, whereas the syntopic *P. ornaticauda* was found in the shallower and slightly

L. tomoculum and a *Kottelatlimia* sp. With the arrival of dusk, we called it a day.

The day before departure from Pontianak, police activity had been stepped up during the weekend. This coincided with the drastic increase in petrol and oil prices at the start of the week. Then the riots, demonstrations and looting began in Jakarta, Bandung, Yogyakarta and Medan. The rest is history. ■



Want to visit?

Pontianak is one of the main cities in Kalimantan, which is also called Indonesian Borneo. Kalimantan makes up two-thirds of the island of Borneo and has had large areas of its virgin forest cut down for timber. It is still a very beautiful island to visit and can be reached via Jakarta. Flights to Jakarta from London can cost as little as £600 under normal circumstances, however, some very cheap offers are available as we go to press. Check with the Foreign Office to make sure it is safe to travel in this part of the world at this time!



The Cover leaf filter is lifted into position.



Even the large pump was blocked by blanket weed with frustrating regularity.

A moving experience

Dave Bevan reports on how Martin overcame a Koi keeper's worst nightmare - moving house and ponds not once but twice

THEY SAY THAT MOVING HOUSE IS ONE OF the most stressful situations that the average person will experience. That is until you have tried moving, complete with a pond full of large koi and ghost carp, all of which have become family pets over the years. When faced with this problem the move can be likened to a major military manoeuvre. Hours of planning, days

organising men and materials and weeks setting up the new home so that hopefully come moving day the move is executed quickly and efficiently with the minimum of stress for the fish, which one minute are swimming happily in their established 5000 gallon (22,730 l) pond and the next are being transported across the countryside in a small plastic tank.

Planning is the key

As with all moves, planning is the key. Should the new pond be temporary or permanent? How big will it need to be? Is this the time to grasp the nettle and reduce stocks by rehoming some of the fish? Can the fish be farmed out to friends on a temporary basis for a few months while a permanent pond is built?

Caught by a job move, Martin had to move into rented accommodation for the next 12 months, which meant that building a new permanent pond to the standard of the current pond was out of the question, but, not wanting to be separated from his fish, he started looking for a semi permanent solution. Something that could move with him again but could also be made to look visually attractive while providing adequate accommodation for the fish. Looking to rehome some 45 koi with a combined weight of more than 220lb (100 kilograms) did pose some problems.

The move

The next problem to be addressed was that of physically moving the fish from their old home to their new home some 15 miles



Catching the fish one at a time Martin passed the net up to Adam and Jenny who then quickly transferred the fish into the transporting tanks on the trailer.

away. Two large open topped polythene containers each measuring approx 10.8'² (1m²) by 30" (0.75m) high fitted nicely into a robust four-wheeled trailer. The containers were lined with heavy-duty polythene to make them watertight ensuring there was sufficient polythene to tie the top to prevent spillage during transit.

D-day arrived and we backed the trailer as close to the pond as was possible. (With approx. two tons of water it is advisable to leave the trailer connected to the towing vehicle.) Armed with a 500gph (2,273lph) pump and 82' (25m) of garden hose the trailer mounted tanks were soon three quarters filled with water directly from the pond. A second pump was pressed into service and with a combined capacity of 2,500gph (11,365lph) the first shelves were soon exposed. By now the fish were aware that something was afoot and retreated to the deepest part of the pond, quickly stirring up the sediment to produce a thick green soup and significantly reducing our chances of netting them quickly.

The small pump soon became clogged with filamentous blanket weed - never to work again and with monotonous regularity the larger pump also became clogged, was stripped out and put back. In less than two



Jenny gently placed the fish in the transit tanks.

Creating the temporary home

The basis of the new system was found by purchasing two round open topped tanks measuring 4' (1.2m) in height with a diameter of 9' (2.7m) constructed from 1/2" (6.4mm) thick hard black rubber. Each tank would hold 1,500 (6,819 l) gallons of water. Installation of the tanks proved to be relatively easy as they could sit on the ground that only required levelling and covering with a 3.9" (100mm) layer of sand. However, although the tanks were ordered several weeks earlier, production and delivery problems meant that installation was delayed until five days before the move giving little time for commissioning before the fish arrived.

Having filled the tanks with tap water, an air pump was fitted to each tank and air injected into the bottom through three airstones in an attempt to remove the chlorine from the water while the water was kept moving by a couple of small pond pumps. With little time to spare, attention was turned to the filtration system. This meant uplifting the existing four bay cloverleaf filter from the pond and transporting it some 15 miles to the new site. Even using a large trailer it was too heavy to move without completely draining the water and removing the heavy Alpha grog from the fourth bay.

This was packed into sealed polythene bags to keep it moist. A concrete block plinth was built to support the filter and the pump and pipe work partially installed. This meant that removal and reinstallation of the cloverleaf was completed in a day, hopefully before too much damage was done to the filters bacterial flora. Once all the pipe work had been connected, the water was pumped via a 2,000gph (9,090lph) submersible pump through the 60 watt Yamitsa UV unit and into the Cloverleaf. Water was returned to the tank via a 4" gravity return.

Although the four bay cloverleaf filter had worked reasonably well on the pond the fish were now going to have to survive in a smaller volume of water without any assistance from marginal or other plants, so Martin decided to dedicate the Cloverleaf filter to one tank and purchased a three bay Trittech filter for the other tank, retaining the facility to push all the water through the Cloverleaf until the new Trittech was up to speed.

COLDWATER PONDS

hours from when we started pumping, the fish were confined to a small area of some 32.3² (3m²) with less than 11.8" (300mm) of water.

Catching can begin

Now Martin was able to start netting in earnest, catching the fish one at a time and passing the net up to Adam and Jenny who then quickly transferred the fish into the transporting tanks on the trailer. During the next fifteen minutes 47 fish, ranging from a Sarasa comet at less than a pound through to the huge 15-pound plus Ghosties, were transferred without loss. Operation complete some Stresscoat was added to



Ready for the off, but would the fish even survive the first leg to their new temporary quarters?



Water from the new tanks is slowly added to the transit tanks.



Transfer the fish slowly and carefully.

each tank and the polythene securely tied with string to prevent spillage during the fifteen-mile journey to their new pond.

This was the part of the operation that was possibly the most dangerous for the fish. Would such a large weight of fish be alright in such a small amount of water? Would they be physically hurt as the trailer bumped along the narrow country lanes? Would the tanks leak? We decided to go at a speed that would see the journey completed in around thirty minutes. There was more than a little relief when the string was removed and the polythene folded back to reveal all the fish swimming quietly in the transit tanks.

Using a bucket Adam slowly filled the transit tanks almost to overflowing using water from the new tanks. This would hopefully help to acclimatise the fish before transfer to their new homes. Meanwhile Martin added Kusuri Klay, a high purity montmorillonite to the new system in preparation for the fishes introduction. One by one they were netted, examined and gently released into the new tanks. Operation complete without a single loss.

One suicide

Over the next few weeks the fish settled in with very few problems, the filters both kicked in fairly quickly and the water quality



After one suicide, nets were fitted to the two ponds.

remained good although the nitrate levels in the tritech system remained fairly high. Sadly one of the Koi - a lovely ladderback, "which was one of my best fish" said Martin, jumped out of the tank that resulted in both tanks being netted as it was not

possible to lower the water level. Although not as good as a proper pond, the strategic positioning of a few plants and cladding the tanks with reed matting helped blend them in with the garden, making their temporary home as permanent as possible. ■



The small and beautiful Peacock Goby

Derek Lambert gives some practical advice on breeding in this extract from his new book

PHOTO: DAVID LUCAS



GOBIES HAVE FOUND GREAT POPULARITY within the marine hobby, but there are also a few wonderful freshwater fish within the group that are offered through the trade. There are literally thousands of species worldwide and many of these practise brood care in one form or another. Many species produce thousands of extremely small fry that have proved almost impossible to rear in captivity, but a few species breed easily and produce large robust fry.

Peacock gobies

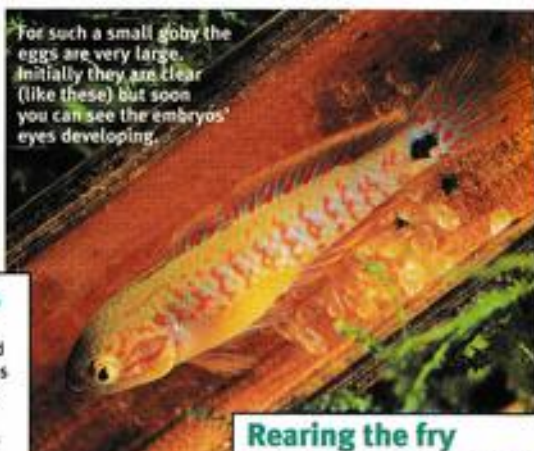
When Peacock gobies were first introduced to the aquarium hobby they commanded a high price and were very much sought after. Many years on, they are still much admired, although the price has come down to more reasonable levels.

