AQUARIST & PONDKEEPER

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REGULARS

COMMENT

Seventy Five Years Ago. No, that's not the title of another feature in *A&P* but it is the grand old age that this venerable publication has achieved.

Launched in 1924 by A. E. Hodge as the *Amateur Aquarist*, like most things it was badly affected by the 1939-45 hostilities but it nevertheless survived and underwent regeneration in the post-war years under the editorial leadership of Alex Fraser-Brunner and Anthony Evans.

Lawrence Perkins and John Dawes took up the baton in later years and, most recently, the honour of maintaining the tradition of bringing *A&P* to you each month fell to myself.

These days, according to those who are constantly extolling modern techniques and computer power, things are that much more simple and quality of production is so much better; from where I sit it would be nice to think that it was all so easy but there is just as much 'blood, sweat and tears' as there ever was in delivering the goods each month.

Part of the problem is that (again blaming modern communications) there is so much more to choose from — not only from the expanding subject matter but also from sources from all round the world which has considerably shrunk in time and size thanks to e-mail and the like.

During this coming year we hope to bring you selected highlights from *A&P*'s history and we ask your tolerance if, in the interests of historical accuracy, we resort to reproducing some original articles whose artwork and photography are not in the highest league of modern day quality.

We'd like to hear from those out there who may have stuck with us from 'way back when' — write and tell us your earliest memories of *A&P*, perhaps you remember it going up in price from its humble shilling (5p in today's currency!) or when it went 'all-colour' for a start?

Have you kept any of those original posters so painstakingly created by Alex Fraser-Brunner? Who's our longest-standing contributor? On the other hand, whilst today's emerging aquarists and readers are also building up their *A&P* memories, they can have a say in its further progression. Why not tell us what you want from *A&P* in the future?

Who knows? You could be one of those pioneers looking back over the next 25 years, at which time *A&P* will be in line for a certain telegram.

Dick Mills

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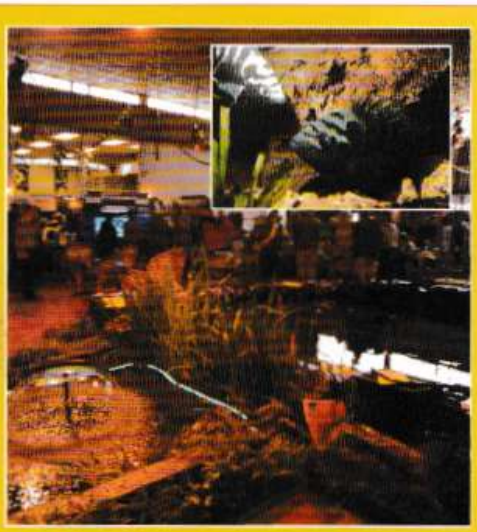
COVER

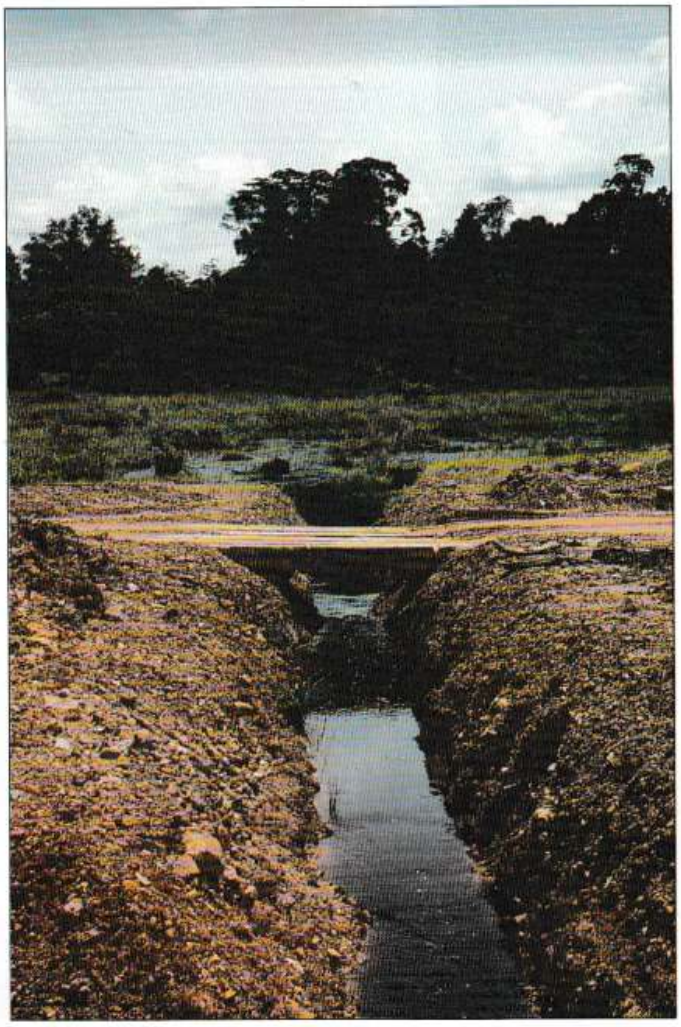


MAIN PHOTOGRAPH Bringing ponds, cascades and streams indoors sounds an impracticable idea but the 1998 Supreme Festival of Fishkeeping managed it, fibre-optics and all. It's amazing what can be done with a minimal water depth, some built-up staging and lots of creative expertise. PHOTOGRAPH: LINDA LEWIS

INSET PHOTOGRAPH There's nothing like a happy family photograph and here's a resplendent pair of *Archocentrus centrarchus*, doing what comes naturally. INSET PHOTOGRAPH: ALF STALSBERG

DAVID ARMITAGE has the lowdown on this unusual species ...

Anabas, the Climbing Per



Habitat of Malaysian *Anabas* near Ayer Hitam in Johore State.

PHOTOGRAPH: DAVID ARMITAGE

This fish gains its common name from the ability of climbing overland, in search of new ponds, sometimes in groups, when its habitat dries out. It is also apparently able to survive encased in mud at the bottom of a dried-up pool in the dry season.

It can certainly move around quite vigorously on dry land, as some acquaintances of mine can testify. They found their pet cat backing, growling, out of the living room which housed the Anabas tank, and on investigation found the Anabas wriggling along the carpet toward the cat.

The lesson gained from this was that these fish jump and need a well-covered tank! They move about, usually in damp weather by flexing their body and levering themselves along using their gill covers and the fins.

They are able to do this for two reasons. Firstly, they a have a rigid, almost turtle-like 'shell' of scales which is the origin of the Latin specific name, 'testudineus,' but the other reason that they are able to carry out terrestrial adventures is the labyrinth organ which is the feature that is common to all anabantoids including Gouramis, Paradise-fish and Siamese Fighting Fish, which are all developments of the basic Anabas model.

Natural history

The labyrinth organ becomes apparent if the gill cover is removed when, instead of the

Asian ch

usual orderly rows of gills, we find the convoluted folds of the labyrinth organ. These folds increase the area for gaseous exchange and have a rich supply of blood vessels. When the fish comes up to the water surface to 'breathe', air is expelled when the chambers beneath the gill covers contract.

The gill cover opens and the 'used' air can escape as a bubble. This in turn causes a partial vacuum in the chamber so when the gill cover closes and the mouth is opened, fresh air is drawn in and can be absorbed by the fine blood vessels in the labyrinth organ.

This makes very good sense, because there is lot more oxygen in air than in water so this increases the number of habitats in which the fish can live so we find this is a very widespread and successful species, as well as being very useful to the human race!

Anabas is usually regarded as the prototype Labyrinth fish, the generalised design from which all the other species, Combtails, Paradisefish, Fighting Fish, etc, developed.

There are very similar species of Ctenopoma in Africa and it has been proposed that Labyrinthfish developed from Ctenopomas which migrated from Africa into India and when a land bridge developed but conventional wisdom suggests that Ctenopomas evolved when Anabas ancestors moved from India into Africa.

Distribution and variation

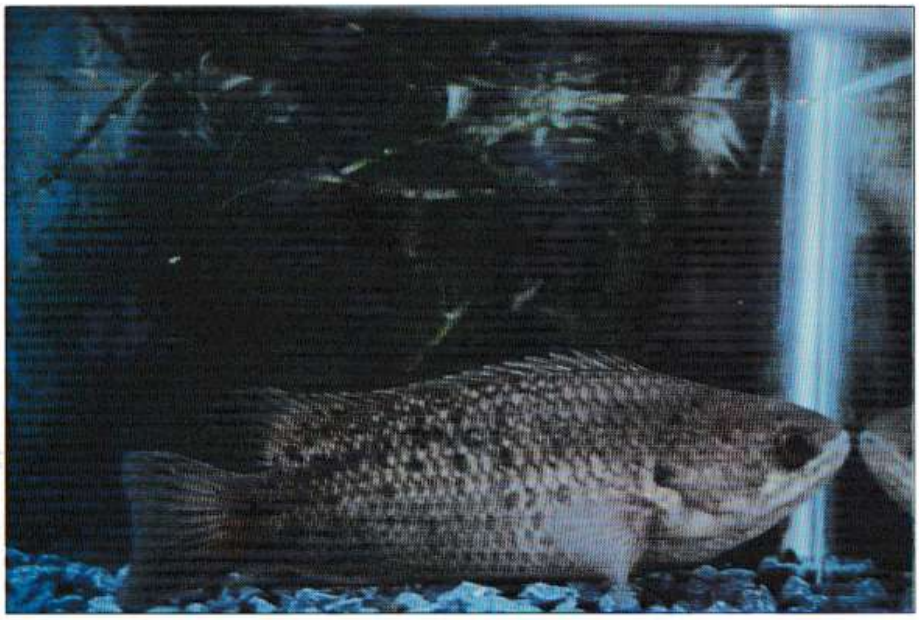
Anabas can be found in Sri Lanka, throughout India, Malaysia and Indonesia, Vietnam and even into China. Because it is important as a food fish, it has also been introduced into the 'wrong' side of the Wallace line, the zoo-geographical boundary that divides the Australian fauna from the Asian.

So Anabas is also found in the Philippines, Celebes (Sulawesi), the Moluccas and probably, even Bali. Because of this huge distribution, the greatest of any labyrinth fish, a great deal of variation in the different races has been noted but so far only one extra species has been described.

This is *Anabas oligolepsis*, which comes from north-east India and has a deeper body, shorter caudal and pectoral fins, as wells as a longer snout than *A. testudineus*. It has a distinct black spot on the base of the tail which it retains

Juvenile Malaysian *Anabas*.

PHOTOGRAPH: DAVID ARMITAGE



Adult Malaysian *Anabas testudineus*.

PHOTOGRAPH: KEVIN WEBB

to a new aquarium and also in case one fish becomes victimised by the others. Floating plant helps diffuse the light and can give the fish confidence.

In view of the nature of the aquarium outlined some filtration will be required in the form of an undergravel filter (although I would always prefer to have a tank with a bare base to facilitate siphoning up the larger debris) or an internal or external power filter.

In my experience some water movement tends to enliven Anabas. Water conditions are not too important as they inhabit such a wide variety of habitats, from acid blackwater rain forest streams, through reservoirs and canals to flooded rice fields (where they are said to eat fallen rice grains) which probably have a heavy pollution of pesticides and fertilisers.

They also inhabit drains and even brackish waters on the coast. (In Malaysia, I found beautiful juveniles in puddles and flooded wheel ruts of a peat swamp forest remnant near Ayer Hitam in Johore along with juvenile *Trichogaster trichopterus*, *Betta bellica* and *Betta persephone* at a pH of 5.0.)

For the sake of the other inhabitants of the tank, though, a pH of 6.5-7.5 is probably best with a temperature in the range 22-26°C.

As with water conditions this species is not at all fussy about food. Flake food and pellets are perfectly acceptable and meaty foods such as earthworms are much appreciated.

Anabas, *THE ASIAN CLIMBING PERCH*

Lowdown on an unusual species

In nature it probably feeds mainly on vegetation, although this may be seasonal but nevertheless, I recommend a vegetable supplement to curb its appetite for the expensive aquarium plants that you may want to introduce into its tank. In nature fish fry and shrimps may form 10 per cent of its diet so don't expect any small fish to survive long in the vicinity of Anabas!

Breeding

In nature they are variously described as breeding at the onset of the rains or after rains, when the waters become clear again. Fish farmers may achieve spawning using 15-20mg/100g body weight of Carp pituitary at 28°C but as aquarists we will have to rely on more natural methods.

Males are usually slimmer than females and females have a distinct urino-genital bulge. Sometimes it is said that males are slightly darker, have a reddish hue (particularly the underbelly), a more distinct tail spot, speckles on the flanks or longer and more pointed fins but these characters are more doubtful.

The male chases the female, sometimes encouraging her with a few bites and when she finally submits to the embrace 2/3,000 floating, yellow eggs are released over a period of a few hours which are completely ignored by the parents.

They hatch within 48 hours and are free-swimming after another 24 hours. There are far too many fry for the hobbyist to raise, so a few hundred should be removed to a separate tank with the original water but better results would be obtained by removing the parents (who won't ignore their offspring forever!) and raising them in their 'home' tank.

They will require infusoria or egg yolk for a week or two, replaced thereafter with Microworm or Brine Shrimp larvae. As the young fish grow you will see the attractive patterns that I described for the Malay fish.

The blotch that develops at the base of the dorsal fin at the base of the caudal seems to be used when pacifying adults and in encounters with their brothers and sisters.

Anabas may not be the most spectacular or beautiful of fish but its behaviour and the wealth of legends surrounding it more than compensate and its hardiness ensures that it will probably survive most of the aquarist's mistakes!

In Malay folklore Anabas in your home is said to defend against evil spirts so perhaps it will do the same for you!

Adult *Anabas oligolepsis*.

PHOTOGRAPH: KEVIN WEBB

FOR FURTHER INFORMATION ON LABYRINTHFISH CONTACT: ANABANTOID ASSOCIATION OF GREAT BRITAIN, C/O 19 CHILTERN CRESCENT, SPOTBROUGH, DONCASTER DN5 7PE

ANDY HORTON'S SHORE WATCH

IN THE COLUMN FOR THE YEAR I WILL EXAMINE SOME ASPECTS OF THE BIOLOGY AND BEHAVIOUR OF THE ROCK POOL FISH AND MARINE INVERTEBRATES THAT ARE BOTH INTERESTING AND USEFUL KNOWLEDGE FOR AQUARISTS

Annual Fish Report

1998 proved to be the most interesting year since the reports of unusual marine life from around the shores of Britain started in 1986.

Experienced wildlife watchers will realise that the number of reports often reflects the amount of human activity rather than the prevalence of rare or unusual species.

However, the awful weather actually meant that rockpoolers rarely got the opportunity to visit the rocky shores from spring to autumn and the records of intertidal rarities were very few. Most reports came in of the larger inhabitants of the sea, and 1998 was a genuinely exceptional year.

Basking sharks

In May a phenomenal sight greeted the inhabitants of the southern part of Cornwall. Hundreds of massive Basking Sharks, *Cetorhinus maximus*, swam into the shallow water.

The Basking Shark is the largest fish in the sea except for the Whale Shark, *Rhincodon typhus*. The Basking Shark reaches 10 metres long and weighs three tonnes or more. They feed exclusively on plankton, cruising along with the water entering its huge mouth and the plankton collected on the gill rakers, before the water passes out through the broad gill slits.

From the vantage point of the cliffs above Kennack Bay, near the Lizard peninsular, the sea was full of Sharks from the horizon to quite close inshore. Usually these Sharks are reported every year in ones or twos.

Historic records indicate that this is not a unique occurrence, but it has not happened within living memory. The Sharks probably followed some exceptional blooms of plankton, which can become trapped in the bays of south Cornwall. The Sharks remained in the vicinity until June.

In March the Basking Shark received full protection under the Wildlife and Countryside Act 1981 in British territorial waters.

The Sharks were not alone. Colin Speedie of the Cornwall Wildlife Trust reported accompanying Killer Whales, *Orca orca*, one of the fiercest and most powerful predators of the oceans. It is unlikely to have been a happy coexistence. Killer Whales are armed with a formidable array of teeth and they are known to attack Basking Sharks, which must be a rather brutal sight with pods of Orcas tearing into the larger Sharks.

Colin Gilbertson, of Mevagissey Marine Aquarium, reported six Pilot Fish, *Naucrates ductor*, caught in a Pilchard net in Mevagissey Bay, Cornwall later in the year. These fish accompany Sharks and Turtles and large floating objects.

Large predatory sharks

Fortunately for bathers the large predatory Sharks that visit British seas during the summer rarely come close inshore and there are no records of any attacks on swimmers or divers.

However, in January a large

Shore Watch File ... 1

The Rock Goby, Gobius paganellus, *emerging from between a weed-strewn rock in my home aquarium. The rock is covered by tufts of the filamentous green algae, Cladophora, which spreads by its rhizoidal base.*

PHOTOGRAPH BY ANDY HORTON

Shore Watch File ... 2

Sea Anemones will fight over territory in aquaria. The Red Beadlet Anemone, Actinia equina, *uses its acrorhagi (blue beads) and the Green Snakelocks Anemone,* Anemonia viridis, *uses its long tentacles.*

PHOTOGRAPH BY ANDY HORTON

Shark of over five metres long (16 feet) long was seen in Sandsound Voe on the western coast of the Shetland Isles attacking Seals, which were attracted by the Salmon in the cages.

Off the north-east coast of England there is area of the sea that has a reputation of being a haunt of some very large predatory Sharks reaching a length of over two metres and a weight of half a tonne.

These very large Sharks occur about every four years and are caught in Salmon nets. Two species are accidentally caught. They are the Shortfin Mako Shark, *Isurus oxyrinchus*, and the Porbeagle Shark, *Lamna nasus*.

Looe in southern Cornwall is famous for its Shark fishing. Numbers caught and returned alive have fallen over the years, but in September a Blue Shark, *Prionace glauca*, was caught that exceeded their scales and estimated to weigh 71 kg, which would make the largest specimen caught in British seas.

Large bony fish

Sharks are the largest fish in the sea, but 1998 also saw the capture of some huge specimens of Teleosts (the bony fish like those kept by aquarists). The largest flatfish in the oceans is the Atlantic Halibut, *Hippoglossus hippoglossus*. A two metre long Halibut was caught by fishermen in the cold northern seas and brought into Aberdeen. It weighed 135 kg. The largest recorded specimen ever was caught off Iceland in 1997 and weighed 266 kg.

The Atlantic Sturgeon, *Acipenser sturio*, is now extremely rare in British seas. In early July, fishermen caught one out of Kinlochbervie, Western Highlands, Scotland. The fish weighed 27 kg (60 lb) and was taken at sea near Sule Rock, between Cape Wrath and the Orkneys.