To breed Peacock Gobies place a single pair in the breeding set-up and feed them on plenty of small live foods. Include gentle filtration (a bubble-up sponge filter is best for this) and change 10% of the water weekly. The male will lay claim to a suitable spawning area, while the female finds a quiet corner away from him.

Once in breeding condition, the male will start courting the female whenever he sees her. Eventually, she will be enticed back to his spawning cave. There they clean the spawning site, usually a rock face tucked away somewhere almost impossible to reach, and lay their eggs. When spawning has ended the female is chased away and should be removed. The male guards eggs and fry for four to six days after they have hatched. By then the fry are free swimming and go off in search of food and the male should be removed as well. ■



A pair courting prior to spawning. By this stage, most pairs will be ready to start laying eggs within a few minutes.



For such a small goby the eggs are very large. Initially they are clear (like these) but soon you can see the embryos' eyes developing.

Sex differences

Males develop a distinct hump on their forehead and tend to grow larger. Females have smaller finnage and a more rounded belly that turns bright yellow when in breeding condition.

Rearing the fry

The young are large enough to tackle Brine shrimp as a first food and grow rapidly. Feed some powdered fry food as well as live foods so the youngsters become used to taking prepared foods. They take several months to sex out by which time the male's hump is visible.



Three days after being laid the eggs have eyed up but the male continues to sit on his clutch of eggs and protect them from all-comers.

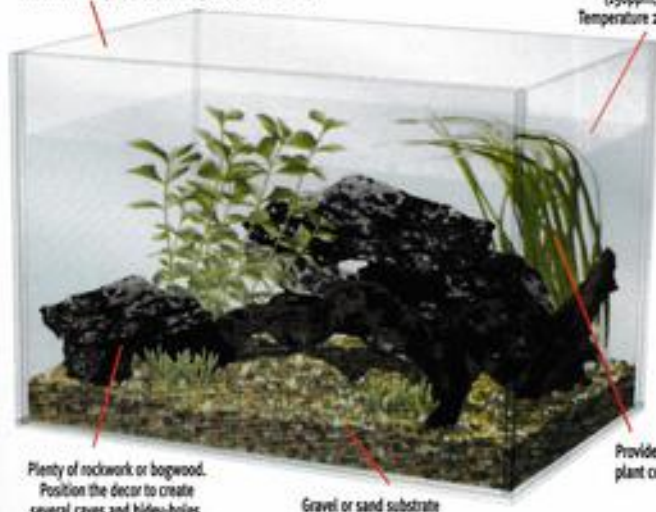


One month old.

Breeding setup

Tank measuring 45cm x 30cm x 30cm (18"x12"x12")

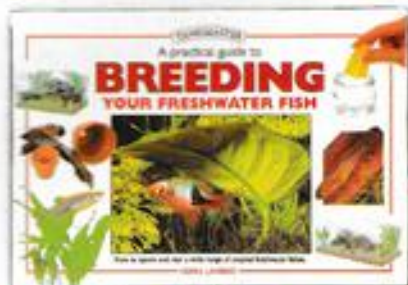
Hard, neutral water (150ppm, pH 7). Temperature 24°C (75°F).



Plenty of rockwork or bogwood. Position the decor to create several caves and hidey-holes.

Gravel or sand substrate

Provide some plant cover.



New book - 20 to giveaway!

We have 20 copies to give away of *A practical guide to breeding your freshwater fish* published by Interpet. Just send your name and address to Today's Fishkeeper, Breeding book giveaway, TRMG Magazines Ltd., Winchester Court, 1 Forum Place, Hatfield, Herts. AL10 0RN.



Riversdale Fishfarm

Today's Fishkeeper visits Riversdale Fishfarm in Lincolnshire



The main shop building is a converted stable building while the blue building with fluffy white clouds is a converted barn, housing coldwater fish



Inside the barn there are 36 vats holding Koi, Goldfish and other coldwater fish

RIVERSDALE FISHFARM IS WHAT the Americans call a classic 'Mama & Papa store'. Bob and Ruth Kay are the 'Mama & Papa' who own and run this shop, with help from other family members who are taking an increasingly active role in the business. As you would expect in this type of shop the atmosphere is a warm and friendly one, with the customers being treated as friends as well as customers.

The shop had its origins 30 years ago when Bob and Ruth moved to Lincolnshire to have more space to bring their children up in. Bob had been working in a Post Office but the

Shop details: Riversdale Fishfarm, Riversdale, Firsby Rd., Halton Helegate, Spilsby, Lincolnshire. PE23 5PA Tel: 01790 752450. Located on the B1195 nr. Spilsby.

Shop opening hours: 10am-8pm. Closed Tuesday.

Proprietors: Bob & Ruth Kay

Number of tanks: 114 and expanding.

Specialities: Marines and Tropicals.

Brands stocked: All major brands plus own brand products.

Show tanks: 2

Which groups of fish do you sell? Marines, Coldwater & Freshwater

Additional services: Water testing, Pond service & Tank set-up.

original idea was to set up as a Bed and Breakfast business; that was until they went looking for a tropical fish shop. At that

stage Bob had already been keeping fish for 10 years and was passionate about his hobby. On looking around he was horrified to discover the nearest local aquarium shop was many miles away. Plans were laid and Bob and Ruth opened their private fishroom (a converted stable) as an aquatic shop. The first weekend they were so busy people were queuing up outside just to look round and buy fish. Riversdale Fishfarm was born and has been going from strength to strength ever since.

Times move on and so has Riversdale Fishfarm. Over the years a marine section was added and a coldwater area. Next comes a major expansion to the marine, Discus and tropical areas, as well as a web

site. The expansion of the Discus side of things comes as no surprise to those who know Bob - Discus have always been a firm favourite of his. Ruth, however, loves Plecs and there are always a few good specimen ones on sale (we don't think she really likes to sell them!). ■

Our verdict

A great, family-run shop with a wealth of knowledge to draw upon. Good healthy stock and a reasonable range of dry goods, including some own brand products which represent especially good value for money. All in all, a shop worth visiting if you are ever in the area.

Bob's verdict on the manufacturers

Which manufacturer has the best range of products in your opinion? **Kent Marine and Eheim**
Which company gives your customers the best service? **Aquatic solutions, J & K Aquatics and TMC.**



The main shop is divided into a series of rooms with tanks laid out in bays

Product reviews

Eheim's 2010 internal filter receives its final review and we look at three new foods from Nishi-Aquaria



Eheim's internal filter has proven to be a reliable work horse well able to cope with a heavy load



The statistics

Aquarium size:	13-35 gallons (60-160l). Up to 4'
Flow rates:	48-110 gallons (220-500l) per hour
Power consumption:	6W
Guarantee:	2 years

EHEIM FILTERS ARE WORLD renowned for quality, so this internal power filter has a lot to live up to. The squat, rather square design is very useful for smaller aquaria where some of the other models are too tall to fit in. Another useful feature is the 'pick-up system' that allows you to pull the filter cartridge straight out of its housing for maintenance while leaving the motor and cable fixed in position in the aquarium.

Other particularly good features

are the variable flow rate and direction. A nozzle at the top allows you to direct the flow and by screwing it up or down the flow rate can be increased or decreased as needed. The top of this nozzle also has a place to fit a small piece of air tubing so it can act as a venturi thus increasing aquarium water oxygen levels.

Our model has been in continuous use for the last 4 months without any problems. Water flow will decrease as the

sponge becomes clogged but it is easy to clean and looks to be a good work horse.

After nearly a year in use

That was what we published about this filter back in August 2001, since when two filters have been in continuous use in our fish room. One is used just to polish the water in one of our 6ft community tanks so has had a relatively easy time of it. The other, however, has been the only filtration in a very mucky aquarium where lots of debris quickly clogs the filter up. Clean outs have been needed as often as twice a week just to maintain a reasonable flow rate. That said, the 'pick-up system' has made this job extremely easy. Other companies have something similar but this one seems the easiest to use out of those we have tried out. The sponge has held up well under extreme usage and water quality has always been maintained at a high level. All in all, an excellent filter well worthy of our Gold Star award.

Nishi-Aquaria add three new products to their range

At GLEE Nishiki launched a whole raft of new products, some of which we have already reported on. Here are three more all aimed at the aquarium market.

Mini-Pellets?

Two of the new products come in pellet form (Pellet mix & Colour Booster) with the Colour Booster actually being described as a 'mini-pellet'. Looking closely at both products the pellet size looks to be the same and neither could really be described as 'mini'. In fact most of the small tropical fish species we tried these foods on had real difficulty eating them, until they were water logged sufficiently to soften up. Then they could bite pieces off. Apart from this one problem for small fish, the medium to larger sized fish we tried them on gobbled them up.

The Pellet Mix has 33% protein, 3.7% Oil, 5.2% Ash, and 2.7% Fibre. It contains three types of pellet, Yellow with immunostimulants for health, Green which are high in protein for growth and red with natural enhancers for colour.