Tunnies, or Tuna, used to be found in sufficient numbers to make the North Sea, especially off Scarborough, an area famous for captures of the massive Blue-fin Tunny, *Thunnus thynnus*. Most north-east Atlantic Bluefin breed in the western Mediterranean and are rarely captured in the North Sea.

Herring fishermen first reported them in 1911, but are now almost unknown from the North Sea since the 1960s. In October the even more unusual Yellowfin Tuna, *Thunnus albacares*, was caught on a mackerel long-line off Plymouth and this is the first live specimen caught in British seas. The fish probably arrived from the Caribbean.

Other rare bony fish

Rare fish often attract attention because the angler cannot identify the fish that has swallowed his bait.

This applied to the Blackfish, *Centrolophus niger*, caught from East Yorkshire's Aldbrough beach (near the Humber). It is a fish that inhabits water of over 100 metres deep, and the North Sea is shallower, although a trench called the Silver Pit of this depth occurs off the Wash.

Other deep water fish caught include a small shoal of Rabbit-fish, *Chimaera monstrosa*, caught by a trawler off Cornwall in September. There was also the first confirmed angling record of a Spanish Mackerel, *Scomber japonicus*, off Scotland.

However, I found the most interesting record for the whole year to be the discovery of a juvenile Maigre Drumfish, *Argyrosomus regius*, brought in by a fishermen at Mevagissey, south Cornwall. This fish was featured in the May 1998 issue of *Aquarist & Pondkeeper*. A report of the find is on the BMLSS (England) web site.

Public aquaria

During 1998 three large and important Public Aquaria were opened. These were the New National Aquarium at Plymouth, replacing the M.B.A. Aquarium on Citadel Hill, the Blue Planet Aquarium at Ellesmere Port, Merseyside, and the Bournemouth Oceanarium, near the pier.

Shore Watch reports

All reports of unusual fish should be sent in to the British Marine Life Study Society to the address at the foot of this page with as many details as possible.

All the interesting reports from 1995 under the official Shorewatch banner can be found on the Marine Wildlife pages of the British Marine Life Study Society (England) Web Site.

Shore Watch File ... 3

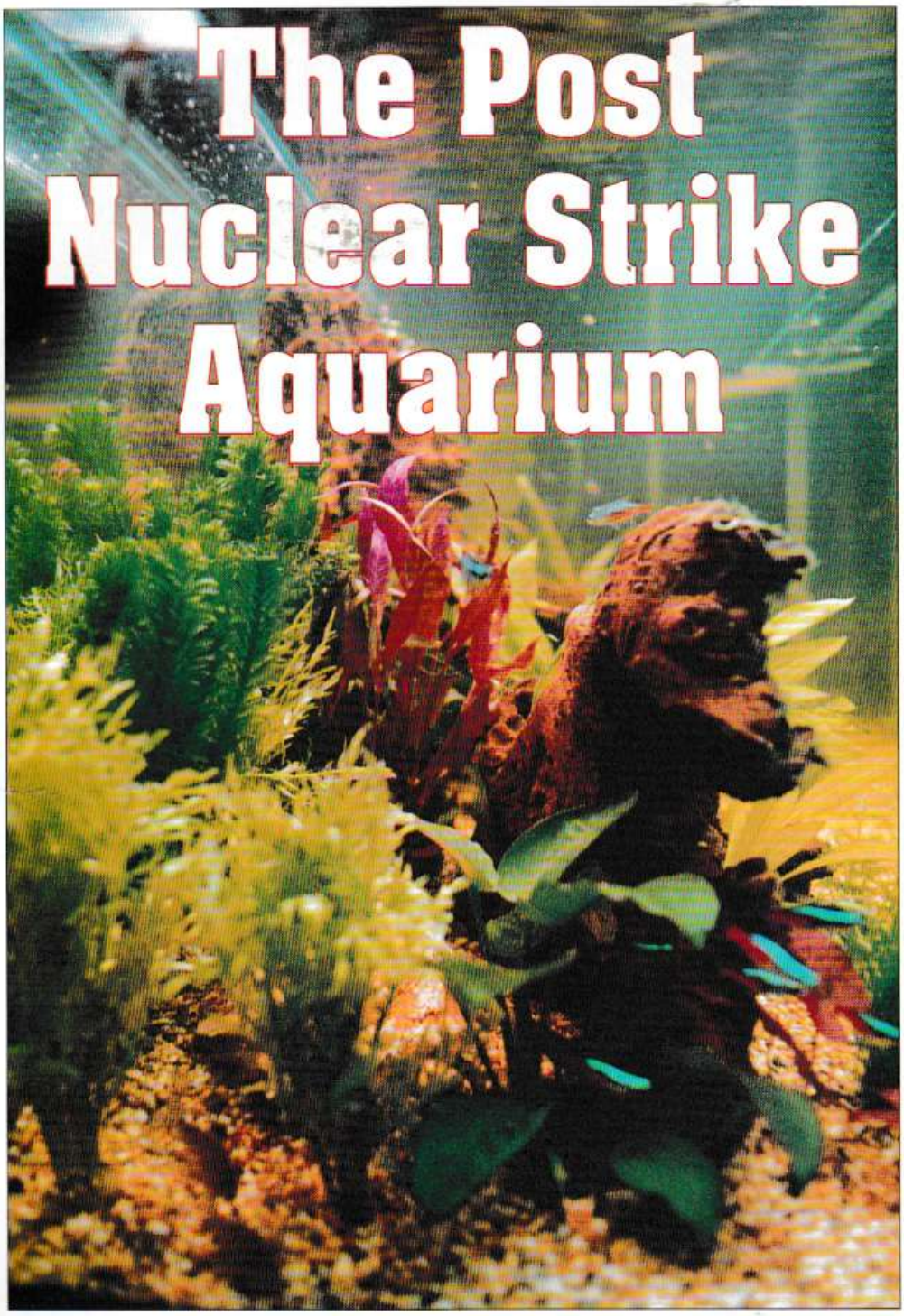
The Purple Sunstar, Solaster endeca, *is a northern species found in deep water. If it is to be kept successfully in aquaria the water needs to be cooled below the ambient air temperature during summer.*

PHOTOGRAPH BY ANDY HORTON

Andy Horton on behalf of the British Marine Life Study Society will help readers who have any difficulties to pursue their interest in the marine life around the British Isles. The first enquiry will be answered free of charge but please enclose a return stamp and do not forget to include your address. For more information please write to: Andy Horton, Shore Watch, British Marine Life Study Society, Glaucus House, 14 Corbyn Crescent, Shoreham-by-Sea, Sussex. BN43 6PQ. EMail: bmlss@compuserve.com Web Site: BMLSS (England) URL= http://ourworld.compuserve.com/homepages/BMLSS/BMLSS (Scotland) URL= http://www.ed.ac.uk/~evah01/bmlss.htm The Webmaster for the Scottish site is Alan Pemberton.

KATHY JINKINGS aims for a self-regulating aquarium

The Post Nuclear Strike Aquarium



This unusual viewing angle shows several things: the plants have room to develop, the planting arrangement adds height and distance to the scene when viewed from the front.

PHOTOGRAPH: WENDY ABURROW

THE POST NUCLEAR STRIKE AQUARIUM

A self-regulating aquarium

Starting an aquarium, whether coldwater or tropical, can be a frustrating business. You have probably already visited the shop and been entranced by their show tanks, with gorgeous fish flickering among leafy green plants, all viewed through crystal clear water, and imagined such a tank in your living room.

The crushing feeling of depression strikes when, a few weeks later, you are viewing a tank that has all the verdant growth of a nuclear testing area. The plants have disappeared, and a strange brown mush has made its appearance in the nice shiny gravel. The fish are still there, but it doesn't really matter as the whole thing has become obscured by a green veil through which you can perceive the devastation within only dimly.

One of two courses

At this point many disappointed aquarists pursue one of two courses. The tank and its inhabitants may return to the shop or join the long list of for sale ads in the local paper; the erstwhile owner joins that group who issue dire warnings to would-be fishkeepers about the difficulty of maintaining an attractive aquarium. Another group wildly throws money at the situation, investing in a stream of tank-cleaning and algae-scraping gadgets. The cosseted plants bask in the radiance of banks of expensive fluorescent tubes, carbon dioxide is used to stimulate them even more, pumped into the water from what appears to be a small chemical factory.

This latter method, with sufficient understanding, will indeed produce a superb aquarium, but needs know-ledge behind it to make it work and to buy equipment that will work together rather than in conflict. Most people do not want to stump up such sums of money immediately; they just want a nice community tank. Fortunately, this is not impossible, even though it may feel as though it is at the beginning!

An aquarium is a little microcosm of a much larger habitat, and natural processes operate in the same way. The fish in the water excrete, and sometimes die. As the waste is decomposed by bacterial action ammonia is produced. Other bacteria in the filter convert the poisonous ammonia to nitrite, and still more bacteria convert the still toxic nitrite to relatively safe nitrate. Plants in the aquarium take in the nitrate, and use energy from light in a process called photosynthesis to create new growth as leaves, stems and roots. The fish may eat the plants, or may eat other fish or creatures that ate the plants. After eating they excrete any undigested matter, and the process begins again.

In a natural habitat this process is much more stable, as the areas involved mean that if something overloads the system in one place the entire structure is big enough to assimilate the problem. In an aquarium these processes need a bit of thought and a helping hand to keep them all working together.

Lowest forms of plant life

Firstly, successful filtration is essential to avoid the fish being poisoned by ammonia and nitrites. Most aquarists manage this part without too much trouble and assume that their problems are over. However, the successful filtration is causing nitrates to build up — the correct end result of the filter's activities. All water contains tiny spores of algae, and bathed in rich nitrate soup the algae grow with wild abandon. As one of the lowest forms of plant life algae are seriously tough and can easily outgrow the aquarist's carefully chosen plants in the less than ideal conditions of the aquarium. The plants become choked with algae, unable to photosynthesise due to low light and die. Their dead leaves decompose. Provided the filter copes this adds to the nitrate burden and spurs the algae on. In the worst case the filter is overloaded, the water becomes polluted with ammonia, and the fish die. Dead fish decompose, and by now the cycle is wildly out of control and going from bad to worse.

Nitrates must be reduced

In order to get things back under control the nitrates must be reduced. This can be done by

Although the aquarium is recently set up the developing plants will all play their part in controlling algal growth as well as providing sanctuaries for the fish.

PHOTOGRAPH: WENDY ABURROW

several means. You can include a chemical that removes nitrates in your filter; these are available in neat little bags that can be recharged when they fill up with nitrates by keeping them in salt water. Fitments are available for undergravel uplifts to allow a small quantity of chemical like this to be included in the filtration. Alternatively, you can change the water more often, to dilute the nitrates regularly, or, most attractively, can add successfully growing plants to eat the nitrates and compete with the undesirable algae. In practice, a combination of attacks will be needed to get the system back under control, but this is achievable. Water changes are easy to implement, and need to be done regularly for the health of the fish anyway. The problem of persuading plants that you like to grow, instead of the green plague, can be a little more difficult.

First, you need to consider the plants that you have chosen. Many beautiful plants require very high levels of light and there is no way round this. If you want to stick with your single fluorescent you will have to simply avoid these species. Other plants sold in shops are simply not water plants. You may have noticed the remarkable similarity of some plants to houseplants; this is because they are the same species. They cannot grow in water, and begin to die as soon as you put them in. Although they appear to last for a while this is just because the leaves are strong and tough, and take a long time to rot. Eventually nature will take its course and your cute little palm or dragon tree will become first decomposing mush, and finally algae food (this is a cheap way of getting houseplants, though!)

'Bunch plants'

Another group of plants is available cheaply under the group name of 'bunch plants'. These are simply cutting, and have no roots. Plonking these into a tank overgrown with algae and bustling with fish is akin to planting a delicate rose cutting in a briar patch in a cow field, and expecting it to flourish. If they are to be successful the cuttings need to be nurtured until they grow roots, like any other plant. If you like these try growing the loose stems in a large jar or small tank until they have healthy roots. The lump of lead usually wrapped round the base may serve to make the bunch look like a single whole plant, but usually covers damage to the delicate stems and allows rot to get a grip. To give them a good chance remove the lead and cut away any suspiciously brown or mushy parts of the stems.

If you keep large or vegetarian fish plants need to be sturdy. The feathery fronds of Cabomba will stand no chance in a tank of large, hungry Goldfish.

There are some plants that are ideal for a new tank with low light levels. These include the Java Fern, *Microsorum pteropus*, which can also be used in cold water or brackish tanks. It also tastes nasty, so is spared the depredations of hungry fish. Like the more tropical *Anubias*, these plants can be grown attached to rocks or bogwood, which also gives the advantage of being easily movable during tank clean-ups. You can attach them to the decor with rubber bands — either black cotton or fishing line can sometimes trap catfish or other spiky inhabitants. You will need to choose decor with a suitably rough surface, so that the roots will be able to get a grip.

Both *Anubias* and Java Fern are slightly more expensive than many other plants but both stand a good chance of being in your tank in years to come, proving more

economical in the end. *Cryptocorynes* will grow well in low light but often deter the beginner by promptly losing all their leaves within a few days of being placed in the tank. This is because the plants sold in shops have often been grown out of water, and have grown leaves suitable for a life in the air. In the water these leaves die and are replaced by leaves grown for an underwater existence. You can forestall them dumping large quantities of dead leaves in the tank by nipping older leaves away, just leaving enough to let the plant feed and grow some new ones.

THE POST NUCLEAR STRIKE AQUARIUM

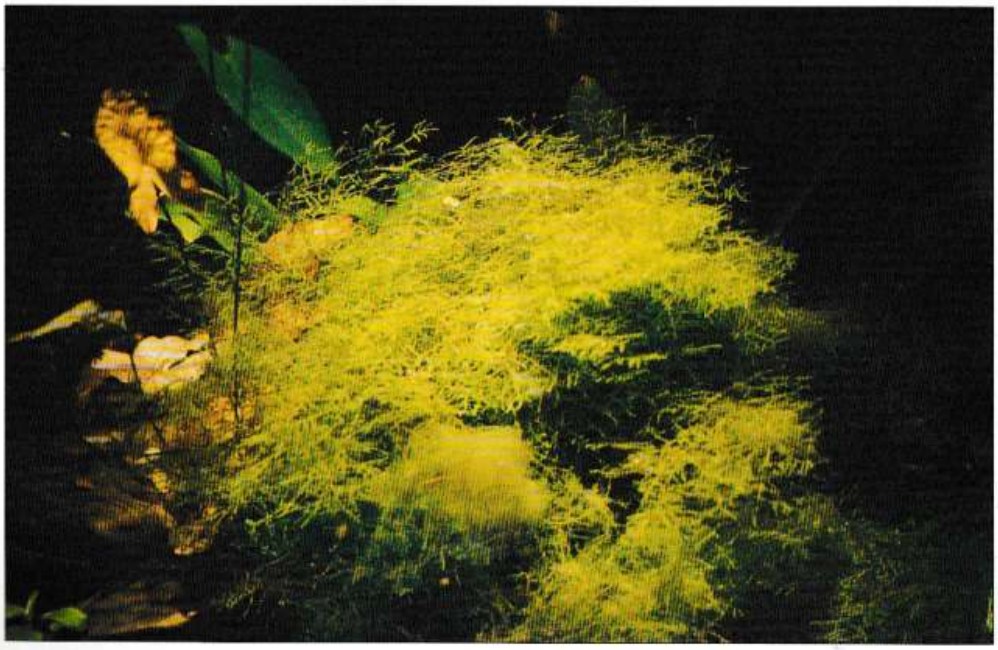
A self-regulating aquarium

Drastic measures

Once you have decided on the plants, drastic measures might be necessary to let them get a grip. In a tank already infested with algae the plants will become coated and strangled before they can establish themselves. The algae must be reduced before they are introduced. There are several ways to do this. First, remove as much as possible by hand. Thick Blanketweed is easy to scoop out, rocks can be scrubbed, and algae on the glass can be scraped off with a razor blade or an algae scraper. Once you have reduced it as much as possible a dose of algae killer will give it a major setback. There are a variety of these preparations on the market, all are safe to use provided you read all the instructions carefully and comply with them. If you use less than the recommended dose the algae will be unaffected, while if you use more

Whilst algae-munching catfish species are effective some species can grow rather large.

PHOTOGRAPH: LINDA LEWIS



As part of the 'nuclear design' plants can also provide ideal spawning media — imagine how many eggs could be scattered into this plant!

PHOTOGRAPH: A&P LIBRARY

you may kill the fish, so read the bottle carefully. After treatment clean the gravel and perform water changes regularly for a couple of weeks as the dead and dying algae will be taxing the filtration.

Once the tank is clean it is time to introduce your new plants. Treat them with the same consideration as fish on the way home from the shop — don't leave them on the back seat of the car for days or drop them straight into water of a different temperature. If there are dead or dying leaves cut them off with a pair of scissors. Sometimes the plants will be in little mesh pots, with their roots entangled. The pot needs to be cut away to give the roots room to grow, but if you wrench it off and damage the roots this will set the plant back. Snip away at the pot carefully, teasing the bits out of the network of roots. Finally, the new plants can be placed in their new home, being as gentle with the roots as possible. Don't cram them into a little hole in the gravel — dig out a good size hole and then put the gravel back around the roots as required.

Frequent water changes

Plants treated with consideration will rapidly feel at home and start growing. Once they are established they will be able to compete with the algae successfully but in the early days frequent water changes will prevent the problem recurring. You might consider adding some algae eating fish. Bristlenoses are ideal for this, being small and peaceful. They will eat algae enthusiastically and are very successful at keeping a tank clean. Furthermore, they will leave the plants undamaged, while carefully removing algae from the leaves. Beware of buying 'Plecs' for small tanks as they grow very large, and avoid the sucking loach which grows into an unpleasant, large and territorial fish which is not averse to snacking by rasping flesh off the sides of its living tankmates.

It takes a lot of plants to eat all the nitrates, so you might like to consider some Duckweed, *Lemna minor*. This is usually regarded as a pest, since it rapidly grows to plague proportions. However, this is also its great advantage. Each of the tiny leaves has used up nitrate in the tank to grow, and when you scoop out netfuls and throw it away that nitrate is being removed from the tank forever. Be very sure before you put it in, though, as it is next to impossible to eradicate. If you do not want a rapid growing plant like this then you will still need to remove excess nitrates by water changes but these should be a regular part of your regime anyway.

The whole point of the plants using the nitrate is lost if leaves are allowed to fall and decay in the tank. Old, dying leaves need to be removed immediately as once they are decaying they will release back their nutrients into the water. If you have chosen plants that prefer to be rooted in the substrate instead of the Java Fern or *Anubias*, put them in small plant pots with an aquatic compost covered with a thin layer of gravel to keep it in place. This will allow some movement of water around the roots while avoiding the stronger currents in an undergravel which flow too fast for many plants to extract the nutrients.