The Colour Booster pellets have 37% protein, 6% Oil, 7% Ash, and 2.1% fibre. They contain 7% spirulina that is a natural source of carotenoids.

The Multi-Sticks look to be the same formula as the Pellet Mix and have 33% protein, 3.7% Oil, 5.2% Ash, and 2.7% Fibre. They contain 3 types of stick, Yellow with immunostimulants for health, Green which are high in protein for growth and red with natural enhancers for colour. Being longer than the pellets these sticks are definitely for fish in excess of 3" (7.5cm). One young Pike Cichlid we tried these out on went absolutely crazy for them and all the rest loved them.



tropical marine coldwater & ponds plants regulars

Trade talk

All the news from around the trade.



Arcadia's new web site includes a pendant selection chart which has been produced in order to help anyone thinking of investing in the series 3 pendant to select the correct model for them.

Arcadia revamp their web site

Arcadia have just undertaken a complete reconstruction of their web site. It now covers in depth all of the current Arcadia product range, all well illustrated and with advice on their use and charts of specifications where appropriate.

Using the retailer locator, consumers can now easily find their nearest Arcadia stockists. The pendant selection chart has been produced in order to help anyone thinking of investing in the series three pendant, to select the correct model for them.

Anyone wishing to put a face to a name can do so by viewing the photographs included in the company profile section. It also contains a number of frequently asked questions and links to related sites - both of which will be added to with time.

The address for the site is www.arcadia-uk.com

New products from DUPLA

Dupla have been expanding their product range recently and by selling direct to the public have managed to bring their products down to a more affordable level. Dupla UK say they will be bringing out a new systemised aquarium in January. Other new products are:

DUPLA Thermik Set Omega is a permanent 20W source of heat that they say activates root development and supports biological circulation. It is suitable for all aquariums from 60-200 litres and is an affordable entry product for substrate heating.

DUPLA AlgoControl Delta is made with specially fermented barley straw. It is a lasting and effective algae prophylaxis which they say has no impact on aquarium plants. It is suitable for every aquarium up to 240 litres.

All Dupla products are available only from Dupla U.K. direct who

can be contacted by phone on 0116 270 6010, fax 0116 270 2913 or e-mail dupla.uk@virgin.net. To check out the full product range and prices go to www.aquaticproducts.co.uk

SeaClear Acrylic Aquariums performs web site makeover

The CASCO Group, manufacturers of SeaClear Acrylic Aquariums, has announced a complete revision of the www.seaclear.com web site. Expanded information for SeaClear Acrylic Aquariums is now included within the www.casco-group.com site and the www.seaclear.com domain will redirect the browser to the proper location.

The new on the web site has lots of photographs and improved information explaining the benefits of an acrylic aquarium. Other

subjects covered are the acclaimed System II aquarium with built-in filtration and information on aquariums with a built-in skimmer box. Later on-line warranty registration will be available.

CASCO Group, Inc., is one of the largest manufacturers of acrylic aquariums and retail aquatic merchandiser systems in the world. CASCO specialises in the design, manufacture and installation of all types of animal and aquarium displays.

Today's Postbag



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



Beautiful furnished aquaria often have nothing to do with a natural biotope.

Who wants a natural biotope aquarium?

I have had a very busy year and my garden has been sadly neglected, in fact, it's so overgrown it's reverted to its natural state, and what an untidy mess it is!

Looking at some of these "natural" biotope tanks gives me the same feeling as looking through the window at my neglected garden. My brother has just returned from tropical parts and brought back a load of pictures of fish habitats and, quite frankly, I would not like to recreate any of them in my beautiful furnished aquarium where the rocks, gravel, plants and fish have all been chosen to create a

pleasing blend. I don't care where they all originated from, they all came from the aquarium shops I have visited. I certainly don't intend to have a pool in a paddy field, a heap of leaf litter, a sewage ditch or a mass of entangled plant roots in my living room tank. Let's face it, an aquarium is not a natural environment but then we don't live in ours, do we?

Must dash, I need to do some work in my 'returned to nature' garden and I don't have a make over crew who can do it in a few hours.

Angela Long, Nottingham

Plants go mad

I thought I would drop you a line about my fish tank. It is 36"x12"x15" and has a wide range of tropicals. At the beginning of the

year I decided to get real plants. I thought my gibbiceps might eat the plant but he does not.

Anyway, all the plants are flourishing, the Sword plants are going well but the *Elodia densa* has gone mad, it has gone from one end to the other and I have to keep trimming it back. My cabomba seems to be growing better since it is in the substrate but on the surface of the water. My girl friend got plants at the same time as I did but her's are not growing like mine are.

By the way, I like your new name and style of magazine now. I have been buying your magazine since 1986 and really enjoy it. I have noticed, however, that you do not do an index of the year's magazines and what has been in them like you used to.

Allan Stuart, Alesss, Ross-shire

star letter



My brother and I have been avid readers of your wonderful magazine since the 1960's when it was *Aquarist* and *Pondkeeper*. We used to run a bus for our club members to the B. A. F. when it was held in Belle Vue, Manchester. Due to pressure of business we had to give it up. Now we are both retired we saw the ad. in the Nov. issue of your magazine and decided to go again. We duly left at five in the morning and set off for Stretford. I took my grandson with me and on the way down I was telling him stories about previous visits and how good the show would be. What a disappointment, the table show was smaller than our normal club night and the trade stands were almost non-existent. What has happened? On the way home we looked into your magazine for any ads. and we saw one in Penrith. It was called North Lakes Aquatics and it turned out to be one of the best pet shops we have ever been in and we all bought some fish, so it wasn't a wasted day. Keep up the good work with *Today's Fishkeeper*.

Archie Fyle, Balloch, Loch Lomond

Golden Pheasant

PHENACUS SPURRII (PETERS)



4.5" 19°F 23°F



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 8BN Telephone 01673 885352, fax 01707 269333 or e-mail andpedition@btinternet.com copy deadline 6 weeks before publication date.

Today's Diary Dates

January's show, auction and club meeting dates

Tues 1st	Corby & D.A.S. meeting; Contact 01536761736 Oasis Fish Club (Sunderland) meeting; Contact 0191 384433 Houslow club meeting; Contact 01784 259230 Perth A.S. meeting; Contact 01738 621704 Clacton Fish Keeping Club meeting; Contact 01255 428065 Worthington A.S. meeting; Contact 01900 67951 Purtonmouth A.S. meeting; Contact 01673 885352 Bracknell A.S. meeting; Contact 01344 489287
Thurs 3rd	Fairley A.S. meeting; Contact 01738 561291 Sandgrounders A.S. Contact 01704 541177
Fri 4th	NorthWest Coblid Group meeting; Contact 0190422 707 593
Sat 5th	Sutton A.S. meeting; Contact 01302 702181
Sun 6th	
Mon 7th	Kirkcaldy A.S. meeting; Contact 01738 634689 Selway A.S. Meeting; Contact 0187 750606 St Helens A.S. Meeting; Contact 0151 4260 4213
Tues 8th	Dunstable & D.A.S. meeting; Contact 01582 707280 Greenock D.A.S. meeting; Contact 01475 704219 York & Dist. A.S. meeting; Contact 01904 414272 Telford & D.A.S. meeting; Contact 01952 409721 or 01952 616410 Bangor Aquarists and Breeders Society meeting; Contact 018 9873539 The Irish Tropical Fish Society meeting; Contact 01 456 1836 Hilton A.S. Contact 0151 289 8190 Northern Goldfish and Pondkeepers meeting; Contact 0161 969 7367
Wed 9th	Tameside A.S. meeting; Contact 0161 339 6593 Linthgow Aquarist Society meeting; Contact 01506 510558 Halifax A.S. meeting; Contact 01274 880471
Thurs 10th	Mid-Sussex AS meeting; Contact 01273 602407
Fri 11th	Basingstoke A.S. meeting; Contact 01256 467889 Yorkshire Childid Group meeting; Contact 01924 367086
Sat 12th	Sutton A.S. meeting; Contact 01302 702181
Sun 13th	Kirkcaldy A.S. meeting; Contact 01738 634689 Bristol Aquarist Society (Goldfish) meeting; Contact 01792 207467 Hilford A.D.A.P. Society meeting; Contact 0208 550 7329 Grimsby & Cleethorpes meeting; Contact 01472 346178 St Helens A.S. meeting; Contact 0151 4260 4213
Mon 14th	

Tues 15th	Southend Leigh & Dist A.S. Contact 01702 305740 Darren A.S. meeting; Contact 01254 701925 Northwich A.S. meeting; Contact 01606 882966 Oldham A.S. Meeting; Contact 0161 281 3725
Wed 16th	West Yorkshire Marine Aquarist Group meeting; Contact 01924 42050 Merseyside Aquarist Society meeting; Contact 0151 201 5969 Clacton Fish Keeping Club meeting; Contact 01255 428065 Tongham Aquarists Society meeting; Contact 01252 25688 Purtonmouth A.S. meeting; Contact 01673 885352 Bracknell A.S. meeting; Contact 01344 489287
Thurs 17th	February 2002 TODAY'S FISHKEEPER on sale Fairley A.S. meeting; Contact 01738 561291 Bristol Tropical Fish Club meeting; Contact 0117 973 2145 Sandgrounders A.S. Contact 01704 541177
Fri 18th	
Sat 19th	Sutton A.S. meeting; Contact 01302 702181
Sun 20th	Carlisle Study Group U.K. meeting; Contact 01704 213690
Mon 21st	Kirkcaldy A.S. meeting; Contact 01738 634689 Thorpe & D.A.S. Club meeting; Contact 01953 605394 Selway A.S. meeting; Contact 01387 750606
Tues 22nd	Greenock D.A.S. meeting; Contact 01475 704219 Greater Manchester Coblid Society meeting; Contact 01422 942555 Midlands Marine Aquarist Society meeting; Contact 0121 359 4469 Worthington A.S. meeting; Contact 01900 67951 Halifax A.S. meeting; Contact 01274 880471
Wed 23rd	
Thurs 24th	Mid-Sussex AS meeting; Contact 01273 602407
Fri 25th	Eastbourne & District Pondkeeping; Contact 01323 7731369
Sat 26th	Sutton A.S. meeting; Contact 01302 702181
Sun 27th	
Mon 28th	Kirkcaldy A.S. meeting; Contact 01738 634689
Tues 29th	Northwich A.S. meeting; Contact 01606 882966 Oldham A.S. Meeting; Contact 0161 281 3725
Wed 30th	
Thurs 31st	

Weekend Success

THIS YEAR'S FESTIVAL OF Fishkeeping & Water Gardening Weekend was sponsored by Today's Fishkeeper and our sister publication, the Water Gardener magazine, and turned out to be a weekend not to be missed. Over 250 people stayed for the weekend

and most said how much they enjoyed the event. Whether you are a fishkeeper or water gardener there was certainly something there for everyone.

Looking primarily at the fishkeeping side we were treated to a series of enjoyable lectures by



Alf really is more than just a hands on aquarist. He likes nothing better than to get right in with the fish and observe their natural behaviour in the wild.



PHOTO: ALF DAVENPORT

This undescribed new species of *Aequidens* was collected by Alf in the Rio Atabapo, Columbia

Saturday saw over 120 Goldfish
and 90 Catfish benched

All the news from around the club scene



Today's Editor and Livebearer expert Derek Lambert, talked about some of the more unusual fish that use livebearing as a method of reproduction



One of the most beautiful of all Aequidens in AIF's talk was A.sp. "Goldsaam"

several contributors to Today's Fishkeeper. Subjects covered were Livebearers (Derek Lambert), Catfish (Ian Fuller) and our Cichlid expert, Alf Stalsberg, flew in especially for the event. He gave 2 fascinating presentations covering a collecting expedition to Columbia and an in-depth look at the Aequidens group of Cichlids.

Apart from the lectures there was a series of very well supported shows. Saturday saw over 120 Goldfish and 90 Catfish benched, with the Sunday Hagen Masters open show causing mayhem and confusion because not enough space was available to put all the entries on. At one time it looked like the Today's Fishkeeper

table would have been pressed into service for some of the overflow!

What else did you miss out on?

Apart from the shows and lectures, Maidenhead Aquatics had over 30 furnished aquaria on display. These ranged from simple community tanks through to specialist set-ups designed with specific species of fish in mind. Koi also made an appearance with a display from South Hants & Worthing Koi Society and Aquarian ran the final of their Aqua Champ competition.

For those people staying for the weekend there was a worthwhile

goody bag. Many of the major manufacturers had slipped something into this, so the final bag of goodies was worth a considerable sum of money. Of course the latest issues of Today's Fishkeeper and Water Gardener magazines took pride of place among the freebies!

During the evenings, live entertainment of a good standard was available. Finding a quiet corner to chat about fish at this time was a little difficult but that was about the only quibble we heard over the weekend. All in all, it was a great social weekend as well as a good place to learn about fishkeeping. So make sure you don't miss out next year! ■



Today's catfish expert, Ian Fuller, gave an interesting presentation on Corydoras



tropical marine coldwater & ponds plants regulars



New Threads

Pete Liptrot profiles The Paradise Threadfin *Polynemus paradiseus*

THERE ARE SOME FISH THAT LOOK too outlandish to be natural and yet are wonderful true products of evolution. Unlike the abominations sometimes produced by selective breeding, every structure has a purpose, every feature can be explained in some aspect of the life history of the species.

Many threads

For me this is one of them. *Polynemus* is a genus within a family of fishes *Polynemidae* that

are widely distributed across the subtropical and tropical oceans of the world, mainly in coastal and estuarine areas. The larger members of the family are highly regarded as food and game fish and may occasionally appear on market stalls here in the UK, where they are noticeable by their remarkable semi-transparent nose!

Fortunately, there are a number of species that stay small and a few of these have been found only in freshwater, which gives them great potential as aquarium fish.

Aquarium conditions

The Paradise Threadfin reaches at least 25cm and 45cm may be possible, therefore it will be better to house them in a large aquarium from the start. Adult fish will require at least 150 gallons of water, preferably larger, but obviously should some of the smaller species become available then correspondingly smaller housing can be used.

Feeding should not be a problem, they would appear to be opportunistic predators feeding on crustaceans, molluscs, worms, other invertebrates and even small fish. Lighting is not critical, however, it probably should be subdued to mimic the low light conditions in the turbid natural habitat. It is highly unlikely that there will be any aquatic plants in the muddy brackish estuaries these fish are known to inhabit, so these should not really be considered as part of the décor. Instead rounded rockwork and maybe well cured driftwood should be used to give the fish a refuge. The substrate should be fine sand, as gravel may damage the fine threadlike extensions to the fins, giving rise to fungal or bacterial problems.

Filtration should be able to cope with the results of feeding a fairly rich diet and should produce good circulation within the aquarium to ensure high oxygen levels. The addition of some marine salt will keep the pH and hardness suitably stable and regular water changes should be carried out at a rate that maintains the Nitrate at less than 25ppm. Ammonia and Nitrite should at all times be undetectable by normal hobbyist test kits. If a specific gravity of about 1.005-1.010 is aimed for this should be acceptable for the fish, but obviously it would be advisable to enquire at the dealer what conditions the fish are being held in. It is unlikely that they will tolerate any deterioration in water quality, and the first signs of such a lapse in maintenance will likely be the loss of the fin extensions that make the fish so desirable.

Temperature should be between 22 and 26°C, any higher should not be necessary and any lower would leave them lethargic and open to disease. Little information is available on compatibility with other members of the same species within the aquarium. They are said to form loose shoals in nature, but the term 'loose shoals' often means that each individual likes to have its own space! With this in mind it would only be wise to obtain more than one individual if the aquarium they are to be housed in is huge, at least until more information is available on their likely social interactions. Other tank mates should be chosen carefully and territorial or otherwise aggressive species should be avoided.

PHOTO: GABRIEL VECCHIALE



The name *Polynemus* actually means 'many threads', which is a reference to the specialised rays of the lower half of the pectoral fins, which are extended into long filaments. It has to be assumed that these are used in order to find food in the soft sand and mud found in the estuarine habitats they occupy.

There is at least one species that appears to be a true dwarf, only being known to reach 11cm, *Polynemus verekeri*, but the others range in size from 20cm or so upwards.

Up to now only a few exporters have featured these fish on their

lists, under the name *Polynemus paradiseus*, a species with a very wide distribution from the coasts of Pakistan to Indonesia. It is unclear whether this name is actually correct for the fish that are collected for the aquarium trade, as there are a number of other species that live in the area where the lists originate (Indonesia). If the fish imported are indeed *P. paradiseus*, it may be that as adults they will require brackish or even marine water and it may be advisable to keep them in slightly saline water at all times. This species is only known to enter full freshwater at breeding time.

"The name *Polynemus* means 'many threads' which is a reference to the specialised rays of the lower half of the pectoral fins."

The Paradise Threadfin *Polynemus paradiseus* look too outlandish to be natural



Want to buy one?

If you are convinced that this species is what you desire, then it may be necessary to ask your local outlet to order one specially. Offer a deposit, as they are otherwise likely to be seen only occasionally and then only at the more adventurous of aquatic specialist dealers. This is potentially a superb display fish that would not look out of place in any Public Aquarium as a fascinating exhibit.

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.....
LATEST NEWS . . . Nothing too radical to report this month . . . Some absolutely gorgeous *Sphaerichthys vailanti* in at the moment, plus plenty of other nice Bettas. Some decent small Rasboras too, including *Rasbora brittani*. Plus our usual big selection of Characins & Catfish . . . including lots of Corydoras. Watch this space though . . . we (hopefully) have some nice stuff lined up for the New Year.