Do not despair

If you are the owner of an algae-clogged wasteland, do not despair. With a little care you can re-establish the correct cycle, and achieve the tank you originally envisaged without spending large quantities of money. While you may still choose to go on to keep a tank with all mod cons and delicate cosseted plants those aquarists whose interest is more in the fishy inhabitants do not have to settle for a bare tank and hours of algae scraping.

ROGER CREW assesses the new situation

Have you got a Licence for that Fish?

In this article I will be introducing, and trying to clarify, the latest piece of legislation to affect fishkeepers, retailers, wholesalers and fish farmers. I have endeavoured to make it as accurate as possible (and easy to understand) but it should not be regarded a legal authority.

The Prohibition of Keeping or Release of Live Fish (specified species) Order 1998 came into effect from November 1 1998 and supplements the import restrictions placed on temperate species from December 1997 and further complements the existing protection given to native species by The Wildlife and Countryside Act 1981, Section 30 of the Salmon and Freshwater Fisheries Act 1975 and The Prohibition of Keeping of Live Fish (Crayfish) order 1996.

Why has it been introduced?

Aquarists, particularly, cannot fail to be aware of the devastating effect the introduction of non-native species has had to many fish habitats. For example, the introduction of the Nile Perch into Lake Malawi has caused the extinction in the wild of many of the endemic Cichlids there.

Captive breeding programmes are doing their best to replace endangered, or even lost, species but obviously mankind must do its utmost to limit such environmental disasters. Here in the UK it would be all too easy to regard such occurrences as events which could not happen here but this is not so; there has been, for example, serious damage to native habitats due to the unauthorised release of Signal Crayfish in UK waters.

The Ministry of Agriculture, Fisheries and Food (MAFF) have taken steps to reinforce existing legislation and this order is intend to protect native fishes in England and Wales although, inexplicably there are no plans to introduce similar legislation to cover waters of Scotland or Northern Ireland.

How is the fishkeeper affected?

There are two levels of licensing introduced by this Order.

1. A general licence which allows the

Strict contols on keeping the Bitterling, *Rhodeus* spp., would deny many fishkeepers of seeing their unique, Freshwater Mussel-assisted breeding behaviour.

PHOTOGRAPH: LINDA LEWIS

keeping of Grass Carp (*Ctenopharyngodon idella*), Sturgeon/Sterlet (*Acipenser, Huso, Pseudoscapirhynchus* and *Scaphirhynchus* spp.) and catfish of the genus Ictalurus in garden ponds or aquaria (other than those on retail or wholesale premises: these premises require an individual licence).

This has the effect of giving blanket cover in licensing these species when kept in all such localities, without any registration or application being necessary.

2. An individual licence is required for any of the species listed below. That is 'individual' to the person applying for the licence. Any person holding any of the listed species has until May 1 1999 to obtain a licence. Any person wishing to obtain any of these species after November 1 1998 must first obtain the requisite licence.

It is an offence for dealers or

HAVE YOU GOT A LICENCE FOR THAT FISH?

Assessing the new situation

wholesalers to sell to anyone not holding a valid licence for the species in question. (Whether they comply, even if aware of the legal requirements placed upon them, remains to be seen). There is currently no charge for the licence.

What is the penalty for non-compliance?

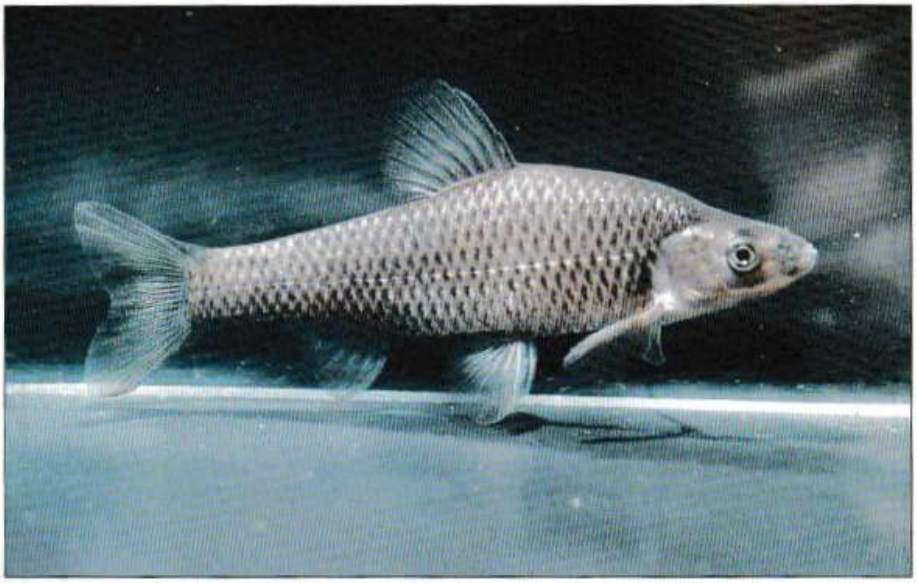
Failure to comply with any of the requirements of the order can result in a fine not exceeding £2,500.

So, what is the intention?

The added protection given by imposing licence conditions is intended to restrict the release of the specified fish into UK waters. Under the current legislation outlined above it an offence to release any non-native fish into the wild without a licence issued by MAFF or the Welsh Office.

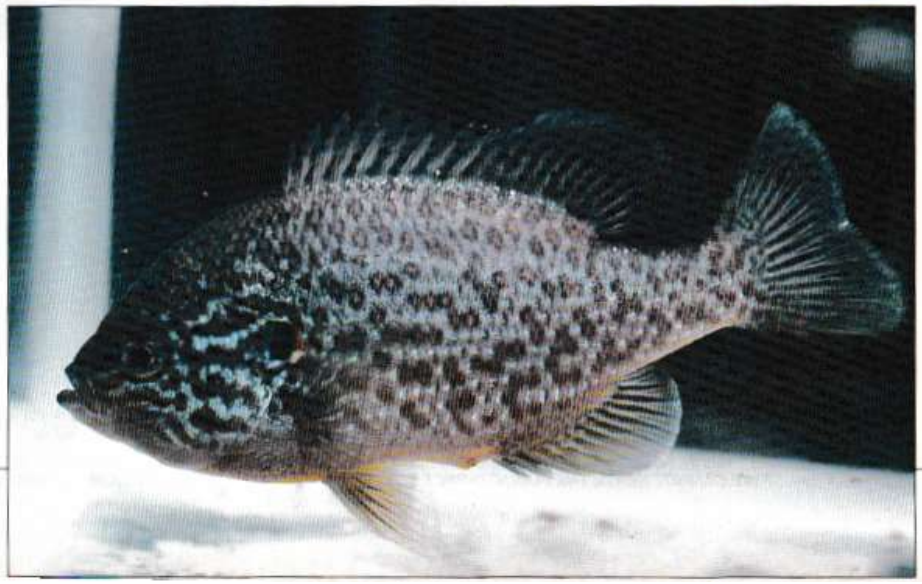
The written consent of the Environment Agency is required for the release into inland waters — other than fish farms — of all fish (including native species). Licensing can only complement the existing legislation by identifying the location of stocks of the fish listed under the new Order.

This implies that MAFF considers the listed species to be either of a significant risk to native species, or those most likely



The Clicker Barb, or Topmouth Gudgeon, *Pseudorasbora parva*.

PHOTOGRAPH: A&P LIBRARY



The Pumpkinseed, *Lepomis gibbosus*, is a favourite North American fish for large aquarium or pond.

PHOTOGRAPH: A&P LIBRARY

to be introduced. Examination of the species listed does not however readily support either hypothesis.

Which species of fish are 'specified' in the Order?

American Brook Trout, *Salvelinus fontinalis*
Asp, *Aspius aspius*
Big-head Carp, *Aristicthys nobilis*
Bitterling, *Rhodeus sericeus*
Blageon, *Leuciscus souffia*
Blue Bream, *Abramis ballerus*
Burbot, *Lota lota*
Catfish, genera *Ictalurus, Silurus*
Chinese Black, or Snail-eating Carp, *Mylopharyngodon piceus*
Danubian Bleak, *Chalcalbumus chalcoides*
Grass Carp, *Ctenopharyngodon idella*
Land-locked Salmon, non-anadromous varieties of *Salmo salar*
Large-mouthed Black Bass, *Micropterus salmoides*
Mediterranean Barbel, *Barbus meridonalis*
Nase, *Chondrostoma nasus*
Pacific Salmon and Trout (excluding Rainbows but not Steelheads), species of the genus *Oncorhynchus*
Paddlefish, species of the genera *Polyodon, Psepherus*
Pike-Perch (including Zander), species of the genus *Stizostedion*
Pumpkinseed, *Lepomis gibbosus*
Rock Bass, *Ambloplites rupestris*
Schneider, *Alburnoides bipunctatus*
Silver Carp, *Hypophthalmichthys molitrix*
Sturgeon or Sterlet, species of the genera *Acipenser, Huso, Pseudoscaphirhynchus and Scaphirhynchus*
Topmouth Gudgeon, *Pseudorasbora parva*
Toxostome (or French Nase), *Chondrostoma toxostoma*
Vimba, *Vimba vimba*

Where can I get a licence?

Applications forms may be obtained from: Ministry of Agriculture, Fisheries and Food, Fisheries Division IIB, Room 308, Nobel House, 17 Smith Square, London SW1 3JR, or in Wales from: Welsh Office, Agriculture Department, Cathays Park, Cardiff CF1 3NQ.

Will fish on the list cease to be available?

Whilst I am sure that MAFF would say that there is no reason why this should be, I strongly suspect that this may be the eventual outcome.

Just ask yourself the question: "If I was a retailer would I want to stock fish for which I am required not only to have a licence but ensure that my potential customers have one also?"

Put this on top of the 'impossible' import restrictions placed on many of these species by the MAFF Centre for the Environment, Fisheries and Agriculture Science (CEFAS) and you can start to see why I fear this outcome.

I say 'impossible' as the import requires health documentation that is not obtainable from the country of origin, and only allows the importation of 'cultivated' fish stocks.

Why pick on these species?

MAFF obviously consider that these pose a threat or that these are the most likely species to be imported.

Absences, rather than inclusions, on the list rule out any debate on their ability to survive in our native environment.

Why weren't aquarists forewarned about the Order?

Although MAFF consulted the Fishmongers Company, Garden Centre Association and National Association of Specialist Anglers, they chose not to invite comment or participation from any representative body directly concerned with the fishkeeping hobby.

OATA were contacted early in the proceedings and did indeed offer constructive modifications ahead of the release of the final draft of the Order and have recently had further discussions with the salmon and freshwater Fisheries review Group.

I would have thought that MAFF would have wished to bring the hobbyists into the debate, if only to win minds rather than to alienate by imposing apparently haphazard discrimination against hobbyists with an interest in certain species.

There are similar restrictions in Australia where it is virtually impossible to hold many species, either tropical or temperate. I hope the methodology now adopted in the UK is not the thin end of the wedge.

However, I must stress that I believe the licensing restrictions have been imposed with good intent and any steps which serve to protect our native species (presuming we can agree on which are 'native') must be supported by any serious fishkeeping hobbyist.

I would ask the Fisheries Minister (who denied adopting a draconian approach and even boasted of having consulted widely on the proposals and of carefully considering the points put to them) why the very people who ultimately keep these fish were ignored?

We want to preserve the diversity of species, albeit in a sensible, practical and workable manner. How can such steps, which are likely to eventually eradicate the availability of certain species, be condoned and yet still allow the importation of such species as the coloured varieties of Carp called Koi and Goldfish — which present a great risk to our native fishes through the introduction of disease such as SVC, without these licensing conditions? How else would he define 'draconian' and 'ill-informed'?

The angling fraternity, by the way, increasingly recognise the risk of disease transmission between different bodies of water through the use of keep-nets and some angling sites supply nets for the use of visitors to reduce the risk of disease to their valued stocks.

How do SVC and other fish diseases come into the debate?

Import restrictions brought in last year were intended to prevent the introduction of fish disease from abroad.

What CEFAS did not do was show any reason to suppose that the fish affected posed a risk in that respect, nor provide any comparative statistics to show that Koi and Goldfish imports posed a lesser risk.

Personally, I do not have any strong feelings against Koi or Goldfish but, as they are the temperate species most likely to be imported, they serve to show the iniquities of the current legislation.

Now it is here, who will police the Order?

I doubt very much whether MAFF or anyone else will bother to police this order, which makes it difficult to see the whole exercise as having any meaning. I wonder what is to follow on behind this?

What was wrong with the exting regulations?

Nothing! Presumably it was the application of them which was found wanting; perhaps any data gathered through the proposed licensing may assist in more stringent enforcement?

Anything else we should know?

Only the information you need for the Licence Application Form. Presumably you all know the name of the Environment Agency region the fish will be located in?

You can obviously provide a sketch map of where your aquaria or ponds are and can say if they will be in a SSI, SAC or SPA, RAMSAR site, National Nature Reserve or Marine mature reserve.

Oh, and can you list all the other fish species to be found co-habiting with them!

Roger Crew is a Council Member of the Federation of British Aquatic Societies with special responsibilities for liaison with MAFF and CEFAS on behalf of the Federation. He was joined in this duty by Dr Peter Burgess.

NICK DAKIN has advice for combatting the creeping menace ... *photographs by the author*

Aggravating Algae

I have long since lost count of the number of marine aquarists who have written to me threatening to leave the hobby as they endure the scourge of nuisance algae. It is possibly the only area of the hobby guaranteed to affect practically all enthusiasts at one time or another, with persistent and serious cases being quite commonplace.

Both filamentous and slime algae can reduce an attractive underwater scene into a ghastly mess, leading the marinist to believe that collecting cigarette butts could be a rewarding hobby by comparison!

Having said that, all is not lost; for even the most badly affected tanks can be revived to their former glory. BUT it is vital to stress that the hobbyist must be HONEST about the type of arrangement he or she has, and be VIGILANT when trying to cure this menace.

If your tank is doubly overstocked, fed four times a day, has no protein skimmer and rarely receives a water change, then clearly a great deal must change if nuisance algae is to be eradicated for good. Correct husbandry should always take precedence.

Understanding the enemy

Whilst I do not propose to devote any time to the species involved, it is important to realise that ALL types of nuisance algae are encouraged to thrive in poor, or deteriorating water conditions. This generally means an abundance of dissolved nutrients and waste material, greatly in excess of those that can successfully be dealt with by the aquarium filtration system.

Excessive nutrients can arrive in the average marine aquarium by a

Red Slime Algae smothering *Clavularia* sp.

AGGRAVATING ALGAE

Combatting the creeping menace

number of common routes and each will have to be carefully addressed in turn by the hobbyist if a successful cure is to be effected.

Mains water

The most common cause of nuisance algae is water changes and replacement of evaporated water with unfiltered mains TAPWATER. Tapwater is designed to be safe for humans and the keeping of fish or any other forms of aquatic life does not form part of the vocabulary with the vast majority of Water Companies.

In general, they follow the EC regulations as set down by the World Health Organisation, often falling just short of the maximum permitted levels quite legally. Unfortunately, this is frequently not acceptable to the marine aquarist and arrangements must be made to filter tapwater into a usable condition.

Many people find that nitrate/phosphate/sulphate removing resins (such as Nitragon) are all that is required. Others, less fortunate, will have to turn to more sophisticated devices such as reverse osmosis units. I personally live in an area where the mains water quality is fairly atrocious as far as fishkeeping is concerned and borders on the need for a passive filtration resin and an RO unit.

Whilst reasonably expensive as an initial outlay, it is becoming ever more clear these days that the purity of reverse osmosis water should be seen as less of a luxury and more of a necessity if marines are to be maintained with the minimum of problems. However, even the use of RO water cannot rid the system of unwanted algae if the correct WATER CHANGE procedures are not followed.

Water changes

It is essential that water changes are of the highest quality and performed regularly if nuisance algae is to be avoided or brought under control. Most aquaria will benefit from a 15-25 per cent water change every two weeks. Not only will this remove excessive nutrients but it will also dilute those remaining.

On a regular and vigilant basis, most tanks can hope to see a noticeable improvement within 4-12 weeks if RO water is used. Performing water changes with impure water will only exacerbate the problem, as will the replacement of evaporated water with 'straight' tapwater.

Filamentous Hair Algae.

If you do not wish to buy a reverse osmosis unit yourself many forward-thinking retailers now sell RO water; some even add the salt and heat it to provide an instant water change mix! It's well worth investigating if a busy lifestyle demands it.

Topping-up evaporated water loss can involve a considerable amount each week. By replacing with ordinary tapwater, the impurities introduced become progressively more and more concentrated as only pure water molecules evaporate and the unwanted substances are left behind.

Therefore, always use distilled, de-ionised or reverse osmosis water for top-up purposes. It is worth noting at this point that domestic mineral water is not filtered water and may contain a substantial amount of algal nutrients. Many people are surprised to learn from the contents label that bottled water is not really much better than their own water supply (except that it costs considerably more!).

Salt and carbon

Activated carbon and salt mixes can be a source of undesirably high levels of phosphates and nitrates, with price no guarantee of purity. Test your regular brand by mixing a litre of salt mix with distilled water to a specific gravity of 1.021 and checking with the appropriate test kit.

Activated carbon can be confirmed safe by dropping a few grains into 10ml of distilled water and letting it stand for and hour or so. Remove the grains and test the water for phosphates (nitrates will hardly ever be found). Even Tufa Rock and Coral Sand are worth investigating in the same way. The results of these tests can be quite revealing and are often dismissed as a source of nutrients for nuisance algae.

Bubbles

A question often asked is whether the bubbles given off during the day by slime algae, in particular, are harmful. The answer is no. This is merely oxygen given off as a by-product of photosynthesis (although knowing that does not make it any more attractive, I have to admit!). At night, however, carbon dioxide is generated by the very same process and high levels of this gas may stress livestock.

Toxic algae

Is there such a thing as toxic algae? Whilst algologists tell us that there certainly are species of toxic algae in the world, these are highly unlikely to find there way into the marine aquarium. Generally speaking, this sort of scenario is not worth worrying about and much rarer than some people would have us believe.

Red Slime Algae.

Nuisance Bubble Algae, *Valona* sp.

Stocking

An over-abundance of waste products by livestock (mostly fish) quickly leads to deterioration in water quality and an ideal environment in which nuisance algae can thrive and multiply at an alarming rate.

It is, therefore, crucial to adhere to traditionally-accepted stocking levels: as far as the FISH-ONLY tank is concerned one inch of fish for every two gallons nett is the very maximum to be considered safe after slowly stocking for one year.