Best Wishes for Christmas & we hope 2002 is another great Fishkeeping year for all our customers & clients.

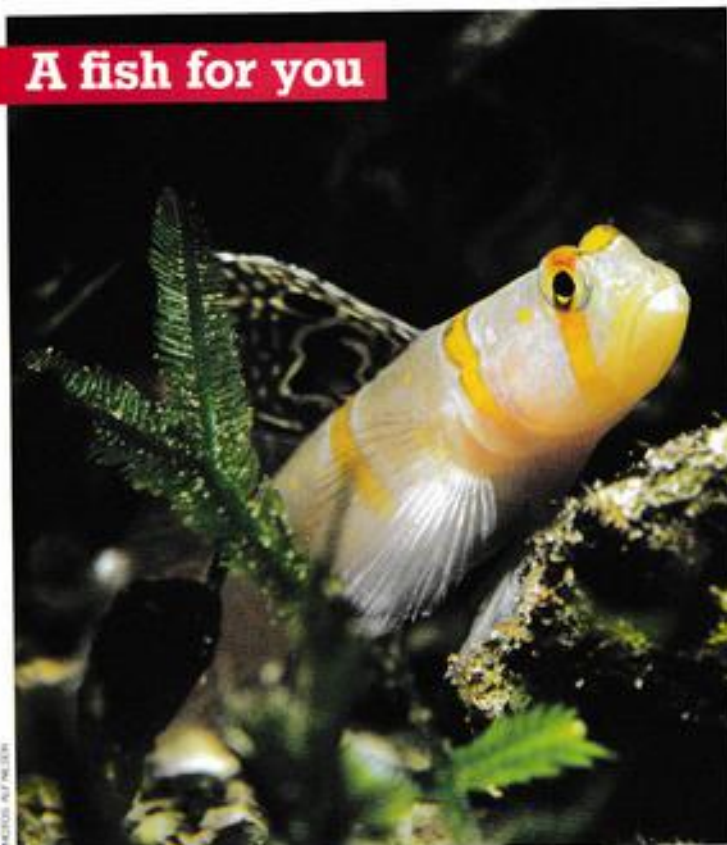
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Sea view

Andrew Caine takes a close look at Aqua Medic's Calcium Reactor 400 and Nitratereducator 400 and has another fish and invertebrate for you to keep



A fish for you



Randall's goby, *Amblyeleotris randalli*

This is a magnificent looking fish with an equally magnificent lifestyle in the wild. What we have here is a member of a group of gobies commonly called shrimp gobies because they live in a symbiotic relationship with pistol shrimps.

The goby lives within a burrow in the soft substrate, here it is able to hide from predators and dart out to catch a meal. However, the burrow has to be maintained, enter the shrimp. This mini lobster is virtually blind, but how it can dig. So the blind bulldozer maintains the burrow, but what does he get out of this relationship? Protection from being a meal, the shrimp

always touches the goby and can even tell if the fin movement is from fish behaviour or water movement to reduce false alarms. When the goby feels threatened the shrimp retreats into the burrow quite rapidly, followed by the fish.

It's lucky here that the relationship is termed non obligate which means if we break up the partnership the animals can live without each other, for without a partner is how most of these gobies come to reside in our aquariums. It is possible to marry a pair by adding the pistol shrimp and goby, but to increase the chance of them pairing do your research and find species from the same area, or, if you are lucky, you might stumble across a pair in a dealer's tank.

This little beauty can easily be identified by the large dorsal fin, and what a fin it is. To observe a pair dancing and flashing that fin is truly one of the most amazing sights in aquatics. However, getting them to lay eggs is another thing. They are a relatively easy fish to keep as long as you have plenty of substrate for them. If you don't have a small overhang or cave you soon will have. Any reef aquarium is not complete without one or more prawn gobies. They're absolutely brilliant, go on, treat yourself, you won't be disappointed.

PROFILE

Family	Gobiidae
Name	<i>Amblyeleotris randalli</i>
Location	Indo pacific
Feeding	Any small shrimps, live crustaceans inhabiting the aquarium
Reef compatibility	Recommended
Tank mates	Peaceful fish, pistol shrimp is ideal
Size	7 cm
Difficulty	An easy, small fish

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An invertebrate for you

Sea
view

Feather duster worm (*Sabellastarte magnifica*)

My reef aquarium has six huge bristleworms inhabiting the substrate, I actively feed them and encourage their growth. Many people who observe the aquarium often comment on how wonderful they are. Yes I am talking about my Feather duster friends for, in fact, they are true sedentary bristleworms.

Fantastic animals they are, colourful, need very little looking after, you don't have to actively feed them, and they are not costly. What more could one ask for in a marine animal? Well, they are great but as with all your aquatic beasts you should know something about them. A very good example that comes to mind was when someone came into the shop and told me that one of his Feather dusters had died in the night and when the aquarium light came on he noticed the head of the worm on the sand and duly removed it. This was a

healthy animal that had shed its feeding apparatus and had started to grow a new crown but it died because someone had kept an animal he had no knowledge of.

Yes the worm is situated within a tube, this very tube is constructed out of fine particulate matter, collected from the water or substrate and mixed with mucus then deposited at the top of the tube, as growth occurs. The head of the worm is surmounted with a ring of pinnate radioles that form the crown. Each of these is a very fine filter. As a particle is collected it is transported to the mouth via a series of stiff hairs known as cilia. When these are damaged the animal's feeding capability is reduced, hence the shedding of the head. It can take up to two weeks for regeneration to occur when a small crown appears. Growth is then quite rapid.

Aquarium inhabitants should be peaceful reef fish as the crown will be damaged by nippers such as butterfly fish and cowfish. These are delicate animals and do not tolerate poor water quality or sudden changes in

salinity. When introducing them into the aquarium, one should acclimate them correctly by adding your water over a period of time. A distressed beast will crawl out of its tube and this is the end of the animal. →

PROFILE

Phylum	Annelida
Name	<i>Sabellastarte magnifica</i>
Location	Western Atlantic, close relatives have a global distribution
Feeding	Suspended food
Size	10 cm crown diameter
Water flow	Moderate
Lighting	None required
Difficulty	Easy, great for beginners. As always, good water quality is required

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Sea view



The Aqua Medic Calcium Reactor 400 is designed for the constant supply of calcium to marine aquaria with a maximum capacity of 400 litres, and the Aqua Medic Nitratreductor 400 is designed to remove nitrate from freshwater and marine aquaria with a maximum capacity of 400 litres.

When you look at these two pieces of equipment the first thing that comes to mind is that they have not been designed to be aesthetically pleasing but specifically for the intended job, and let's face it, they will spend most of their life within a cabinet or in the sump out of sight. What I like about these is that they give the impression you could drop them and abuse them without any damage. With my handling that is important and robustly constructed they certainly are.

The top houses the water circulation pump, inlet and outlet ports and a port for



pH and redox potential probes if you wish. For water feed, we are supplied with a tee piece so you can cut into an external filter pipework, so you do not have to purchase an additional pump. The filter chamber fits to the top with only two clips but they give a watertight seal. The calcium reactor comes complete with hydrocarbonate media and the nitratreductor comes with bioballs and most importantly Deniballs, so both come complete, no need to buy media.

Deniballs are bacteria produced plastic, these provide surface area and a nutrient source for bacteria living in an anoxic environment. Having to feed such bacteria every week with liquids is now old technology, deniballs give a year's supply of nutrients to bacteria, so forget the feeding just put the deniballs in. They are expensive but worth it. My own nitrate filter is filled with deniballs and I just leave it alone, they do a great job. ■

The price tag

We now come to the most important bit, cost and extras needed. I am pleased to say that both retail at £85.00 each which is a good buy. Extras needed for the calcium reactor is of course a CO₂ system, 'CO₂ Compleat' from Aqua Medic, which is everything you need, costs £155.00 giving a complete calcium reactor for £240.00, good value. No extras are needed for the nitratreductor.

Optional extras are redox potential controllers and pressurised probe for the nitratreductor, costing £232.00. For the calcium reactor a pH controller, solenoid valve and pressurised probe cost £258.00.

Write to Andrew

Andrew Caine is Today's Fishkeeper's expert on marine matters. Write to him at Fishkeeping Answers, Today's Fishkeeper Magazine, TRMG Ltd, Winchester Court, 1 Forum Place, Hatfield, Herts. AL10 0RN, enclosing a SAE. Alternatively you can e-mail him at askap@btinternet.com. All letters and e-mails will receive a personal reply and you have a chance of winning the star prize with your question.



I will be putting both these pieces of equipment into action and giving a performance review in about six months, but initially they do look very good.

Corys & Cats



Ian Fuller, chairman of the Catfish Study Group (UK), identifies some of the 'Spotted ones'

IDENTIFYING THE MANY SPECIES OF *Corydoras* is becoming more and more difficult: there are a considerable number of species that can easily be mistaken for others that are similarly marked. Here I will try and show some of the characteristics that may help to separate some of the species that come into the trade as '*Corydoras punctatus*' bearing in mind that these are only my opinions and should be used as a guide and not to be taken as fact. As I go through groups of species it will lead into other confusions and bring in species that are possibly new and yet to be described by science. The most obvious

solution would be to have a picture database of all known species that could then be used for comparison; unfortunately we don't have that luxury although the Aqualog 'All *Corydoras*' book comes close.

Increasing confusion

Today there are increasing numbers of *Corydoras* species arriving in our shops that have names that are made up, either by the catcher or the exporter. I have known the same fish turn up on three consecutive shipments with three different names; this is invariably a ploy by the exporter to sell

fish he would otherwise be stuck with. The opposite also happens when exporters call every other black spotted *Corydoras*, *Corydoras punctatus*.

The main species that are imported under the guise of *Corydoras punctatus* are usually *Corydoras ambloicus*, *Corydoras agassizii*, *Corydoras leucomelas* and *Corydoras schwartzi*. This is something that should never have occurred in the first place, because *Corydoras punctatus* does not even come close to looking like the other four.

Firstly, it is the only one of the five species that does not have a dark mask across the eyes. The body, which is whitish, is covered



Corydoras ornatus

with small to medium round black spots, the other four species have irregular shaped blotches all over their bodies and in some specimens those blotches along the sides blend into irregular rows.

Observing the dorsal fins

The dorsal fin of *Corydoras schwartzi* is creamy white in colour and instead of, or as well as, a large blotch or bar, there are two or three rows of small horizontal blotches that in some individuals may be hardly visible. This is one of those species that can show a wide variation of colour pattern within a single population.

The other four have large distinctive black areas in their dorsal fins and this characteristic is how you can identify each species.

Corydoras punctatus has a large round to oval black blotch that is situated more or less centrally in the dorsal fin.

Corydoras ambloicus has a black area that starts below the first three or four dorsal fin rays and extends upwards into the dorsal fin, reaching to approximately two thirds of the way up.

Corydoras agassizii is very similar in appearance to *Corydoras ambloicus* and at times it is very difficult if not impossible to differentiate between these two species. Where they do tend to differ visually is in the dorsal fin bar / blotch. *Corydoras agassizii* has a dark brown to black pigment that extends from the body covering the full length of the first two, or sometimes, three



Corydoras punctatus



Corydoras pulcher

*Corydoras punctatus**Corydoras opossini*

soft dorsal fin rays. However, this can be variable in size and intensity from one specimen to another. The size, orientation and colour of the body blotches of both species are so variable, ranging from a medium tan to dark brown and almost black, that to separate them by body markings alone is impossible.

Observation of body patterns

Corydoras leucomelas is somewhat smaller and stockier than the previous two species and its colour is more defined. The body is

*Corydoras schwartzi**Corydoras ornatus*

white covered with smallish jet-black blotches that can also be quite variable in size and distribution and in some specimens they may form irregular rows. There is a largish black diamond shaped blotch that is fairly evenly dispersed on the body and dorsal fin.

Corydoras schwartzi also has a white body and is a little larger than *Corydoras leucomelas*. It also has black irregular blotches that are larger than in *Corydoras leucomelas*. These form four or five bands that run the length of the body. These bands may be quite variable being very distinctive in one specimen and hardly discernible in another. Note that the bands along the sides of the body are positioned on either side of the juncture of the dorsal and ventral scutes, which is a feature that separates it from two other similarly marked species that have an irregular band or row of blotches along the centre of the body as well as rows above and below. These species, *Corydoras ornatus* and *Corydoras pulcher* have a row of blotches that extend back from the head

*Corydoras leucomelas*

along each side of the body to the caudal peduncle. *Corydoras ornatus* has two rows either side of the central one and the blotches rarely combine to form solid bands. In *Corydoras pulcher* there is only one on either side with a dark ridge that runs the full length of the back and the blotches join to form broad bands. It also has a large black diamond shaped blotch that covers most of the front half of the dorsal fin and extends down the body as far as the juncture of the dorsal and ventral scutes.

The final species is *Corydoras parallelus* that looks like *Corydoras schwartzi*. The body markings are situated in exactly the

same areas but in *Corydoras schwartzi* the blotches form broken bands rarely being fused to form solid bands. *Corydoras schwartzi* has blotches in the caudal fin, that form up to eight irregular vertical bars and *Corydoras parallelus* has an almost clear caudal fin. ■

NOTE

If any one has a particular query regarding identification please feel free to write in and I will see if I can help solve the problem.



Gorgonian Sea Fan, *Solenastrea ticksoni*, photographed at Tibbataha North Reef, Solo Sea

The Myth of Nutrient Poor Reefs

Dr Ronald L. Shimek starts a new series on feeding corals

THIS IS THE FIRST OF A FOUR-PART SERIES discussing nutrient utilisation in coral reef aquaria. This particular article will emphasise the processes occurring in natural reefs. I hope it will set the background for the remaining articles, where I discuss what is occurring in our aquaria.

The stage is set

I am a marine ecologist and for a number of years, I have studied nutrient processes in, mostly temperate, marine ecosystems. When I started to keep reef aquaria, I discovered that most of the reef aquarium 'references' had rather 'entertaining' discussions of nutrients, nutrient-transfer processes and ecological relationships in general on reefs. Unfortunately, those entertaining discussions had about as much relationship to what is really occurring with coral reef animals, as astrology does with astrophysics. So, to ensure some credibility, unlike many aquarium 'reference' authors, I have included my information sources in the peer-reviewed professional literature, the so-called 'scientific journals'. None of the information sources are difficult to read, and I urge all readers to examine this literature for information and insight. In general, I think you will find some aquarium literature disturbingly inaccurate. To facilitate the ease of reading for this series, I won't bother to cite sources in the text, but I have listed the sources consulted at the end of the article.

SEEING Red

John Tate suggests a beautiful plant to grow in your aquarium and has some vital tips on lighting

GIANT RED ROTALA (*Rotala macrandra*) IS found in parts of India and Southeast Asia and belongs to the Lythraceae family. The genus boasts some remarkable, distinctive varieties, varying in their level of difficulty. *Rotala macrandra*, might not be considered the easiest, but it's definitely well worth any aquarists consideration. It is, however, one of those aquarium plants with a sporadic availability, so ring your aquatic retailer to check their stock first.

Few plants are so attractive

Getting a positive ID is usually easy, few plants are as stunning. It has pointed, ovate, almost elliptical leaves 2-3cm in length and approx. 1cm in width. Each leaf has a distinctive deep bronze red top, and a purple red underside, arranged in opposing pairs, or occasionally trios, on very fine sensitive stems. They will often grow to the height of the aquarium.

Its tall growing nature makes it a versatile background plant, providing perfect contrast when set against bright green plants such as *Limnophila sessiliflora*, or *Hygrophillo polysperma*. It can also be grown mid ground if regularly pruned.

This plant is usually sold as a collection of stem cutting secured in a pot. When choosing a specimen look for plenty of good healthy growth, and signs of rooting at the base of the stem. Once home remove the pot and the securing medium carefully, so as not to damage the delicate stems. Then gently, with forefinger as dibber, insert the stem deep into the substrate (a fine sand like substrate is preferred), tweezers often prove very handy for this. Repeat this leaving a good gap between stems to prevent shadowing (leaves taking the light from others), as this species is very much dependent on good light intensity for its colour, the stronger the light, the



Giant red roatala is one of the most attractive plants to be grown in an aquarium

Lighting tips

Lighting is extremely important when considering the welfare of aquarium plants. Here are some useful tips to use.

- 1 Use good quality tubes, with a high red spectrum, around the 720nm area. These tubes are often marketed with a name that identifies them with plants.
- 2 Provide approx. 1w per 2ltr of water.
- 3 Always use reflectors over tubes, so that any light escaping is directed back to the tank. N.B. reflectors are not light substitutes.
- 4 After a year to 18 months the light

wavelengths of fluorescent tubes degrade to a point where they are no longer optimally beneficial, and may promote the growth of algae rather than higher plants. Replace your tubes regularly, even if they are still emitting light.

5 If you use plastic condensation trays on your aquarium, you might have noticed that after a time they become opaque. This is due to UV. admissions from the tube. Replace the tray once the clouding prevents good light penetration.

6 Provide light for 10-12 hours every day - fit a timer if you are not at home to turn the lights on every day.

stronger the coloration.