In the MIXED FISH/INVERTEBRATE aquarium, fish stocks are far lower at one inch of fish for every six gallons nett. The key word here is 'nett' as these calculations can only be made after the displacement of rockwork, sand, gravel, decoration and ullage have been taken into account.

Such items can effectively reduce the water holding capacity of a tank by 20 per cent or more. It is easy to see that by working on gross gallonage the aquarium could be overstocked by at least one fifth! Equally, the extra stock would have to be fed, which ultimately means that the tank is not only overstocked but overfed as well!

Filtration

Assuming that the main biological filtration is adequate correct mechanical and chemical filters must not be overlooked. The need for a protein skimmer and activated carbon cannot be stressed too greatly. Not only do they assist greatly in the removal of substances that cause pollution but they are the only devices that can perform such an important task.

Having said that, in at least 75 per cent of cases that I encounter, the size and efficiency of the skimmer is woefully inadequate. It is not sufficient just to have a protein skimmer, it must be the right one for the job.

An efficient skimmer can remove copious amounts of waste at an early stage, keeping the tank water clean and an inhospitable place for unwanted algae. The same applies to carbon: it must be activated, of high quality, positioned properly in the system and changed regularly.

Make no mistake, the installation of a really effective skimmer and good quality carbon can improve the fortunes of an aquarium markedly.

Lighting

Being so adaptable nuisance algae can proliferate under practically any lighting scheme and it would be a mistake to start altering lighting systems drastically without first rectifying any shortcomings in the quality of water. Occasionally, altering the source of lighting only serves to increase the vigour of unwanted algae!

AGGRAVATING ALGAE

Combatting the creeping menace

Additives

Two additives should be avoided at all costs: liquid invertebrate food, which can prove to be highly polluting, and any form of algal fertilizer. Most tanks will support a fine growth of macro-algae without the need for extra nitrates, etc. Algal fertilizer cannot be selective, feeding both decorative AND nuisance algae alike.

Some aquarists have noticed that by keeping calcium levels high, at a constant 400-450ppm, calcareous algae form more readily and nuisance algae declines. However, this cannot be seen as a remedy as such, merely an opportunity to cultivate a more acceptable form of algae.

Maintaining such high levels will require a calcium reactor or kalkwasser dosing chamber.

UV and ozone

Both ultra-violet sterilisation and ozone will help to improve the marine aquarium environment as a whole and their installation can only be seen as a welcome addition. However, neither will noticeably reduce nuisance algae as such, and money put aside for such items might be better invested in a good reverse osmosis unit.

Predators

Whilst some herbivorous fish will browse to a variable extent on filamentous algae, there are few suitable aquarium inhabitants willing to consume slime algae. The Caribbean Queen Conch has been suggested as a suitable invertebrate predator but its sheer bulk may cause disruption in many reef tanks; it could also be difficult to acquire outside the USA.

Of course, if a potential grazer is chosen, it should be remembered that its waste will contribute to the overall condition of the water; in reality the benefits and disadvantages of filling the aquarium with potential predators may largely cancel each other out.

Chemicals

The use of chemicals can be considered only as a last resort and a sign of desperation. Experience has shown that their success rate fluctuates wildly and the effects are nearly always very temporary. Fish and invertebrates have also been observed to suffer as a direct result of such treatments.

Conclusion

Whether your algae be slimy, filamentous, or both, the most reliable approach has always been to keep water quality extremely high. If this route is pursued vigorously, a gradual improvement is nearly always noticed and even badly-affected tanks can be transformed in only a few short months.

Unfortunately, there are no easy options but identifying the possible causes to this frustrating problem is a big step on the way to solving it.

To recap on effective remedial action:

- Always use a mains tapwater filter; reverse osmosis if possible.
- Test salt, carbon substrate and rockwork for nitrates and phosphates.
- Perform the correct water changes regularly.
- Never use 'straight' tapwater for evaporation top-ups.
- Be realistic about aquarium volumes. Always measure the nett amount accurately when it is first filled.
- Never overstock with fish.
- Always base stocking levels on the nett volume of water (see number 5).
- Feed livestock sparingly.
- Don't use chemicals or unwanted additives.
- Always fit an appropriate protein skimmer and activated carbon.
- Don't add yet more fish in the vain hope that they may eat the algae.
- Do remove unwanted nuisance algae at every opportunity.
- Don't rely on decorative algae to 'rob' nuisance algae of its nutrients if the situation is still really acute (it usually gets smothered and dies!)
- Be honest about assessing stocking levels of fish, frequency of water changes, etc.
- Be vigilant. Eradicating nuisance algae will require some effort, but the rewards will be there in the end.

Please visit my web site at: http://www.nickd.clara.net

LIZ DONLAN'S KOI CALENDAR

Whilst the hobby of Koi keeping is on the increase and there are more Koi shows each year attendances at some club meetings seem to be dwindling.

In my own club, whilst membership remains reasonably high, attendances at meetings are at an all-time low.

Having said that, the small numbers who do attend are amongst the more enthusiastic and interested I've come across for some time.

General discussions regularly take place with no-one feeling frightened to ask questions and/or give their opinions, and, more importantly, none of them leave a meeting part way through a speaker.

At first I thought perhaps it was the programme itself (which I arranged!) which was discouraging members from attending, but I've found that three other organisations to which I belong have also got dwindling attendances at their meetings — maybe people prefer to sit in front of the telly these days.

Therefore, if you want to challenge the above comments and tell me that your club has hundreds of members attending meetings, then let me know your secret of success.

This month's photograph features the mud ponds in Japan. I'm fortunate to have been to Japan twice and would certainly go every year if funds would allow.

If you've never been then why not start saving up now and contemplate going this October with one of the many dealers who organise trips?

As far as I'm concerned EVERY Koi hobbyist should go to Japan at least once — I can assure you that once you've been you'll want to go again.

PHOTOGRAPH: LIZ DONLAN

Show Calendar

MAY

2/3 Dealer's Koi Show (UK). Telford. Organised by DJs Koi. (Contact telephone number 01922 493290).

15/16 BKKS KOI '99. Bingley Hall, Staffordshire County Showground.

29/30 South of England Chapter ZNA. 5th Open Show. Farenam College, Hampshire. Contact Show Chairman, Martin Priday, 01243 264719.

30 Lower Thameside Section (BKKS) Open Show. Southend-on-Sea (*venue to be advised*).

30/31 BKKS South Hants Section. 8th Open Show. South Downs College, College Road, Crookhorn, Havant, Hants. Further details from Ron Isted (Show Secretary), 012453 572762.

JUNE

12 Essex Section BKKS. Closed Show. Aveley Sports & Social Club, Aveley, Essex.

12/13 Worthing and District BKKS. Open Show. Worthing Rugby Club, Angmering, West Sussex.

JULY

3/4 East Pennine Open Show. The Heritage Centre, Elsecar, near Barnsley, Yorkshire.

18 Essex Section BKKS. Open Show. Aveley Sports & Social Club, Aveley, Essex.

AUGUST

7/8 International Koi Show. Organised by DJs Koi. (Contact telephone number 01922 493290).

Koi Society Meetings

JANUARY

6 BKKS Leicestershire Koi Section. Guest speaker: Dennis Wordsworth of *Infiltration*. Contact Keith Boyton, 0116 233 0797 (home) or 01455 550550 (work).

17 Northern Koi Club. St James Church Hall, off Eccles Old Road (near Hope Hospital), Salford. 1.30pm. Guest speaker: Charles Harriss of *Purity on Tap*. Contact Glynis Morgan-Davies, 01706 218243.

24 Yorkshire Koi Society. Collingham Memorial Hall, Collingham, near Wetherby. 2.30pm. Contact Malcolm Buck, 01947 810372.

28 Witham Valley Koi Society. George Fischer Social Club, Station Road, North Hykeham, Lincoln. 8pm. Guest speaker: Duncan Holmes, Aquatic Advisor. Contact Jeanette Preston, 01522 791135, Geoff Green, 01522 829590, or Mrs J. P. Oliphant, 01522 822670.

There are numerous Koi Clubs/Societies throughout the UK and we will publish details of their meetings each month as and when we receive details. However, don't forget to include a contact name and number. Copy for Koi Calendar can be sent to me c/o Koi Calender, MJ Publications Ltd., 20 High Street, Charing, Ashford, Kent TN27 0HX, or by contacting me direct, telephone (0161 794 8282) or fax (0161 793 9696).

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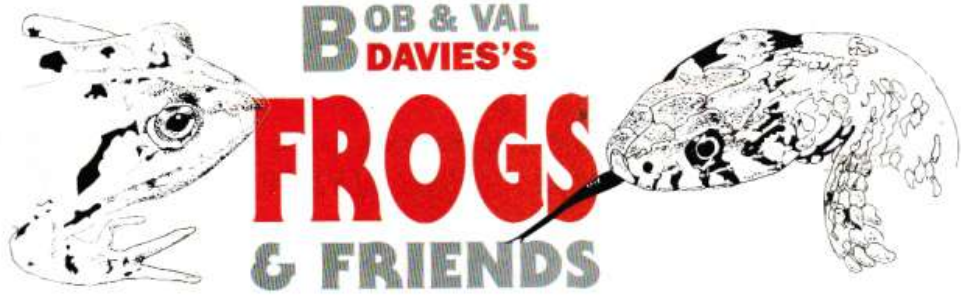
6 BKKS Leicestershire Koi Section. Guest speaker: Dennis Wordsworth of *Infiltration*. Contact Keith Boyton, 0116 233 0797 (home) or 01455 550550 (work).

17 Northern Koi Club. St James Church Hall, off Eccles Old Road (near Hope Hospital), Salford. 1.30pm. Guest speaker: Charles Harriss of *Purity on Tap*. Contact Glynis Morgan-Davies, 01706 218243.

24 Yorkshire Koi Society. Collingham Memorial Hall, Collingham, near Wetherby. 2.30pm. Contact Malcolm Buck, 01947 810372.

28 Witham Valley Koi Society. George Fischer Social Club, Station Road, North Hykeham, Lincoln. 8pm. Guest speaker: Duncan Holmes, Aquatic Advisor. Contact Jeanette Preston, 01522 791135, Geoff Green, 01522 829590, or Mrs J. P. Oliphant, 01522 822670.

There are numerous Koi Clubs/Societies throughout the UK and we will publish details of their meetings each month as and when we receive details. However, don't forget to include a contact name and number. Copy for Koi Calendar can be sent to me c/o Koi Calender, MJ Publications Ltd., 20 High Street, Charing, Ashford, Kent TN27 0HX, or by contacting me direct, telephone (0161 794 8282) or fax (0161 793 9696).



HERP FACT FILE

The Midwife Toad (Alytes obstetricans)

Also known as the Bell Toad on account of it distinctive call this interesting species is not commonly kept nowadays possibly because it is rarely available due to regulations and because of its rather dull colouration.

It ranges from Western Europe to the Alps and Iberia and eastwards to Germany. The Iberian Midwife has been classed as a separate species (*A. cisternasii*).

A few years ago a previously unknown Midwife was discovered on Majorca in an isolated location and was apparently threatened with possible extinction but captive-breeding programmes have now enabled re-introductions into the wild.Older books on vivarium life usually recommend the Midwife as a suitable subject especially in outdoor enclosures where, given suitable winter protection, they would thrive.

With the increasing number of exotics this rather dull little toad waned in popularity but we know of two captive-breedings in this country in 1998 (both outside).

Like certain other amphibians this species exhibits an interesting method of brood care which gives rise to the popular name. The eggs are produced in strings of jelly, like those of the Common Toad (*Bufo bufo*), but are much fewer in number.

The string is then taken up by the male who entwines it around his hindlegs where they remain until hatching. To prevent dessication he must ensure that his surroundings are moist and may even enter water to dampen them.

Male Midwife Toad caring for its young like his human counterparts.
PHOTOGRAPH: BOB & VAL DAVIES

This parental care helps to increase survival chances of the tadpoles — amphibians that simply abandon their eggs in the water generally produce large numbers to balance predation.

Normally the jelly is relatively soft and soon dries when out of water but the Midwife's jelly appears thicker and tougher to combat dessication and to withstand any knocks during transportation.

In these days of habitat loss and increasing pollution we were pleased to discover that the Midwife has not been entirely neglected by keepers in favour of more colourful species.

Book Review

Geckoes — Biology, Husbandry & Reproduction, by Friedrich Wilhelm Henkel and Wolfgang Schmidt. Published by Krieger Publishing Company 1995. Price: £35. ISBN: 0 89464-919-1. 237 pages; 96 colour photographs.

In spite of the fact that most, although not all, Geckoes are crepuscular/nocturnal they are very popular with many keepers, some even specialising in Geckoes.

When we bought this book it seemed to fill a much needed niche by drawing together information on the keeping of a large number of species.

The book starts by looking at the family Gekkonidae, its distribution and habitat, general features including sizes, type of scalation, tails and eyes as well as features unique to the family such as vocalisation and behaviour.

In the second section all aspects of reproductive behaviour are studied. An important point from this is that almost all Geckoes store sperm — one mating being sufficient to fertilise several clutches.

Although this was known to apply to some commonly-kept species such as Day Geckoes (*Phelsuma*) and Leopard Geckoes, its application to all species could not be taken for granted.

General husbandry is dealt with in the third section. This examines the needs of the species and with the help of line drawings illustrates five different types of set-up, substrates, furnishings, etc.

Within section three are several pages on rearing young and disease.

The main part of the book contain descriptions of the species. In order to avoid repetition each one is designated a letter A-D for type of habitat and I-V to correspond with vivarium set-up shown in the previous section.

A substantial bibliography and index complete the book. The authors are amongst the foremost keepers and breeders of Geckoes in Germany with over 20 years experience.

For anyone interested in Geckoes this is a book which is fascinating to read as well as informative and useful for identification and husbandry guidelines for both commonly-available and rarer species of Gecko.

Giants in peril

Madagascar has often been described as an island paradise with its own unique flora and fauna.

However, this can also be a cause for concern. In the last two years expeditions from the USA have gone to the island to study the wildlife, assessing the impact of deforestation and trying to locate and ascertain the numbers of certain species.

One such species is the giant Parson's Chameleon (*Chaemaleo parsoni*) which can reach a total length of 68cm (27 in). These creatures prefer deep shade, cooler temperatures and high humidity which means primary forest is their preferred habitat.

The expeditions found that they could adapt to degraded forest if sufficient shade was available although in some areas where Parson's Chameleon had once been found in reasonable numbers there was no remaining suitable habitat for them.

Specimens from some regions have been heavily collected for the pet trade and sightings are now quite rare. As a result of habitat fragmentation there is the worrying possibility of inbreeding and competition with other residents which may well limit the long-term viability of the species.

Parson's Chameleon threatened in the wild but conditions for captive breeding are still elusive. PHOTOGRAPH: BOB & VAL DAVIES

1988 saw the start of exports to Europe, USA and Japan. Since no detailed studies existed of behaviour in the wild, serious herpetologists who attempted to propagate Parson's were working in the dark.

The first documented private breedings occurred in Germany in 1993 and USA in 1994. Between 1993 and 1998 a total of just over 70 live hatchling have been recorded but no second generation (F2) breeding reported.

There has apparently been no successful reproduction by a zoo worldwide. Obviously a notable difference between wild and captive conditions exists which affects reproduction.

In captivity there are numerous instances of infertile eggs being produced, egg-binding, high female mortality and a failure of viable eggs to hatch.

Having bred considerable numbers of several species of Malagasy Chameleons, a few years ago we were given a clutch of Parson's eggs which we incubated for 20 months and, although they did not develop fungus and rot away they failed to hatch and when finally opened showed no signs of development.

It is estimated that there are between 400 and 500 specimens in captivity. At the moment a CITES suspension prevents all but four species of Chameleon from being exported from Madagascar — Parson's is among the banned species.

However, if Madagascar is able to fulfil certain requirements and the CITES suspension lifted then legal trade in this species will begin again.

A group of herpetologists in America is urging the US Fish and Wildlife Service to propose raising the status of Parson's Chameleon to CITES Appendix I which would prohibit legal trade in the species.

The situation now is that this giant of the forests is in real danger of extinction in the wild and, on the basis of the last 10 years, captive breeding offers little hope of saving the species unless more work can be done to improve reproductive success.

A baby Anaconda — may grow up to nine metres (30 feet) if it survives the perils lurking in its pool. PHOTOGRAPH: BOB & VAL DAVIES

Anacondas in the wild

Relatively few TV programmes deal with reptiles so the portrayal of the Anaconda (*Eunectes murinus*) on Channel 4, Monday, October 26, was most enjoyable.

Filmed in Venezuela, 7° north of the Equator, a gravid female was seen going through the hot, dry season during which time she did not eat for seven months.

This may not be quite the ordeal it seems as gravid female reptiles tend to stop eating as they fill up with eggs or embryos — there simply isn't room inside them for food but they obviously need to be well fed beforehand in order to provide nourishment for the growth of developing offspring.

After parturition (birth) the snake's thoughts naturally turn to food and having fasted for so long she ate some of the stillborn young and infertile 'eggs' (known as slugs).

The interesting part was that she accidentally picked up one of the live young but released it immediately in spite of her hunger.

Eating infertile slugs has been occasionally observed in other captive reptiles — we have seen it in our Blue-tongued Skinks (*Tiliqua scincoides*) but had not come across it in snakes although it has been reported by colleagues.

Predation on live young can also occur in certain species of snakes, lizards and frogs. As always in the wild the mother Anaconda was not the only predator around; the remnants of her meal were cleared up the following morning by Caimans which would readily have eaten the young if they had been present at the birth.

On entering the water the young Anacondas faced another danger. One was seen being nipped by a group of hungry Piranha but it quickly swam out of harm's way.

No doubt the Caiman also take some of the youngsters, although Anacondas will also eat Caimans which are small enough to be subdued.

SONIA GUINANE concludes her Lake Malawi safari ... *photographs by the author*

Broken Boats & Bananas

Sunday, October 5

5am: the ferry arrives and a mad panic ensues. No time for breakfast until we are on the Mtendere. Barnabus takes us and all the gear to the ferry on another of Stuart's open boats.

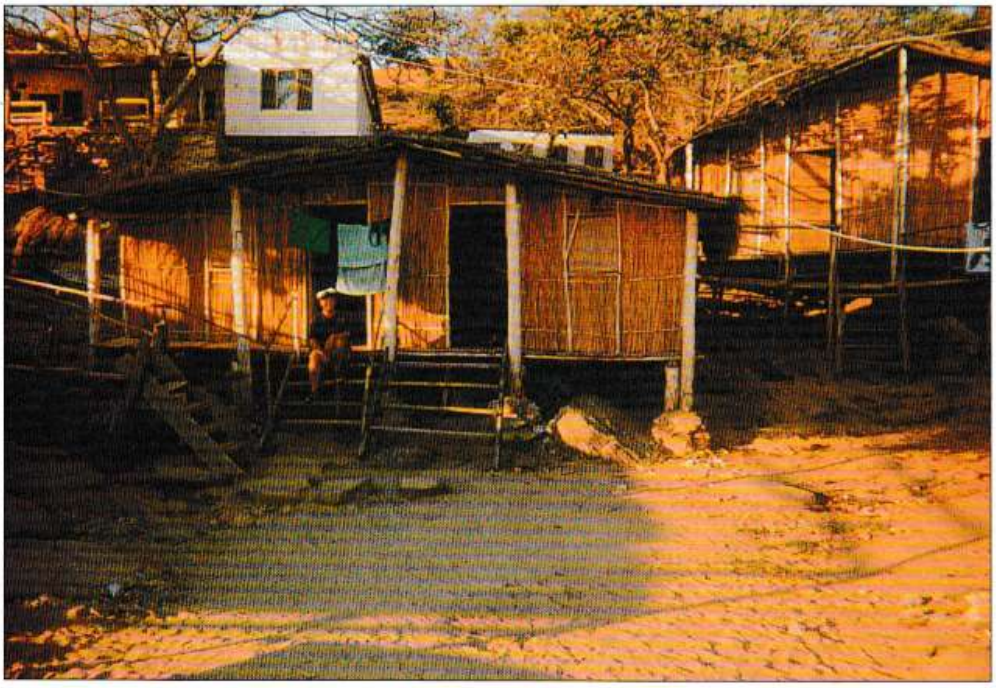
There is quite a swell as he draws along side the ferry, which Ad expertly boards but of course when it my turn I get it all wrong again. Most people wait until the waves were at their highest and then just step aboard, but not being nautical I try the same process when the water is at its lowest.

Ad pulls me over the side and I land in a most undignified heap at the feet of some very bemused Malawians who are gazing at this European female as though she is something from another planet.

It takes a long time to load all the passengers, boxes, chickens, bananas, bags of fish, children and many people are crammed on the lower decks. These people do have a hard life and have so little, yet seem so happy and cheerful.

The journey back to Nkharta Bay, about eight hours, passes quite quickly. It is a beautiful, sunny day and the lake is very calm. Back on dry land we visit the same 'best restaurant' in town, while Ad collects the minibus from the police station.

The only thing on the menu is



First class 'hotel' at Nkhata Bay.

banana pancakes, which most people decide to eat. It was a blessing that I only consumed a tiny amount as most of the others suffered later as a result of eating all theirs.

Monday, October 6

Today is a rest day at Kambiri, much to the relief of Dave, who is really suffering after his banana pancake. In fact everyone that ate one is experiencing very unpleasant side effects.

Gisela and I (who didn't succumb — who says females are the weaker

Near Lion's Cove, Likoma.

***Ps. Zebra* at Maingano, Likoma.**

sex now?) take advantage of the opportunity to wander around Stuart's huge fish houses to look at the huge variety of cichlids, caught by his divers. These beautiful fish are exported to many different locations all over the world, including Japan and Europe. Many of the wild-caught fish from Malawi that arrive in this country have come from Stuart's at Kambiri Point.

That afternoon everyone gets their gear ready for the trip to Cape McClear the next morning, while continuing to enjoy the day of relaxation.

Tuesday, October 7

There is long boat ride ahead of us today, but at least we are using the *Lady Louise*, which is larger and more comfortable than the open boat. Because the lake level is continually dropping due to lack of rain she has to be anchored some distance from the shore and one of Stuart's boys rows us alongside.

Climbing on board from *Little Willie* is a lot easier than the already mentioned scramble to get on the Mtendere!

Although the others are still not feeling too good they are all determined to dive when we reach Cape McClear and I am hoping to snorkel. This evening we will be camping on the beach which will be my first experience of spending a night under canvas. The prospect of

BROKEN BOATS & BANANAS

Concluding the Lake Malawi safari

no airbed did not cause me much concern at this stage as I was confident that I would be able to cope with any discomfort.

Cape McClear is located at the southern end of Lake Malawi with a protected area for the endemic fish. It is possible to dive or snorkel there with permission, but the catching of fish for any purpose is prohibited.

This will be Dave's first dive for a while so he decides to take it easy. Although the water is rough I am determined to snorkel as this area has so many different species.

Even from the surface I could see many beautiful fish, but unfortunately they were some distance below me. The returning divers comment on the diversity of the cichlids species that they have seen — *Otopharynx lithobates*, *Stigmatochromis modestus*, *Labeotropheus trewavase* 'Red Top', *Nimbochromis linni*, *Nimbochromis polystigma* and *Pseudotropheus tropheops*.

Dave saw a large *Tyrannochromis macrostoma* female actually releasing her fry to feed and then take them quickly back into her mouth as he approached. It is witnessing scenes like this that have made the long trip to Malawi so worthwhile.

That evening at the camp site on the beach which we are sharing with monkeys (and I am not referring to my fellow travellers!), Dave and I are complete greenhorns when presented with a tent to erect — virgin territory as far as I am concerned, but he has no excuse as he was once awarded a Duke of Edinburgh award for camping out in Snowdonia.

Finally, with Irv's help, the tent is hoisted so we are able to bed down for the night. I now realise that I should have brought an airbed as the sand is very hard! Next time I will get it right.

Wednesday, October 8

This morning's cold shower is a welcome relief to my aching limbs after a rather uncomfortable night. At least now I can say I have camped in Africa! After breakfast the *Lady Louise* heads off again towards Zimbawe Rocks where more diving is planned.

During the boat ride it is possible to see many black clouds on the horizon which are swarms of the Lake flies that provide a valuable food source to some of the birds and other wildlife that we see around the lake. On several occasions we have seen the beautiful Fish Eagle in many different locations during our stay,

***Ps. Zebra* at Zimbawe Rock.**

with the rocks that they frequent liberally covered in guano.

At Zimbawe Rocks — literally just that — a collection of rocks sticking out of the water, the water is a little cloudy so I just have a quick swim. The divers also have a problem with visibility which disappoints Dave as this is to be his last dive.

He and Gisela settle on a rock scratching the surface which releases food and all the fish come crowding around them. *Pseudotropheus zebra* O/B, *Otopharynx lithobates*, *Labeotropheus fuelleborni*, *Labeotropheus trewavase* 'Red Top' and many *Macrostoma*. They also see large Kapango catfish accompanied by *Pseudotropheus crabro*.

The last port of call that day is Mumbo Island which is home to the *Pseudotropheus* sp. 'tropheops Lilac' and *Pseudotropheus* sp. 'tropheops mumbo'. As their air tanks are almost empty and the lake is now very rough Dave just snorkels while Gisela stays in the boat with Mary and I.

There is a very strong wind blowing and it takes two hours to reach Kambiri Point, where an army of Stuart's boys wade out to help offload us and all the gear.

That evening is the realisation that the holiday is almost over for Gisela, Dave and I, although the others still have another week. There is one more treat in store for us, though, for our last two days and we are determined to make the most of our short time left in this beautiful country.

Thursday, October 9

This morning we board the minibus with an overnight bag and drive to Liwande at the southern end of the lake. Here we walk over dry mud to board a miniature 'Mississippi Paddleboat' for a two-hour cruise up the Shire River to Mvu Camp where we are to spend the night.

Mvu means Hippo in Malawian. The water level in the Shire River has dropped considerably over the last few years due to lack of rainfall which is now the norm all over the world.

The cruise to the camp, which is located in a national park, takes about two hours and the variety of wild life that we see is wonderful, as Malawi takes great pride in what the country is doing for conservation.

Many Hippos, both in and out of the water, graze like cattle. Crocodiles, Impala, Waterbuck and several herds of Elephants, both adults (with their tusks intact) and babies which are joy to behold. There are Maribou Storks, Kites, Ibis, Egrets, Eagles and many other birds along the river's edge.

Mvu Camp is a delightful place sympathetically constructed within the confines of the park and our accommodation for the night is in chalets that look like safari tents but have real beds and solar-powered lights.

This is the sort of camping that I can cope with! Warm showers are another unexpected luxury. It was another wonderful experience sleeping in the 'jungle' with all the fascinating noises (apart from Dave's snoring) that broke the silence from time to time.

Friday, October 10

Our last full day in Africa dawns and for once it is cloudy as there has been rain overnight. The view from the river bank is incredible, like something out of a Hollywood movie or a BBC wildlife programme. Hippos everywhere, birds and many crocodiles of varying sizes on the opposite bank just beginning to stir as the day starts to warm up.

Following an excellent breakfast we are back on the Malawi paddle-steamer heading up the Shire River. This time we see even more Elephants than on the journey down yesterday. Is there no end to the wonders of the Dark Continent?

Everyone is tired but has thoroughly enjoyed the time at Mvu. Towards the end of the long drive back to Kambiri Ad stops at a Monastic Retreat to enable us to buy some local wood carvings. I buy a large carved cichlid which now has pride of place in our fish room.

Back at Stuart's an excellent farewell dinner has been laid on for us and the three of us due to leave the following day are very sorry to be going. We have just experienced a cichlid keeper's dream, seeing Malawi cichlids in their natural habitat, visiting places after which many of the species are named.

It has been possible to see Mbuna grazing on the aufwuchs growing on the rocks, just as they also do in the rocky decor that we provide for them in the aquarium, and the 'Haps' of many different shapes, sizes and colours. All of us learned a great deal more about these fish having spent time with Ad, whilst enjoying Stuart's hospitality.

This fish safari was the first of its kind and Dave and I feel proud to been amongst the guinea pigs. It's our intention to go again in 1999 for the whole four weeks.

Saturday, October 11

The day of departure is here. All the 'gang' pose for the obligatory final photograph just before Dave, Gisela and I leave for Lilongwe Airport. All of us have become good friends during the short time that we have spent together and it's sad to have to say goodbye.

This African tale does, however, have a sting in the tail! On arrival at the airport we discover that our British Airways Boeing 747 is stuck on the ground with hydraulic problems and is not likely to leave until the next day.

Accommodation and meals in a hotel are provided overnight, courtesy of the airline. The flight home is delayed over 24 hours and on arrival at Heathrow our baggage has gone missing!

Caught in the Net

Kathy Jinkings logs on for more Internet Fish Information

One of the great benefits of the Internet is only slowly starting to be appreciated in England, while it is already widely in use in other countries, especially America. This is the ability to shop by mail order.

In the context of the Internet, mail order doesn't simply mean that you can have the same goods delivered to your door that otherwise you would have gone to the shop for; it gives access to a whole world of products which may be unavailable and unknown in the UK.

As yet there are very few Internet sites which cater for the online aquarist shopper. A few months ago we looked at some of the commercial sites run by the familiar manufacturing names, but none of these supply directly to the public.

This month we are looking at sites where the aquarist can read about and consider purchasing items from the global world of fish keeping.

We start this month's tour at a new Internet site: **Seame.At www.seame.com.** This is the web site of a continental retailer with a variety of products, some of which will be familiar names, while others will be new to English readers.

The bright and cheerful site is clear and easy to navigate, while there are enough animations and flashing arrows to keep it lively without becoming annoying. The reader can browse through the items on the catalogue, while regular visitors can go straight to the Gift and New(s)Shop to see what special deals are currently on offer and which new products have been added.

A feature which allows you to choose the currency in which to see the prices makes it easy for English, German and Dutch shoppers to see what they are letting themselves in for and avoid a nasty shock due to an erroneous currency conversion. The prices are also available in US$.

You do need to select your currency on the first page, so don't miss doing that before wandering off into the rest of the site. The products page uses icons to indicate whether each range of products is suitable for pond, tropical aquarium or marine keepers. Once a category has been selected, a 'quick guide' to the items on offer is shown.

The reader can quickly see which items he is interested in, and can then choose a link to read more about the product to see if it is what is needed. To purchase an item, the reader clicks on a button and is shown his 'shopping cart', detailing which products have been selected, their prices individually, and the total.

The reader can either change the numbers of each item chosen (0 means remove it from the list), continue shopping, or proceed to the 'checkout' by clicking a button. At the checkout the order details are shown again, and the reader fills out an address form for the delivery.

Payment can be made by credit card, either over the phone or via a secure link. Although many people are concerned about giving their credit card details over the Internet, secure protocols mean that you are at less risk than by handing over your card to a waiter who disappears into a back room with it.

For those who prefer to phone up with their number, there is a touchtone system to keep the duration of the call to a minimum. An acknowledgement of the order is then sent by email.

Products on offer range from the familiar Eheim pumps through water tests (electronic and manual), foods, filters, medicines, books and CDs. The news page tells us that a variety of new products are expected soon, including a wide range of aquarium plants. This site is well worth a look, even if you don't expect to buy anything.

The type and variety of products being used on the continent is always of interest, bearing in mind the large number of expert and successful fish keepers from both Holland and Germany.

Internet shopping can be expected to become commonplace over the next few years, and if that increases our choices it can only be a good thing.

Another Internet shop of interest to the aquarist has been mentioned briefly in this column before. The Aquatic Bookshop, at **www.seahorses.com** is a bookseller specialising in aquarium and fish books. The most demanding of hobbyists (and indeed ichthyologists) are likely to find something here of interest.

Not only does the book list include a range of books currently in print from publishers all over the world, but the second hand book list is a treasure trove of delights. Books that have gone out of print, old copies of magazines to complete your collection, and scientific papers are all on offer.

Such delights do require a little effort though; the pages are simply presented in the form of long lists, which take quite a while to load and even longer to read through. It will be easiest on your phone bill if you save the list to your hard disk so that you can browse through it at leisure. If you need something obscure you will probably find it here, and if you don't you can email them and ask them to keep an eye out for it.

Although large bookshops like Waterstones and the Internet-based Amazon often claim to offer this service, in actual practice you often never hear back from them and the book remains unfound. Provided it is fish related (or even reptile or amphibian) then this bookshop is your best bet.

Although this is not as polished as site as the previous one and there is no shopping cart, you can still buy by credit card if you send them an email.

In addition to established retailers, many primarily information-giving sites are making use of the Internet to offer goods for sale in association with local businesses or Internet-based franchises.

The Nishikigoi Net of Japan, at **https://www2.studiois.com/chosuke/order500.html**, is a site which has been recommended in this column previously as providing lots of information for the Koi lover. Now you can (if the bank manager will permit it) buy high-grade Koi straight from Japan and the Chosuke Koi farm. From the shop page you can select whether to look at Koi in the $250 or $500 bracket.

Each fish is described individually by type, sex, age, length, and the area where it was raised. The details button of each fish shows a picture of the fish, plus extra information.

If you decide to buy, the order lets you choose which airport you want the fish shipped to (which includes London for UK buyers) and shows the flight time. The total cost is then displayed.

At this point you may get a slight shock; everything is arranged for you up to arrival at your chosen airport, so to your original fish price are added duties, documentation fees, airline fees etc. My original $500 fish suddenly rocketed to a total price of $1,575!

If you still want your fish, the next order page displays advice and warnings that you will need to sort out any required import licences, etc, and the liability (or lack of it) of Chosuke Koi to your fish once it is in transit.

If you agree to the contract, you then proceed on to finalise your order. With visions of an enraged bank I dropped out at this point!

For those with somewhat less funds, the Nishikigoi Net also offers Koi calendars, CD-ROMS, and books and magazines for the Koi lover, each described with pictures and text on its own page.

Like everything in the Koi world though, don't expect them to be cheap!

NEXT MONTH WE WILL BE TRYING TO FIND ASSISTANCE WITH FISH DISEASES ON THE 'NET'

Kathy Jinkings (British Aquatic Resource Centre — http://www. cfkc.demon.co.uk). (AquaSource International — http://www. aquasource.demon. co.uk)

STEVE GRANT tackles a prickly subject ... *photographs by D. Blundell*

Catfish of the genus ACANTHODORAS

Catfish remain a favourite of many aquarists, myself included. There are many different kinds of catfish offered for sale, each fitting into their own niche in the aquarium.

This article is about one of the many kinds, which I have always liked. There are currently three species in the genus Acanthodoras. One of the three species is common in the aquatic hobby but there is confusion in that two of the species names are generally used for the same fish. This happens in books, magazines and in shops.

Hopefully this article will allow you to differentiate between the species, and will give you a little information on how to keep these fish happy in the aquarium.

The genus Acanthodoras belongs to the family Doradidae which in itself has approximately 80 species

Acantho-doras cata-phractus.

CATFISH OF THE GENUS Acanthodoras

Tackling a prickly subject

included in it (at the moment). Members of the Doradidae are usually referred to in the trade as Talking Cats, Thorny Cats or Dorads.

Doradids (the proper term) are most easily recognised by the possession of a single row or series of plates along each side. These plates often have spines or hooks on them.

The species

Acanthodoras cataphractus, (Linnaeus, 1758)

This is by far the commonest in the trade of the three species, often being sold in large numbers. It has an orange-brown body colour with creamy-orange markings on the head, body and fins. There is a creamy-orange stripe across each side of the body, starting at the skull and ending on the body at the base of the caudal fin.

On each stripe there are backward facing bony spines. There are rows of small, blunt bony like projections across the upper and lower half of the body, either side of the creamy-orange stripe. The belly region usually has indistinct light brown markings.

The operculum (gill cover) and head/skull region are bony but not coarse. The barbels are indistinctly banded brown and orange-cream.

Acanthodoras spinosissimus, (Eigenmann & Eigenmann, 1922)

This species is very rare in the hobby and I saw it for the first time, when a batch of specimens were imported with *Acanthodoras cataphractus*, even then they were not positively identified by shopkeepers and wholesalers.

This species has a black body colour with the markings on the body, head and fins being yellow to white. There are usually three to four white to yellow spots along the ridge of the back, one on the posterior edge of the dorsal fin base, one in-between the first spot and the adipose fin, one on the rear edge of the adipose fin and the last one just at the origin of the caudal fin spine.

These spots are missing in *cataphractus*, the back having no marks or just thin, creamy brown lines. The belly region has white to yellow spots and swirls and the barbels are distinctly banded black and white.

There is almost always a white to yellow outside edge to the pectoral fin spines which is usually missing in *A. cataphractus*. There is a distinctive bent yellow line on each gill cover, which is missing in *cataphractus*.

The bony projections on either side of the lateral body stripe are much more numerous and longer and sharper than in *A. cataphractus*. The skull, operculum, dorsal fin spine and humeral process (the bone on the body above the pectoral fins) have bonier and coarser projections than in *A. cataphractus*.

Acanthodoras calderonensis, (Vaillant, 1880)

This species does not currently appear in the trade. Its body is elongate and depressed. It differs from the other two species as it does not have thorns on sides of the dorsal fin spine, only on the front edge.