It is generally tolerant of water conditions, but regular pruning after the plant has settled will encourage the plant to thicken. Ensuring a regular dose with a liquid feed,

and the occasional iron tablet will help maintain vibrancy. If the original species proves too demanding for your conditions try *Rotala macrandra* 'Florida', a slightly different form, but a bit easier to grow. ■

Koi World



Bernice Brewster takes a close look at the life expectancy of pond liners

FOR ANYONE CONSIDERING BUILDING A KOI pond, or even some reconstruction work, I thought I might take the opportunity of the quieter koi keeping months of the year to explore some essential pieces of pond equipment. Recently, I read an article that questioned the validity of the length of time that pond liners are supposed to be guaranteed. The question was posed, if a child buys a grandparent a pond liner for a present, for whose lifetime would it be guaranteed, the child's or the grandparent's? Clearly, the original question was rather facetious but this set me thinking as to what is meant by a lifetime guarantee on the labelling of pond liners? Over the years, the manufacture of rubber products has improved significantly from a couple of decades ago, when the average life span of

a liner was 30 years, whereas Firestone rubber liners have a life expectancy of 80 years - the lifespan of the child? Butyl liners have a life expectancy of between 30 - 40 years and PVC liners between 15 - 20 years. Even in terms of PVC liners, there is an improvement as in the past, the life expectancy was between 5-10 years!

Factors that affect the life of a liner

There are, of course, a number of qualifications on the life expectancy of any liner. The first is that it needs to be perfectly installed, no creases and no areas exposed to air and light. Any crease in the liner

Tetra have recently marketed a heron defeating pond liner which can seal itself if punctured, in fact you can even nail plant baskets and other features through the liner, without any water loss! Large punctures would still be a problem for this sandwich type of liner but nonetheless, this is quite a breakthrough in defeating the simple types of puncture many people experience. Just like other rubber, butyl and PVC liners, the Tetra liner is available in a range of pre-cut sizes or in rolls so they can be cut to size.



causes the fabric to become stretched and taught, which over a period of time will cause the material to lose its strength and begin to break down. Interestingly, ozone in the air, is one of the chief factors which affects areas of rubber liner which are exposed outside of the pond. In most instances the exposed areas are the edges of the pond but once these begin to break down, water will continuously seep away, the simple answer is to ensure the liner is covered at the top, by brickwork, paving or for a more natural look by sandwiching it under layers of turf. Water acts as a light filter and ultra violet (UV) light is quickly absorbed in the first few centimetres of water surface but where PVC liner is exposed to air and light, the UV wave length of light damages the structure of the plastic causing it to become brittle and inflexible, leading to failure.

Of course, there are other factors, which can affect the life span of any liner, not the least being damage through plant roots and stones. Sometimes liners can be damaged from the most unexpected sources. Several years ago, I witnessed during the installation of a large pond, where the butyl liner had been inserted and was awaiting welding, a heron walking over the base of the empty pond repeatedly stabbing holes in the brand new liner! I suppose this was a seriously clever heron to sabotage the pond, in anticipation of the fish stock being an easy meal, as the pond drained. ■



Tetra's Heron defeating pond liner

I am very grateful to Ted Low of Gordon Low Ltd. and Roger Foggitt of Tetra for providing me with valuable information on pond liners.

tropical

marine

coldwater & ponds

plants

regulars



Axolotl - normal coloration showing feathery gills.

An Aquatic Peter Pan

Bob and Val Davies reach the letter Y for Young in their A-Z and select a hardy and unusual amphibian for beginners

Amphibians for beginners – Axolotls (*Ambystoma mexicanum*)

THESE TOTALLY AQUATIC AND HARDY creatures have enjoyed considerable popularity with hobbyists for many years and are relatively inexpensive. Specimens that can be found in both aquatic and reptile outlets will be captive-bred, since the species is possibly extinct in its native habitat.

Lake Xochimilco, Mexico and listed under Appendix I of CITES that prohibits exports.

Axolotls are instantly recognisable. They are in fact extra large mole salamander larvae with a sturdy body, large head and wide mouth. Feathery, three-branched gills sprout from either side of the head. These absorb oxygen from the water although occasionally the Axolotl will gulp air from the surface. In keeping with their aquatic lifestyle the tail is laterally flattened to provide an effective 'paddle' that can produce a rapid



Although not a true albino this golden axolotl seems to lack any dark pigment.

burst of movement when necessary.

Normal coloration is dark grey to black back with a lighter grey underneath. However, there are a number of colour mutations now available including gold, albino, piebald and leucistic, although some are scarcer than others. Axolotls retain larval characteristics into adulthood and can actually breed as larvae.

Captive care

Since these are totally aquatic an all-glass aquarium, minimum size 60x30x30cm (24x12x12") with gravel substrate is needed for a pair. Although aquatic plants can be provided these will probably be dislodged. Filtration can be used but strong water currents are undesirable. Many keepers do not use filtration but rely on regular water changes (N.B. As with fish, water must be aged and of the same temperature). Ideal temperature range is up to 21°C (70°F) during the day falling to a minimum of 10°C (50°F) at night. Axolotls are very hardy and when accidentally subjected to almost freezing temperatures have survived unscathed.

Food must be appropriate to the creature's size, but according to size axolotls will eat earthworms, mosquito larvae, bloodworm, aquatic insect, crickets and can be given raw, lean meat on an occasional basis. This may have to be waved in front of them with Forceps. Some, but not all, will learn to eat Reptomin pellets but uneaten food can cause pollution problems.

How big do Axolotls grow? Up to 25-28cm (10-11")

Breeding

Mature males have enlarged folds of skin either side of the cloaca (vent). In winter the sexes should be separated and over a period of 2-4 weeks the water temperature lowered to about 6-8°C (43-47°F) for 10 weeks. The axolotls are then placed together and water temperature gradually increased to 20°C (68°F). The male lays spermatophores that the female takes up in her cloaca. Within several hours anything between 200 and 600 eggs are produced and should be moved to an aquarium with about 8-10cm (3-4") of aged water and kept at 20°C (68°F). After two weeks the eggs hatch. The larvae are carnivorous and also become cannibalistic, so food for them should consist of infusoria graduating to Daphnia, Cyclops, whiteworm, bloodworm and small earthworms. Because of the cannibalistic nature of these creatures different sizes should not be kept together. The wide mouth enables surprisingly large food items (i.e. brothers and sisters!) to be eaten. Metamorphosis has been induced in laboratories by administering thyroxine but can also occur if the water is kept shallow and allowed to dry out very gradually. Once

Banded newt larvae - very similar to the adult but has yet to lose the gills.



A-Z of Amphibians

Y - Young amphibians

The young of frogs and toads are usually called tadpoles, whereas those of salamanders and newts are referred to as larvae. Most anuran tadpoles complete their development in water - the most familiar example being the common frog that, along with several other species, simply deposits spawn in ponds and leaves them to develop on their own. However, anurans have developed more different breeding strategies than any

other vertebrate group all of which depend, to differing degrees, on water although in some cases the water or fluid is contained inside an egg in which complete development takes place. During their development these young are sustained throughout by nutrition stored in the egg yolk and when fully formed they are insectivorous like the adults. Tadpoles of many other species are largely herbivorous and possess horn-like, scraping mouthparts for grazing. However, some filter-feeding tadpoles lack these horny plates. Tadpoles of a few species are, or become, cannibalistic during their development.



all four limbs have developed in the young herbivores and filter-feeders, the remnant of the tail is resorbed and for a short while (up to a few days) the youngsters do not feed as their mouthparts are changing in order to adapt to a future diet of insects. At the same time the gut also shortens.

Most larvae of salamanders and newts resemble the adults - the body is long and slender with a fin along the tail for greater locomotion. These larvae are more predatory and have jaws, teeth and a

digestive system similar to that of the adults. They are carnivorous from birth and first foods tend to be infusoria followed by larger creatures including their own kind. As with anurans some species of tailed amphibians complete their whole development within the egg but most start life in water. Both tadpoles and larvae possess feathery gills that are resorbed at differing stages in their development. Some young, notably axolotls, may retain the feathery gills throughout life. ■

Close encounters



John Dawes reports on new *of the fish kind* strains of award winning Guppies, angry Damsels and meat eating tortoises



The new Calico Double Sword Guppy from Keells

Kumara Bastian's 25 years of experience are still resulting in new guppy varieties

Just two of the aforementioned award-winning varieties: the Calico Double Sword Guppy and the Blue Cobra Guppy, both magnificent in their own ways.

These, along with all new varieties produced by Kumara and his colleagues are part of a long-term programme by Keells Aquarium, who aim to develop, on average, two new varieties every year at their special

Award-winning Sri Lankan Guppies

On one of my visits to Sri Lanka, I was introduced to a quiet and charming gentleman who had a remarkable skill: he could create superb varieties of guppy. In recognition of this skill, the company that employs him - Keells Aquarium (Pvt) Ltd. - had named one particularly beautiful variety, the Kumara Sunray Tuxedo Guppy, after him.

Several years later, Kumara Bastian's 25 years of experience are still resulting in new guppy varieties, now aided by fish geneticist, Tyrone Perera. Some of the products of their endeavours have resulted in awards at Aquarama (Singapore) over the years, a great honour that represents official recognition of their undoubted quality.

This year was no exception, with three of the new varieties winning awards: the Flame Guppy, the Calico Double Sword Guppy and the Blue Cobra Guppy. At a special press conference held during Aquarama, these - along with several other varieties created over the past couple of years - were introduced to an admiring group of invited



The award-winning Blue Cobra Guppy

guests. Since it was quite impossible to take good-quality photographs during this event, I asked for some to be sent to me... and these have now arrived.