Also, the lateral scutes cover one third of the side whereas in *A. cataphractus* and *A. spinosissimus* they cover more than half of the sides. The maxillary (longest) barbels reach to near the end of the humeral process when depressed along the side of the body, which is not the case in *A. cataphractus* and *A. spinosissimus*.

Aquarium care

A. cataphractus and *A. spinosissimus* will accept the same conditions in the aquarium. They prefer the temperature on the

***Acanthodoras cataphractus*, showing back profile.**

cool side, say 72-76°F, and the water slightly acidic.

Make sure that you regularly hoover the gravel and watch the water quality as their naked skin can 'burn' easily in adverse water conditions.

They are almost completely nocturnal so during daylight hours they remain hidden. Because of this hiding places need to be provided. I prefer to use pot or plastic pipes for this purpose because they have smooth surfaces and put the fish more at ease because they are completely hidden.

If you keep them with other nocturnal bottom dwelling fish make sure there are enough adequate hiding places for each fish. If not they will either fight for the best spot or all huddle together, either way they end up with damaged fins or scratches on the soft parts of their bodies.

Because they are nocturnal it is best to put food in when it is dark, this greatly increases their chances of feeding and you will soon see a difference in their bulk. If not fed in this way they will easily starve or fail to thrive rather than coming out when the lights are on.

Newly purchased specimens are usually very hungry and may feed when it is light, but if not please ensure that food is placed in the aquarium when it is dark. They relish bloodworm, frozen prawns, earthworms and sinking tablet food. They are very peaceful but I would not keep them with small fish in case they eat them during the night.

Propagation?

There are no firm breeding reports but I believe that the problem is (and this goes for many other catfish) that aquarists usually only keep a solitary fish, or when they are kept in groups they share their home with other fish.

I believe that they would spawn in captivity if given the right set-up. My choice would be a large tank with just the species in question in, maybe four or more fish to increase the odds of getting both sexes.

My choice of substrate would be sand and not gravel which most people keep them on. The sand is so they can lay their eggs in a shallow, if this is how they breed. I would also include some flat stones and leaves as they may use these for spawning sites.

Broadleaf plants and bogwood propped up to give a potential underslung spawning site, should also be added. By giving them all these different sites would increase the odds of breeding them.

It may be that in the wild they spawn after or before the rainy season, so it may pay to decrease and then higher the water level at certain intervals. The fish would also need conditioning: to do this I would feed earthworms, frozen prawns and bloodworm.

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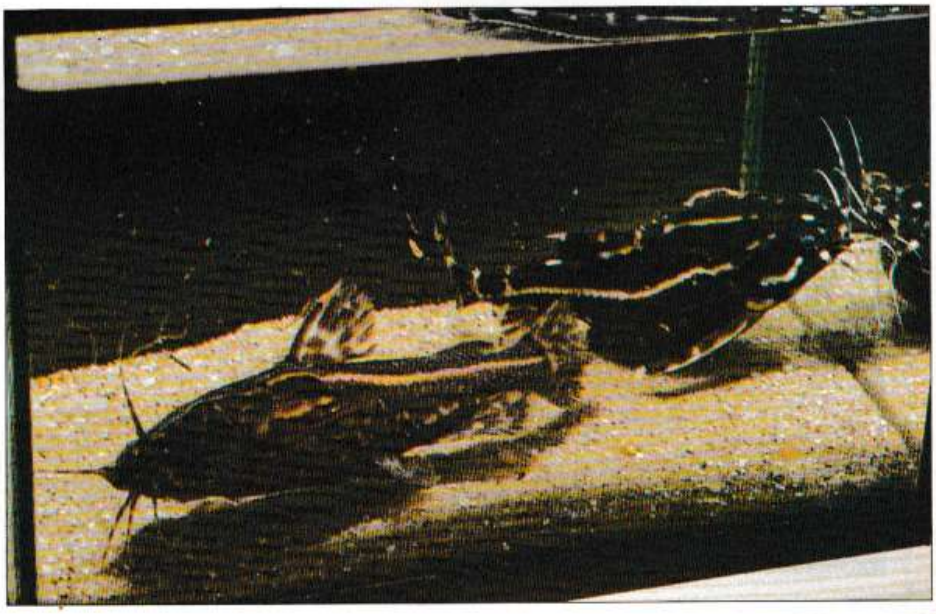


BELOW
Acanthodoras spinosissimus.

BOTTOM OF PAGE
***Acanthodoras cataphractus* and *A. spinosissimus* together.**

Out&About

LINDA LEWIS takes in the 60th Anniversary Weston-super-Mare event ...

photographs by the author

Supreme Festival of Fishkeeping

The Diamond Jubilee of the Federation of British Aquatic Societies was celebrated over the weekend of October 30/November 1 1998 at the Supreme Festival of Fishkeeping, held, as it has been for the past nine years, at the Pontins Holiday Centre, at Sand Bay, Weston-super-Mare. Rolf C. Hagen once again sponsored the show.

The Festival itself was on a smaller scale this year with less Trade stands. This meant that the fish shows could be brought into the main building. As the weather was absolutely diabolical for much of the time this made life very much easier both for those exhibiting fish, and for the fish themselves.

As a resident rather than a day visitor I was, as usual, impressed with the amount of sheer hard work and organisation that goes into putting on the Festival. The organisers had done themselves proud. There is usually a pond included in the display, but to celebrate the Diamond Anniversary a large area of the main hall had been transformed into a truly magnificent water feature.

Starting from above stage level a series of channels and small waterfalls had been created which flowed down through a water course into a Koi pond at the bottom. The whole thing was set off by fibre optic lights and plants, and a bridge across the middle added the finishing touch.

Not just a fish show ...

Throughout the Friday afternoon and on into the evening could be heard the sounds of water running as exhibitors filled tanks, and the happy sounds of people greeting each other, for the Festival is not just a fish show, it's also a

social event. Gradually chaos turned into order and by 10am on the Saturday morning, Sand Bay was ready to greet the day visitors.

Numbers appeared to be up on last year, and the stands were all kept busy. There was no award for Best Trade Tank this year, which was a great pity for Coralux lighting systems had set up a most wonderful marine tank which I felt sure would have won the award easily.

It was, as you might expect, beautifully lit so that the colours of the fish and invertebrates appeared bright and true, but it was also very well laid out and stocked with the right number of fish — just a few. These had plenty of places to hide and swim amidst the array of inverts. Both fish and inverts were in wonderful condition too.

A new award for Best Market Stall, a huge trophy made by BTC, was made to the Hagen stand. Dominating the main hall, this stand offered bargains galore and was kept busy throughout the show. Disappointingly, the Furnished Aquarium Races were cancelled.

It seems that last year the plastic plants and other decorations were given away to the winning teams and no-one had provided any replacements! I think there were also some concerns that there was already enough water in the hall, thanks to the vast water feature!

There was little to see from the fishkeeping societies this year which was a great shame. Nine clubs entered the Society Furnished Tank competition. This is judged by members of the cocieties themselves.

I have said this before, but I do think it's a pity that this section is not more clearly labelled or signposted. All visitors see are two rows of tanks. They are not made aware of the competition or of its criteria. The very worthy winner was Hounslow and District Aquatic Society.

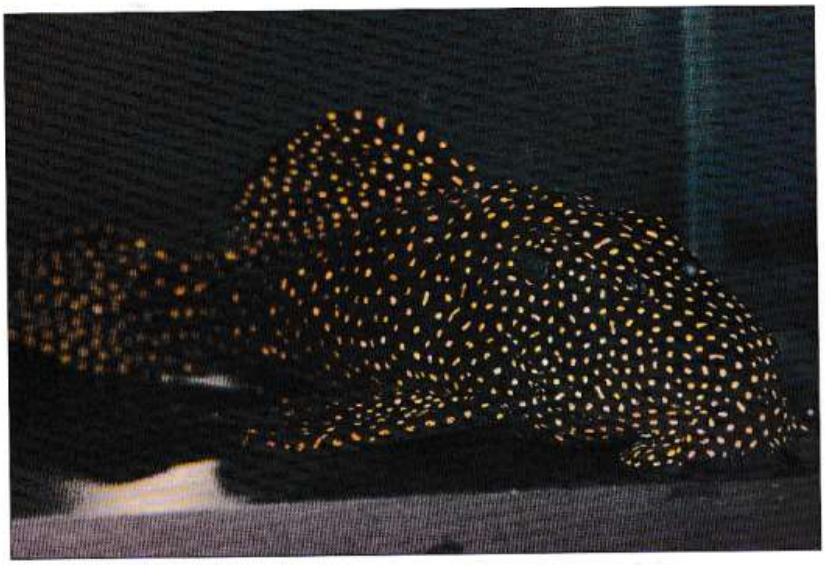
Forced to retire

Throughout the first day the Junior Fish Show was set up, judged and then taken down. Sadly, I didn't get to see this, as a heavy cold forced me to retire to the comfort of my chalet for much of the Saturday afternoon. I am told that, as usual, the competition was keenly and enthusiastically contested with Angela Cank emerging with Best in Show although the highest pointed exhibitor was again Robert O'Grady from Swansae A.S..

Lectures were given by Dr Steve La Thangue and by Colin Grist, curator of the Blue Planet Aquarium, Ellesmere Port. The latter's emphasis was on conservation, while the former made the complicated science of water chemistry accessible to everyone.

Geoff Capes again impressed everyone with both his strength and his air of authority (would you argue with him?) as he organised the popular Tug of War competition. The Festival closed to day visitors at 5pm. For the residents there were just a couple of hours to draw breath before the evening's entertainment began.

As usual we were treated to a three-course meal followed by just a few brief speeches and presentations. Gold, Silver and Bronze awards were made to Society members who had been successful in fish shows through the year, with a special award — the Hagen Nutrafin Trophy of



TOP OF PAGE
Tony Tyson's Supreme Champion, *Leporacanthilus galaxias.*

ABOVE
Alan Best's Open Champion, *Corydoras goosei.*

The Supreme Festival of Fishkeeping

Excellence — being awarded to Tony Tyson who just keeps on producing prize winning fish as easily as the rest of us make cups of tea. The day ended with music, dancing and cabaret.

Bright and early on Sunday morning the contenders for the Shows began arriving to bench their fish. As well as the usual Hagen Masters Open Show and the Supreme Championship there was an additional class to celebrate the Diamond Jubilee. Like the Supreme class all fish entered here had qualified by doing well in other Shows during the year. Judging started at 10.30am and continued for much of the day.

To keep people amused while they waited to see the winning fish, further lectures took place given by Ray Killam, who talked about Koi, and Joe Pecorelli of the London Aquarium, who spoke about the design and building of the Aquarium.

There was also the final of the Tetra Junior Quiz. Six contestants remained to battle it out, every one of them obviously enthusiastic about the fishkeeping hobby and with plenty of knowledge of the subject. The eventual, and worthy, winner was Ryan Hope. This is no easy contest. One or two of the questions proved too difficult for me!

Although the Festival is primarily about fish, there were plenty of creatures on display thanks to the sponsors, Rolf C Hagen's interest in all kinds of pets. Bristol Zoo had their usual range of creepy crawlies, whilst a new exhibitor, the Aquatic Experience (Syon Park) also showed snakes and other unusual creatures. Other stands featured hamsters and rabbits.

Variety of animals

The Blue Planet Aquarium only had one display tank which, at first sight, just contained a couple of bits of wood. Look more closely, though, and you saw hidden below the wood, a small Alligator. At one point someone even walked through the hall leading a Bosc Monitor Dragon on a lead, so for variety of animals, Weston was a good place to be.

There were plenty of good quality fish on sale too, both tropical and coldwater, and trade in these was brisk.

As the hours passed, the crowd grew outside the Show hall as entrants waited for the results of the various classes to be displayed. At last, the judging was over. I was pleased to see a Corydoras catfish take Best in Show, even if it was an unusual species (*C. gossei*); its owner, Alan Best, of Strood A.S., was even more pleased!

The Special Diamond Award went to a most strange and unusual looking fish owned by Allan Finnigan. Glorying in the name of *Lophisilurius alexandrae* it was a truly ugly fish (no offence, Allan) which will not be winning any beauty contests. In contrast, the Supreme Championship was won by Tony Tyson with a beautiful medium sized catfish, *Leporacanthicus galaxias*.

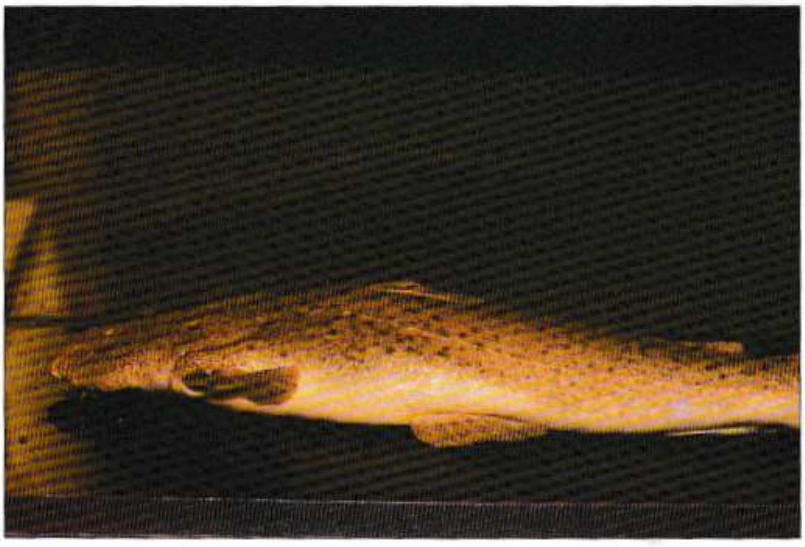
My sincere congratulations go to all the winners. It takes year round effort to produce such great, healthy fish. Overall I enjoyed the Festival, but felt that in order to encourage more people to stay for the weekend something needs to be done to inject a bit more variety.

The format is good, don't get me wrong, and the value for money is excellent, however, in order to keep coming back, many people would like to see a few changes. This might bring back a few of the Trade stands and other exhibitors. Perhaps a change of venue would help. Why not let *A&P* know what you think by dropping the editor a line?

The Festival is obviously what we, those who go, make it. A father and daughter had travelled all the way from Malta to attend. They had a wonderful time. There are no fishkeeping festivals in their country and they thought ours was marvellous.

In Malta getting hold of up to date equipment and accessories is extremely difficult and places to buy fish are very limited. There is only one fishkeeping society and the membership is 100 per cent male. It certainly made me feel fortunate to be living in the UK!

Meanwhile, my thanks to the FBAS for organising the event, and to my friends at Hounslow for making me welcome.



BELOW
Allan Finnigan's Diamond Champion, *Lophisilrus alexandrae*.

BOOK REVIEWS

The Water Gardening Handbook

Author: **John Dawes**
Publisher: **Interpet**
ISBN: n/a
Price: **£14.99**

This new book is yet another in the series of the popular Interpet Questions & Answers Manuals and comes at just the right time for those contemplating installing a pond or water garden in the approaching (we hope!) spring.

Divided into five major sections — Pond Set-up, Pond Fish, Pond Plants, Pond Wildlife and Pond Management — the book first takes the reader through the whole pond scenario including General, or Mixed Ponds, Koi Pools (yes, the difference between ponds and pools is explained), Wildlife Ponds and Small Water Features before moving on to streams and water movement.

Siting and design are considered before the different formats such as Prefabricated, Lined or Concrete are discussed; the final chapter in the first section 'Running a Pond' is not, as might be expected, pond management but an explanation of the 'hardware' required to keep the pond running in optimum conditions.

The choice of fish and their subsequent care could not be more comprehensive, with descriptions of Goldfish, Koi, other Cyprinid fishes being joined by those covering other temperate fish as well as the borderline 'coldwater' tropical species.

The importance of plants is stressed, and full details are included on their reproduction and propagation, the planting of a pond together with plant health and diseases. All types of plants are discussed — bog plants, shallow- and deep-water marginals, surface, floating and submerged species.

As today's water gardener may not be quite so interested in fish the section on pond wildlife makes attractive alternative reading and could open up another avenue of enjoyment altogether.

Finally, the real pond management includes the important aspect of managing water quality and has a 'four seasons' discussion of the pond's care throughout the whole year.

Superbly produced (in association with Andromeda Oxford Ltd) this Interpet book is a must for both existing pondkeepers and those only thinking about installing a water feature in their gardens.

Throughout questions (and the answers) pop up in the authoritative text just at the right moment. The illustrations could not be bettered and if anyone should be needing any constructive encouragement to get into water gardening then this book should make their minds up in no time at all.

Rainbowfishes: Keeping and Breeding Them in Captivity

Author: **Derek Lambert**
Publisher: **TFH**
ISBN: 0-7938-0376-4
Price: **£4.95**

Those were the days when a Rainbowfish would have been a fish with two dorsals coming from perhaps a choice of three species.

How things change and what a choice there now is and what a task to positively identify some of them, especially in attributing genera to Families.

This book has managed to sort out who's who and fully exposes, to coin a phrase, 'all the colours of the Rainbow'. With the catchment area of Rainbowfish extending from Australasia to Madagascar (plus an Atherinidae related genus in Mexico and several others in marine and brackish waters too) it is not surprising that more and more species are being discovered.

With a size range of between just over 35mm up to around 150mm there is a Rainbowfish to suit most domestic aquarium sizes. Without exception each fish brings its own brilliant colouration and, in many instances, truly exotic finnage.

Nowadays, the increasing number of species imported has overcome the traditional regard for Rainbowfish as being slightly oddball species, and readers will be delighted to find photographic sequences of spawning actions by several species in the book.

Details of establishing the correct conditions for the Rainbowfish aquarium and of their care are fully covered and by writing the text in from the first person attitude, the author makes the reader feel a real sense of involvement in the proceedings.

The photographs, by several of the world's best fish photographers, are absolutely stunning; you will meet most of the popular species of Rainbowfish, including the relatively new *Melanotaenia praecox*, but there is plenty of background information to make you want to go and seek out the rest. Enjoy.

A-Z of Tropical Fish Diseases and Health Problems

Authors: **Dr Peter Burgess, Mary Bailey and Adrian Exell**
Publisher: **Ringpress**
ISBN: 1-86054 125 9
Price: **£16.99** (*but see details of Special Offer to Readers elsewhere in this issue*).

According to the authoritative text no less than 95 per cent of fish ailments are induced through environmentally incorrect conditions (including feeding). This points the finger well and truly at the owner/fishkeeper, so what are you going to do about it?

Armed with this book it soon becomes clear that diseases (and the risk from them) can virtually be eliminated from most freshwater applications and even if any ailment should strike then a successful remedy is readily at hand.