Space does not allow us to print the whole new range, so I will restrict myself to

Guppy Breeding Unit. This restriction to two new guppies per year is based on a number of factors, such as market potential, growth rates and reproductive performance... plus the fact that it takes about two years of investment to develop a new variety in



Ilmaria Batista - guppy breeder 'par excellence'

commercial quantities and with sufficient brood stock to ensure a steady supply. As the evidence shows, this thoroughly professional approach is paying rich dividends.

Displaced Damsels

Seagulls pull out lumps of turf, while humans punch tables, or desks... or walls. Sound familiar? Both these behaviours are examples of what is referred to as a 'Displacement Activity'. Such activities represent less dangerous outlets / releases for pent-up anger or aggression than direct physical conflict and, since any form of direct conflict carries the risk of injury (not just to the 'victim', but to the aggressor as well), it is not surprising to find that evolution has resulted in most territorial species evolving their own distinctive range of displacement behaviours.

One of the fundamental requirements of such a behaviour is that the message it sends out must be unequivocal, so that both the individual expressing it, as well as the one at the receiving end, know exactly what is meant. The fact is that all territorial species, including humans, have the ability to inflict serious injuries, or even death (often, quite easily), on an opponent, so, in the absence of displacement activities, actual outbreaks of direct violence with resulting injuries or death would be commonplace. Not good 'biological news' for any species!

It is important here to distinguish between a displacement behaviour / activity and an aggressive (or agonistic) display. In displays, feathers are ruffled, or fins are expanded, or gills are flared, or fur is raised... or whatever. But, no external object is involved. In displacement activities, however, an external object is involved, e.g. The divots of turf and the table / desk / wall mentioned earlier. It is this 'third' object that is physically attacked by the aggressor, rather than the rival.

As far as I am aware (please enlighten me otherwise if I'm wrong), fish have never been reported as exhibiting displacement behaviour. Well, if so, this may have to change if what I observed in my spawning Cloudy Damsels (*Dascyllus cornutus*) falls under the definition of a displacement behaviour. I think it does, but see what you think.

I had a pair of Cloudy Damsels (*Dascyllus cornutus*) that frequently spawned on the side pane of their aquarium. The 75cm tank contained rockwork, some anemones and

'micro' invertebrates, lush growths of *Caulerpa sertularoides* and two Black-tailed Humbugs (*Dascyllus melanurus*).

Whenever the Cloudy Damsels spawned, their level of territorial / defence activity, quite naturally, intensified. Therefore, when the Humbugs approached (which was quite often), there was a great deal of flaring of fins, body undulations, jerky swimming movements and so on.

If the Humbugs persisted in their inquisitiveness, though, then - quite frequently - something rather unusual happened. With an exaggerated body movement, one of the Cloudy Damsels would swoop down from the spawning site (the eggs were always laid high up the side

of the aquarium) and with an audible croak or grunt (Damsels often 'vocalise'), it would - quite literally - snap off the tip of the nearest shoot of *Caulerpa* and fling it into the surrounding water. This was usually enough to get the message across to the Humbugs that it was time to beat a hasty retreat.

The first time I saw this behaviour, bells rang in the far recesses of my mind telling me that I knew what I was observing, but it took several more incidents before I realised what it was (or what I believe it to be). In the end, I must have observed over one hundred such incidents. As far as I can deduce, what I observed has all the characteristics of classic displacement behaviour. What do you think? ■

Meat eating tortoises

Everyone knows that tortoises (family Testudinidae) are strict vegetarians. Right? Wrong!

Certainly, plants form the overwhelming majority of the diet of these popular reptiles, but, surprising as it may seem, tortoises are not averse to the odd meat meal. Sometimes, they will even choose to eat flesh when suitable plant food is abundantly available, so it's not something that they will only do under duress.

The first time I came across this unexpected trait was over twenty years ago when I found one of the two Spur-thighed Tortoises (*Testudo graeca*) that roamed free in our garden, voraciously biting into a dead bird that it had discovered near a hedge. Some minutes later, it was joined by its partner that immediately set about tackling the dead bird with equal gusto.

Since then, I've encountered this carrion-feeding behaviour many times

in my travels. One incident, though, sticks out in my memory as being particularly 'original'. I was visiting an ornamental fish exporter based in Rio de Janeiro and was intrigued to see a number of tortoises strolling lazily (as tortoises do) along the rows of aquaria lining the fish house. When I enquired about this, I was told that they (the tortoises) were being used as a means of clearing up undetected fish corpses from otherwise inaccessible corners of the fish house.

Even accepting that there are always several ways of tackling the potentially smelly problem of rotting meat - including active encouragement of cockroaches in a world-famous public aquarium to dispose of any chunks of flesh-based food that might have been inadvertently dropped and missed during the daily feeding rounds - somehow, the use of reptilian corpse-consumers represents, in my view, an enlightened, creative, environmentally-friendly, though somewhat unusual, approach to fish-house hygiene.



Biological 'waste control' in action, i.e. Tortoise eating a dead fish at a Brazilian exporter's premises in Rio

CLOWN RASBORA

Rasbora kalochroma



...End Point

Pete Liptrot introduces one of the more desirable of Dwarf Cichlids - *Apistogramma elizabethae*



CURRENTLY APISTOGRAMMA SPECIES ARE enjoying quite a bit of deserved popularity, due in part to the greater accuracy of identification in shops and the increased amount of available information on the various species. Instead of small under-nourished wild fish that require long periods of Tender Loving Care, there have been quantities of sexable sub-adults coming out of South America and other sources. The fact that some investment has been required in order to supply these larger healthier fish means that the price has increased somewhat and no doubt market forces are also in operation here.

As with all specialist groups there are certain fish that for one reason or another are considered more desirable than most and *Apistogramma elizabethae* is among this group of select species. It is a beautiful species, with similarities to the more well known *Apistogramma agassizi*, but more delicate in appearance to my eyes. Sven Kullander, who has been a major influence in the naming of Cichlids from South America, described it as a valid species in 1980.

Different colour forms

Due to its quite wide distribution there is some colour variation between populations, but the most frequent feature of male fish is the presence of yellow coloration extending from the gill-cover to the lower jaw. There is a broad lateral band as seen in many *Apistogramma* species. The tail is spade shaped and the dorsal fin has extended rays towards the front, similar to those seen in *Apistogramma bitoeniata*. They can grow to reach a length of 3 1/2" (8cm) or so for males, considerably less for females.

Pete's feeding tip

A combination of clean live and good quality frozen foods should be regarded as a staple, as while many Dwarf Cichlids will take some dry foods it is unlikely to provide them with all the nutrition they require for reproduction. Care needs to be taken to ensure that any live foods come from a disease free source and tubifex should not be used at all. Frozen foods should not have been defrosted and then refrozen, as there are indications that this can lead to problems when this food is subsequently used.



Apistogramma elizabethae is one of the more desirable Dwarf Cichlids

The type locality is an affluent of the Rio Uaupes at Irovaio, approximately 20km from the mouth of the Uaupes, Amazonas State, Brazil. Its wild distribution ranges from the Rio Uaupes to the Rio Negro and it is found in shallow areas of small creeks. At one collection site, near Sao Gabriel do Cachoeira on the Rio Negro, the fish were found in a flooded area among submerged grasses, along with *Apistogramma pertinens*, *Apistogramma* sp. "Miaa" and *Dicrossus filamentosus*. *A. elizabethae* was in the minority compared to the other spp. of Dwarf Cichlids in this habitat and it appears that they are not common anywhere.

Difficult to breed

It is rumoured to be quite sensitive and difficult to breed, but appears to be no more so than many other wild collected Dwarf Cichlids. They have been observed spawning in aquaria at dealers when given sufficiently good care. They do require very clean, very soft and moderately acidic water for successful reproduction, high conductivity will adversely affect viability of the eggs as with many other fishes from this area.

As a guide, spawning has been noted to

occur at a pH of about 6, conductivity was c. 50 microsiemens and the temperature was in the low 80's Fahrenheit (27°C). Before any spawning is attempted of course, it is necessary to ensure the fish are in good condition and feeding is obviously an important part of this.

For routine maintenance the water should be clean and low in metabolic waste products, high Nitrate can be an indication of other problems that will almost certainly result in ill-health or death with fish such as this. Regular water changes and efficient filtration must be used to ensure this, but filtration would ideally be gentle, producing only low current. They are not built to live in rapids!

These fish would be best used in my view as a focal point for a "biotope" aquarium, as there are many other small and beautiful aquarium fish to be found in this area that could be maintained with them and in an aquarium such as this some wonderful naturalistic behaviour may be observed. In a larger tank more than one pair could be housed. This is much better than just housing a single pair together. Dwarf Cichlids can have the most complex love-lives that are considerably more interesting to watch than the most involved soap opera! ■