Whilst prevention is always better than any cure, it is the acquiring of basic practical knowledge by the fishkeeper that provides the best ammunition in the battle against disease.

This knowledge is provided in abundance in the first section (occupying approximately a third of the book) entitled Health and Husbandry; herein is discussed every conceivable topic — water quality, inter-species compatibility, transportation, nutrition, breeding — that affects fishes in captivity with stress avoidance being high on the list of priorities.

The final subject in this section, Treating Fish Diseases, provides a natural cue for the next part of the work, Signs of Tropical Fish Diseases and Health Problems.

Accurate observation, the drawing of the correct conclusions from them, will be instrumental in the proper identification of any disease present with the result that the correct (and therefore most effective) remedy is chosen for any particular ailment.

The major proportion of the book (near enough half) is devoted to the Treatment of Diseases and Health Problems and this is where the A-Z of the title comes in as each entry is in strict alphabetical order. Within each entry there are paragraphs entitled Signs, Causes and Prevention & Treatment; cross-references to related problems or similar symptoms or associated behaviours are in capitals for attention-grabbing.

The information and presentation could not be more clear, photographs are used throughout to present either disease or symptomatic behaviour and whilst the trio of authors have between them a formidable pedigree of knowledge both scientific and practical, nowhere does the text extend the bounds of comprehensibility of the average fishkeeper.

A further advantage is that the physical size of the book (a 'slim' A5 would be a good approximation but having almost 400 pages) means that it's a handy book to take to the aquarium glass rather than have to drag a coffee table with you on which to place far heftier tomes. Diseases? Sorted!

ASK A&P

SEND YOUR QUERIES TO: ASK A&P, MJ PUBLICATIONS LTD, 20 HIGH STREET, CHARING, KENT TN27 0HX

Marine

★ PRIZE WINNING PROBLEM ★

Q I am a hobbyist (with a couple of years experience of keeping marines in a fish-only tank) and I'd like to set up a 4 foot aquarium for a single Octopus, *Octopus cyaneus*. The tank will be filtered by an external power filter and will feature protein skimming. Will this suffice and what are the basic tank requirements of the Octopus?

A I cannot answer this query from personal experience or through the experiences of fellow club members. Therefore, what follows has been gleaned from a trawl through a number of aquarium texts. The major considerations are:
1. Octopus are extremely sensitive to water quality, requiring stability and perfect water conditions, with very low nitrates.
2. They are highly strung creatures, easily prone to shock, and, therefore, cannot handle disturbances.
3. They are predators.
4. They are escape artists.
Providing you buy a reputable power filter with a good turnover (ie, at least three times the tank volume per hour when under load), you pack it correctly, clean and maintain it on a regular basis, your filtration should be fine. You must also buy an efficient skimmer and maintain that similarly. The power filter, unless it is one of the newer wet/dry types will not reduce nitrates, hence you will need regular partial water changes. If your tap water has a high nitrate content you will need to invest in a means of removing it before use.
Other required water aids would be the use of activated carbon and/or other adsorbent resins.
Octopus are nervous creatures that are prone to shock. The less you disturb the tank the happier they will be. Your external filtration should help in this aspect. You must provide nooks, crannies and bolt holes in your aquascaping for shelter. Children rushing around the tank are not to be recommended.
Lighting should be subdued but more importantly you must not suddenly plunge the tank into full light or complete darkness. The lighting should be staggered to give a slow build-up to full power. A night light will prevent sudden darkness as will ensuring your room lights are left on for a while after your main tank lights switch off.
Because they are predators of fish and any mobile invertebrates Octopus can only be kept on their own or with sessile invertebrates such as Corals, Tubeworms or Sponges. They can escape through the smallest of gaps (much smaller than you would imagine) so provide tight fitting, secure cover glasses with no gaps.
Finally, they have the most complex brain and are, therefore, the most intelligent of the invertebrates; this is probably what gives rise to their very nervous disposition and escapology skills. They must be left in peace or they may use their defence mechanism and discharge a cloud of toxic, black, 'inky' fluid into the tank. In the closed confines of the tank this could be fatal to the Octopus.

Tropical

Q I have been tempted to buy a *Osphronemus goramy*. It is pink in colour and about eight inches at present, although I have been warned that it will get quite big. Could you possibly provide more information?

A You are acting very correctly to gain information on a fish before you purchase it. If only more would so so life for many pets would be better. Your information that this fish will get bigger is quite right — a lot bigger — up to 20 inches. However, if you can provide a home at least five foot in length you will find it hardy, and fed on a diet of large food such as pellets, half boiled vegetables, fruit and chopped fish, will be at home with Tinfoil Barbs and larger catfish.

Coldwater

Q I have been aware for some time now of the increasing recommendation to use an air pump in pondkeeping. Is this really necessary in view of the pond's generally large water/air surface area? Can an air pump really make such a difference?

A You may be confusing the use of an airpump in the indoor aquarium to provide extra aeration but in the outdoor pond there are other considerations to be taken into account. The process of biological filtration can leave the water low in oxygen levels. The addition of airstones to the final chamber of the filter can help replenish oxygen before water is returned to the pond. This is an alternative method to installing venturis which may (to some people's tastes) produce too noisy water turbulence to their tranquil pond.

SPECIAL FEATURE

DEREK LAMBERT feels uneasy about nature under threat ... *photographs by the author*

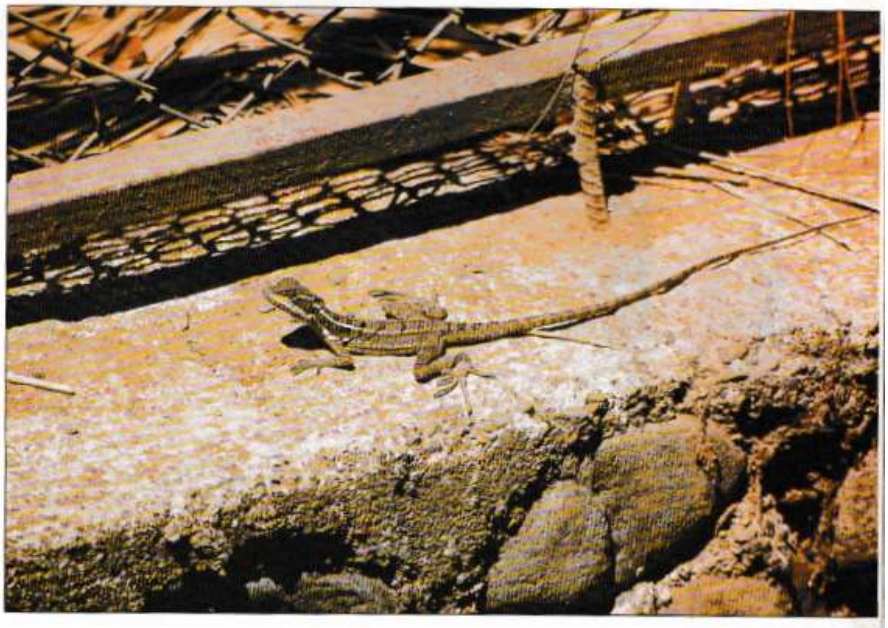
The A&P Costa Rican Quest

Virgin rainforest in one of Costa Rica's protected national parks.

For such a small country Costa Rica has a tremendous number of species of plants and animals living in it. This variety is called its biodiversity and is measured by counting the number of species found in a 10,000 sq km area of land mass. This way of measuring things means that just because a very large country may have more species in it, it does not necessarily mean it has the greatest biodiversity.

In fact, tiny Costa Rica has the richest biodiversity in the world with 615 species compared to the USA's meagre 104. These figures are based upon birds and mammals rather than fish but Costa Rica with about 130 species of freshwater fish is still an aquarist's dream.

For those of you more interested in amphibians Costa Rica is home to 150 species of amphibian including several species of gorgeous but deadly Poison-arrow Frogs.



Not my favourite creatures

Other deadly inhabitants of Costa Rica include some of the 100+ species of snake which live there. These represent about half the native species of reptile and I must admit they are not my favourite creatures. Fortunately, we never saw any snakes on this trip but lizards we saw and heard aplenty.

Every time we were working in a river the undergrowth and trees around us were alive with them. Hearing them was no problem, but actually seeing them was another matter altogether. Some of the small ones seemed to deliberately sit out on a rock or tree trunk and watch our antics, but the larger species usually scuttled off as soon as we came close.

These we tended to see just out of the corner of our eyes as they vanished into the undergrowth. Once, however, I was lucky enough to startle a Basilisk Lizard which turned tail and ran straight down the river. These remarkable creatures have webbed hind feet with extra long toes which enable them to literally run over the water's surface — hence their nickname of Jesus Christ Lizards.

Another group of animals which it is almost impossible to ignore are the insects. Over 35,000 species have been recorded from Costa Rica. From trails of Leaf-cutter Ants meandering around the forest floor for hundreds of metres, to stunning Morpho Butterflies with a 15cm wingspan and brilliant electric blue wings the whole forest is alive with insects.

Of all the countries of Central America Costa Rica has the reputation of looking after its native plants and animals better than most. This is partly because of the National Parks system which was introduced in the 1960s. There are now over 30 of these spread across the country and they make up about 13 per cent of the country's land mass.

Add to these forest reserves and Indian reservations and Costa Rica, as a country, is now protecting about one quarter of its land against the worst ravages of the modern world. On its own this is a major achievement but add to it the many privately owned lodges, reserves and haciendas and you have a country which on the surface is well capable of looking after its native species.

Illegal logging and grazing

Things, however, are not perfect. Those parks in remote areas are only rarely visited and have little money with which to employ rangers. This means illegal logging and grazing go on far too frequently and a few sections of these parks have been badly damaged. Those in more accessible areas, particularly if they are areas of outstanding

This cheeky little lizard sat and watched us fish for a good half an hour before ambling off to find more interesting pursuits.

natural beauty, do not have the financial and staffing problems but are being swamped with visitors.

One of the smaller parks on the Pacific coast originally had only 36,000 visitors per year in 1982 but by 1991 this number had risen to over 150,000. On peak days this meant over 1,000 people were being crammed into a very small space disturbing the wildlife, polluting the beach and encouraging hotel development all around.

Nowadays the maximum number of visitors is limited to 600 a day and the Park is closed on a Monday which has helped restore the peace of this beautiful place.

This problem of over use has been created by Costa Rica's reputation as THE destination for eco-tourism. In the last decade the number of people visiting Costa Rica to look at its natural splendour has over doubled to in excess of 700,000 people a year. This has led to an explosion of hotel building with the attendant damage to native habitats.

Fortunately, most of this development has been on a small scale, with the hotels having less than 50 rooms. These more intimate resorts do far less damage than the huge hotels which have been built in other popular holiday destinations like Mexico and the Caribbean.

Things are changing, though. Several of the big chains have built, or are planning to build, huge complexes with over 400 rooms in them. These will stretch the local resources to breaking point and without proper sewage treatment may lead to pollution problems in some areas. Hopefully, these developments will prove as unpopular with tourists as they are with local people and simple commercial forces will stop the trend.

Taken their toll

Apart from the explosion of tourism in Costa Rica other industries have taken their toll on the environment. In many areas the forest has been cut down to make way for farming. With banana and coffee exports bringing in over US$775 million in 1993 this represents a major part of their foreign income and no amount of concern about the environment can completely stop the expansion of these farming industries.

Likewise industry is expanding steadily with all the problems that brings. The other main threat to the environment is population growth. Costa Rica currently has over one third of its population under the age of 15. With men expected to live till they are 75 years old and women reaching about 80 years old it is obvious the population is rapidly expanding. In the last decade it has gone up by one million and is steadily growing.

Protected habitats

When comparing Costa Rica to countries like Mexico it is plain they have been far more successful at protecting their native species. Not only are the habitats themselves protected, but, so far, widespread exotic species introductions have not taken place.

So the Gambusia, Tilapia, Carp and Catfish which have so often caused the demise of Mexican fish are largely absent from Costa Rica. We did find Tilapia introduced in one river, unlike Mexico, where it is a rare habitat which does not contain some exotic or other.

One exotic we did see were Cattle Egrets. These were introduced in the 1950s and are now firmly entrenched.

Looking to the future Costa Rica has the political stability and sheer natural beauty to become a top tourist destination. Already several firms are offering holidays there from the UK although I don't think any of the major tour companies have started to include it in their holiday brochures.

If you do decide to go there for a holiday remember that 87 species of bird, 27 mammals, 36 amphibians, 16 reptiles and all

Deforested land used for cattle farming.

As we fished in this river under the tree canopy we could hear birds and lizards constantly on the move around us.

species of cacti and tree ferns, plus some palms, are protected under local laws and must not be collected, hunted, captured or sold. All species of fish are fine at the moment but check to see what the regulations are before you travel and make sure you contact MAFF to find out the current UK regulations.

The 4th Annual WYMAG Marine Seminar

This excellent event was held on Sunday, November 7 1998 at the Gilbert Murray Hall, Leicester University. It was organised by the largest marine club in the country, West Yorkshire Marine Aquarist Group, and generously sponsored by Underworld and Aquarium Systems (suppliers of Instant Ocean, Polyfilters, Seaclone and many other aquarium products).

Imagine this magificent coral all bleached out due to the loss of its symbiotic algae through excessive water temperature.
PHOTOGRAPH: A&P LIBRARY

Who got lost?

Proceedings should have started at midday but in fact there was a 45-minute delay. This would appear to have been due to the same problem as last year, when people had trouble finding the venue.

Many people seemed to have found the place OK as the hall was well over half full at midday, but at this point we were obviously well short of the expected and eventual turn out of 250. The late start did not dampen enthusiasm and the hall was almost full when we got underway.

One theory I overheard was that some people may have followed signs for the University instead of the excellent map that was provided. The University has many sites scattered around the area and to follow one of them instead of the map could have led to serious confusion.

Friendly atmosphere

The atmosphere was relaxed, chatty and friendly. Refreshments in the form of soft drinks, hot drinks, sausage rolls, sandwiches and cakes were provided and covered by the entrance fee of £9. A free goody bag was also provided and this contained a set of Aquarium Systems Reef Evolution Additives.

Content

The seminar consisted of three excellent slide based lectures, lasting around an hour each plus a 15 minute question and answer session at the end of each one. The seminar has always attracted first class speakers, as the names of previous speakers such as Julian Sprung, Martin Moe and Peter Wilkens will testify. This seminar was no exception with three well known and widely respected international figures.

Raffles and a lunch break followed the first two lectures and a 45 minute general question and answer session followed the final lecture, with the day ending around 6 pm. I have given a short synopsis of each of the talks below:

Daniel Knop, *Experiences of Coral Farming*

Mr Knop treated us to an excellent account of the coral farming project he is involved with in the Philippines. We were told how the fledgling corals were attached to limestone slices and grown in trays placed on the Ocean bed at various

points throughout the farmed area.

Various methods were used to protect them from the ravages of predators, and from the possibility of them being buried alive by the digging activities of Gobies. The project has been instigated with the involvement of local fishermen so as to highlight and promote the importance of the long term benefits, as opposed to a short term gains, that the reef can bring them.

Hopefully, export licences will be granted for the exportation of these corals for the aquarium trade. However, if licence applications are not successful attempts will be made to sell the idea of coral farming to local trades. Already some of the larger beach front hotels have expressed an interest in the project.

A question from the floor suggested that others, particularly in the United States, could copy the ideas and use them for big business, as opposed to promoting the scheme as a means of helping to stop the destruction of the natural environment.

However, Daniel saw the United States scenario as completely different to the situation in the Far East. He did not see any real problems and welcomed any work that could promote an understanding and stop the destruction of the reef.

Another question from the floor concerned the freight charges for these corals as the propagation method involved them being attached to weighty looking slices of limestone.

Daniel has a book on Tridacna Clams to his credit and has just published a book on reefkeeping techniques, as practised in his native Germany. As yet the book is only available in German but the English translation should be available early in the New Year.

Werner Baumeister, *Underwater Wonderland*

Werner Baumeister is a lifelong aquarist involved in marine biology, diving, and underwater photography as well as being a noted author of marine biology and marine aquarium texts.

Werner began his talk with a non-aquatic slide of a beautiful looking mountain set under blue skies in the Dolomite range in Italy. It was his means of introducing the topic of coral reefs as he pointed out the mountain was once, many millions of years ago, a coral reef.

This led into a short preview of the differing types of coral reefs and how they are formed. The rest of the talk was based round an underwater slide show of spectacular beauty. Personally, despite all the beautiful marine shots on offer my favourite was an aerial shot of a coral atoll surrounded by a sea of an unbelievable shade of blue.

Many of the questions from the floor revolved around the theme of global warming, increased sea temperatures and rising water levels.

Bob Goemans, *The Plenum System*

The first two talks had been very interesting and illustrated by some excellent slides but the final talk took a different approach. The speaker is an eminent marine hobbyist of many years experience and consequently the presentation was of hands-on, tank-based experience, but with a decidedly different approach.

Bob had taken the semi-open plenum system of Jaubert, modified it to a closed system and added efficient, powerful, protein skimming. He named the system the Jaubert NNR, the NNR standing for natural nitrate reduction. The results were there for all to see, which was just as well, because without seeing the photographic proof it would have been difficult to accept such outstanding results via a non-visual presentation.

They were truly amazing with quite staggering photographs of the coral growth achieved from initially small specimens and even some cases of coral regeneration from virtually dying specimens.

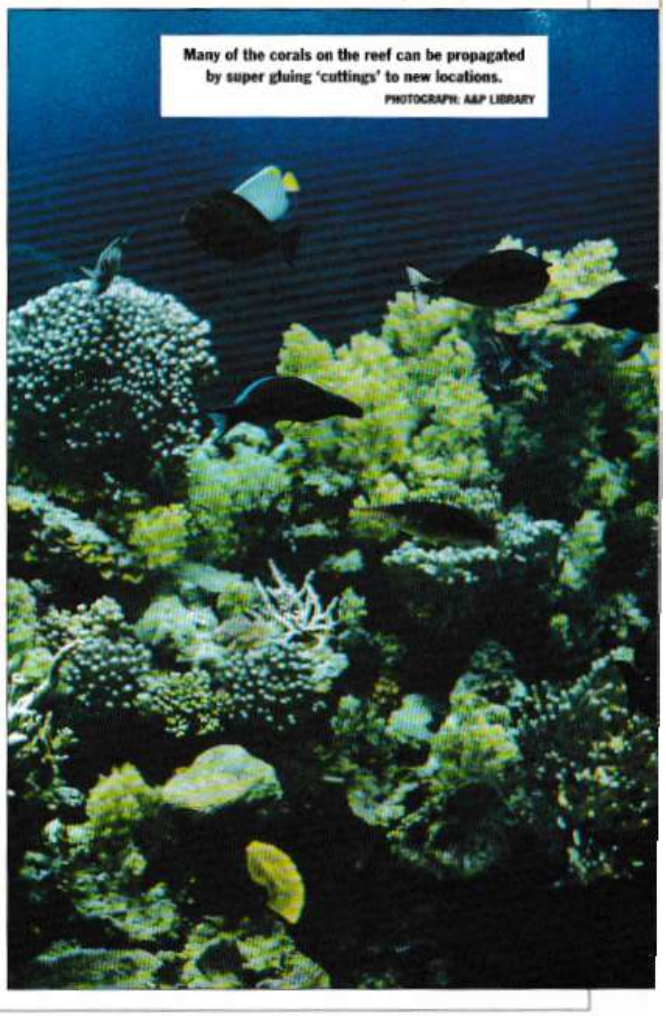
The system revolves around a deep sand bed that is suspended above the tank floor thus leaving a space, or plenum, below it. The support for the sand bed is made of the egg crate material familiar to most reef aquarists. This is wrapped in an envelope of mesh (fly screen mesh provided the correct mesh diameter).

The mesh must not be wrapped around the egg crate in many layers, just a single wrap to give a single thickness on each side of the egg crate. The mesh-wrapped egg crate is placed in the bottom of the tank and is supported off the tank bottom by PVC piping to provide a space of about one inch below it.

The sand bed is then placed on top of the supported plate. Coral sand is too small a particle size and therefore an aragonite based sand is used with a particle size of 2 to 3mm. A thin top layer of live sand can be used to give an instant effect or uncolonised sand can be used but the system may take a few weeks to mature. A relatively small amount of living rock is also used.

No water is drawn through this sand bed, ie, no powerheads and uplifts. The system works on a oxygen gradient basis and draws on many microbial processes, not just the usual two nitrifying bacteria associated with filter beds, plus undefined 'happening' in the plenum space.

He likened the system to a block of flats that had its rubbish disposal in the basement. What happens in the living space above the basement determines what is thrown into it. Without the basement junk accumulates in the upper living space.



Many of the corals on the reef can be propagated by super gluing 'cuttings' to new locations.
PHOTOGRAPH: A&P LIBRARY

The 4th Annual WYMAG Marine Seminar

No one is exactly sure as to what goes into the basement or how it all gets there but without the basement the whole block suffers.

Bob has produced a book on Live Sand and it is just beginning to become available in this country. He also has a new book based on the plenum system, the contents of which he kept close to his chest, due for publication later this year. He promises this book will appeal to everyone from the hobbyist to the professional marine aquarist.

Underworld and Aquarium Systems

A special mention must be given to Dave Keeley and his company, Underworld and Aquarium Systems. Dave has sponsored all four of these annual seminars. When you consider he paid the expenses, including travel, for all three speakers, two from Germany and one from America, you begin to realise just how deeply he digs into his own pocket to sponsor these events.

I know from my own experience of running the West Midlands Marine Group over a period from 1984-1990 that he has always been a supporter of hobbyist groups. As would be expected Underworld had a small sales stand at the seminar but there was no hard sell. Dave showed once again that he is a true supporter of the hobbyist.

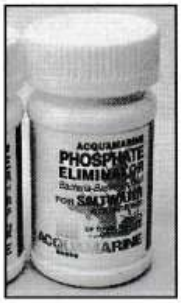
New books

I have already mentioned a number of books published by the speakers. There were other new books available on the Underworld stand, two of which caught my eye. Both were concerned with the breeding of marine fish. One was by an author well known to us all, Martin Moe, Jr. and his book covered the breeding of Dottybacks. The other book was by Frank Hoff and covered Clownfish.

In conclusion

Congratulations must go to WYMAG's President, Richard Musgrove, for overseeing the programme on the day. We also owe Roy Meek and all the other committee members a vote of thanks for all the hard work they have to put into such an event if it is to be the resounding success it undoubtedly was.

Details of WYMAG can be found in our *Meet the Society* column elsewhere in this issue.



Meet the Societies

WEST YORKSHIRE MARINE AQUARIST GROUP (WYMAG)

WYMAG's membership now stands at 350 and is far and away the biggest marine-only aquatic club in the country, and probably the world.

The club meets every third Wednesday of the month at Bruntcliffe Working Mens Club, Morley, near Leeds, and sees a turn out of 60 to 70 members at each meeting. They manage to enlist a host of top-notch speakers for these meetings.

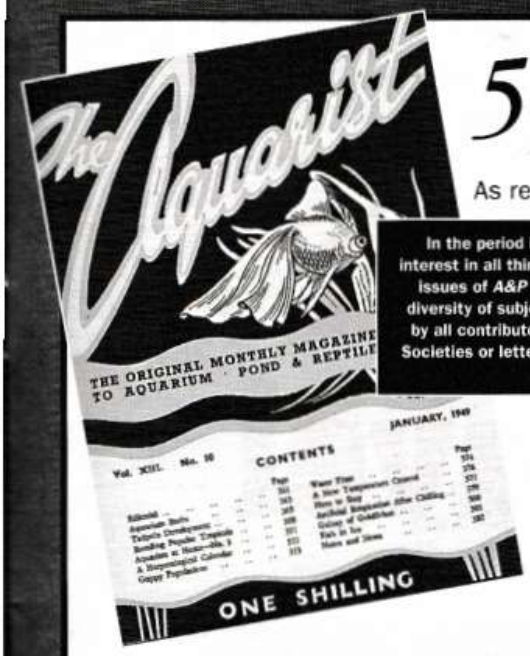
An innovation is the video taping of all the meetings. These recordings are then available for loan by any club member at a cost of postage only. There is also access to a library of books but due to postal logistics they are only available at the monthly meeting.

Members all receive a monthly newsletter. All this is available for the very reasonable cost of £10 per year.

Further details can be provided by the Secretary, Roy Meeke(01274 611822) or the Membership Secretart, Ms J. Natrass, 7 Northley Avenue, Thackley, Bradford, North Yorks, BD10 8LX.

50 Years Ago ...

As recounted by Editor **Dick Mills**



In the period immediately after the war the increase of interest in all things aquatic was rapid. Looking through past issues of *A&P* makes interesting reading not only for the diversity of subjects raised but for the apparent enthusiasm by all contributors whether they be authors, reporters from Societies or letters from readers. January 1949 threw up this selection of topics ...

• It is often said that there is nothing new under the sun (however, this isn't the justification for reproducing items from 50 years ago in this column!) but certain topics do appear to have a regularity of exposure. The threat to pond inhabitants was a rife way back in 1949 as it is today — and the half century of years in between seems to have thrown up little to ameliorate the situation. A report from New Zealand's Dominion *Aquarist & Pondkeeper* offered a deterrent in the form of an electric fence operated from an accumulator (battery) or from a transformed-down main supply. The battery (if used) was buried beneath on the pondside paving slabs.

• The development of any young is fascinating and one that should appeal to the aquarist is that of the tadpole. Using basic microphotography the development of the tadpole could be followed in the minutest detail. To obtain these revealing pictures a microscope of an overall magnification of x90 had a 35mm miniature camera fixed to is eyepiece. A four second exposure time at f4 brought the best results.

• How many Guppies would become established in a 10 gallon tank from one breeding pair if left to themselves and just given food? In an interesting experiment the answer appears to be about 40, after about ten weeks duration. It seems that the young were eaten at a steady rate to balance the additional numbers from new broods. Incidentally, in this controlled experiment the tanks were not planted and so no natural refuge was available for young fry. At a later date palisades, made from glass rods were placed across the corner of each tank with the result that tank population numbers rose and remained higher due to the extra protection offered. By weighing the fish it was possible to measure the efficiency of the conversion from food to fish; this was between 11/18 per cent. The inference was drawn that this was an experimental illustration of the principle familiar to many aquarists — that a fixed population level of fish can be reached in a tank and that once it is reached no amount of increased feeding can raise the numbers.

• A clever method of temperature control, using two thermostats in parallel and a switch, was developed by Mr S. W. Angel of the Blair Aquatic Club, to vary the water temperature in his aquarium so as to reflect more naturally the variations found in nature. One thermostat (the one with the switch after it) was set to 75°F whilst the other was set to 60°F; 'making' the switch allowed the higher temperature whilst switching it off let the temperature fall (and be maintained at) the lower setting; this simulated natural day/night temperature variations. It can be seen that this method could also be used to adjust the tank temperatures to higher settings than normal, say for breeding purposes.

• P. A. Shoerk, of the Luneburg Aquatic Society in Germany, reported how he had rescued six Angelfish by artificial respiration after their tank water temperature dropped to 16°C (60°F) after a four-hour trip home from a dealer's in winter. Although he slowly raised the temperature back up to 28°C (82°F) it was only after blowing through their mouth and gills using a pipette that they revived. Not only that, he had done the same trick with *Barbus tetrazona* and *Panchax lineatus*; all actions were witnessed by members of the Society.

• No less than 24 tropical, 13 goldfish and 14 coldwater tanks (a strange demarcation to say the least — Ed.) for an exhibition of furnished aquaria organised by FBAS Societies held in conjunction with the National Exhibition of Cage Birds at the Royal Horticultural Hall in London. A comment was made to the effect that: "Generally the quality of the plants was of a very high standard and it is interesting to see how the quality is improving." Another remark was: "Some of the tanks, both tropical and cold, were grossly overcrowded. This is deprecated, as it would give the wrong impression to prospective aquarists." Also, with the coldwater: "Plants are not in such good variety, and in some cases it was very doubtful whether the plants had not been grown under tropical conditions." The Best Aquarium was the tropical one entered by the Harrow Aquarium Club. The runner-up was a tank of Shubunkins by the Luton Aquarium Society. Incidentally, this report was compiled by Cecil W. Creed, the former FBAS Vice President and Judge.

• New societies continued to emerge and this month's crop included Wimbledon District A.S., Chesterfield & District A.S., Eastcote & District A.S. and Worcester & District A.S. Tentative enquires were being made in the Uxbridge and Wallington areas about the possibilities of forming Societies.

75th Anniversary Year

Established 1924

SUE ARNOLD looks at moving house plus aquariums ... *graphic by Darren Slack*

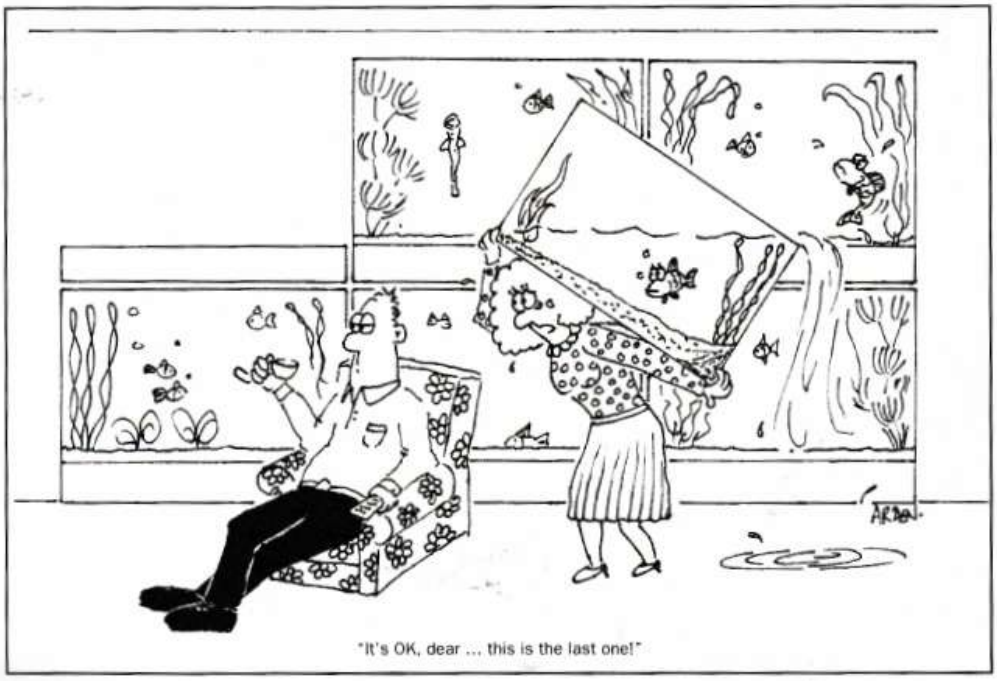
Have Fish ... Will Travel

I've just moved house, not just me, you understand, but me and half of Lake Tanganyika. I learned one thing ... I am never ever going to do it again!

My partner, my other half, the rock of my life, knew exactly what to do when moving time approached. He followed the same procedure when the fish tank cracked, at midnight, of course, and water cascaded all over the floor. He does it when my mother comes, or even when he thinks she might. He has found the perfect answer to the problem solving dilemma ... he vanishes.

I tried hard to believe that he really did need to go on that essential management course. The one that requires an innate ability to swim the ocean, ski down mountains and talk the hind leg off a donkey, all in the interests of team work.

Moving house, I was left to assume, required no team mentality, no pulling together in a crisis, it just needed me. Oh, and three million buckets, plus half the world's supply of strong, clean, plastic bags.



"It's OK, dear ... this is the last one!"

Forward planning is something I know about

Moving Lake Tanganyika, I say, requires more skill than climbing mountains, more stamina than swimming oceans. Forward planning is something I know about. It took months to collect polystyrene boxes and plastic bags from friendly pet shops; and yet more boxes from puzzled computer salesmen who winked at each other as I rooted through their waste bins. It took endless Sundays to gather enough rags and towels from jumble and car boot sales.

Most people try and get rid of rubbish before they move, not me. I spent hours gathering it in. I collected so much that the neighbours were thinking of calling out the Social Services. They believed, with some justification, that I had gone right off my trolley.

In the days before 'The Move' I behaved quite oddly. I scooped gravel, rocks and coral sand from fish tanks, washed my spoils carefully, and dried them in the sun. Thank God for the sun, at least for a while, the boxes could live in the garden.

I sectioned fish into size rather than environment. It was important with almost no shelter left that the larger fellows like the *Cyphotilapia Frontosas*, were not allowed to have expensive free range smallies for lunch. My tanks no longer constituted sand floor, mud floor arid rock, they were containers for small, medium and large.

One thing about keeping only Lake Tanganyikan fish is water problems are greatly reduced, and so are the relevant stress transfer problems. It looked odd but it was sensible. The fish were sulky but safe.

The night before the move was a nightmare. Boss man arrived home expecting tea and sympathy after his hard week of constructive play. Instead he held open plastic bags while I filled them with fish.

Oh, I wish I was one of them!

Shell dwellers came in two varieties: females, who could easily be moved in their homes ... oh, I wish I was one of them! And males, who on spotting a net, promptly disappeared into the few remaining pockets of sand, only surfacing when there was no water to swim in, and I had almost given up ... nothing in life changes, evolution and equality are only surface dressings.

The seven foot tank became a water bath, providing heat and spasmodic airlines. The night became morning.

Frantically syphoned out of the tanks

Towels and rags proved more valuable than gold as we frantically syphoned out the tanks — the last bit took ages. No matter how skilled you are it's impossible to get out that final quarter of an inch of water ... and we had so many of them!

The residual sand and gravel and the last shelters were packed up dirty, containing as they do a vast variety of essential bacteria. The removal men arrived and packed around us ... they made us coffee!

Finally, the men loaded the tanks and drove away. We gathered up two dogs, all the fish and a pile of dirty gravel. We even took bags of fish water, as many as we could stuff in the car. We would have taken the cat but in all the chaos it had upped and disappeared. With no airlines and too much time elapsed we had no choice but to go.

The journey to our new home was long and slow. Do fish get sea sick? Would the heap of boxes fall over and suffocate the dogs? We did our best not to find out, but an emergency stop left two dogs well and truly tangled up in a polystyrene mountain despite all our careful packing. The only thing damaged seemed pride, but how do you tell if a fish has whiplash?

Most people unpack crockery and furniture when a removal lorry arrives. We unpacked tanks. The men were brilliant. They dumped stuff where they thought it best, discovered the coffee and generally fended for themselves.

We started the long, slow assembly process, erected tanks and set in undergravel filters. I still think they're best. I topped them up with my bacteria loaded gravel and ...

"I must fetch the cat!"

"Now?"

"I only have today ...!"

The debris of Lake Tanganyika

Before I could scratch his eyes out the man who should share my life had disappeared. I stood among the debris of Lake Tanganyika. Beyond me were mountains of boxes it would take weeks to explore. Oceans of fish waited patiently in dark boxes for warmth and security. A huge pile of wires, lines and lights needed assembly.

I would have cried but there wasn't time. I scattered clean coral sand, I emptied bags of old water. I set up heater-stats, pumps and lights, I laid out rocks, added chemicals, floated fish, topped up tanks with warm water. Finally, as the sun set, I released my charges into their new homes. My bones ached with damp, my tongue was dry with thirst, for the removal men had waved farewell hours before. The fish, however, seemed happy.

"Any tea?"

I could have cursed, but it was a waste of energy. I resorted to snorting in sneaky admiration.

Exact moment to leave ... best moment to return

My spouse, my team mate, had been home for one day, well between homes mostly. He had known the exact moment to leave, and the best moment to return. He had certainly outwitted me in the essentials of quality time and forward planning.

"Cat's hungry, too."

I pointed to the kitchen. Well, to the pile of boxes that represented the kitchen. My eyes glinted green, a hiss escaped from between my gritted teeth.

The cat decided not to greet me. It wagged its tail and laid its head low. The man backed rapidly towards the door.

"I think a Chinese is called for," he muttered, "and some celebration wine." He fled, leaving me alone once more.

I would have kicked the cat, but it too had vanished. I was not surprised, no, it had simply lived up to my expectations. It was, after all, a Tom.

ALF STALSBERG introduces an unfamiliar Central American Cichlid ...

photographs by the author

Archocentrus centrarchus

Female and male (in front) in their striking colours.

This Central American Cichlid is not very often seen in the hobby or in the shop, the reason being that you have probably overlooked it. And this is very easy, because you usually find small, young fish, and, like many other cichlids, they are quite dull when they are small. And this is a drawback for the American cichlids. Many people buy their fish by the colour and if the fish lacks such an attribute they will be overlooked. Not by people that are dedicated to the hobby, or have American cichlids as favourites, like me. But by people that just go into the aquarium shop to buy something new.

If a dedicated cichlid lover goes into a shop looking for something special, and he knows the fish by name (if the fish and name is correct!), he will buy the fish and spend the time necessary to see the fish grow up into a beauty. So give them a chance and you will end up with some fishes your friends will envy. *Archocentrus centrarchus* are fantastic and the colour contrast when they are spawning, is enormous, and I hope some of the following photographs will convince you.

Buy a small group

The fish is quite easy to keep and to spawn but you have to buy a small group to start with. The most suitable number is 10 but a minimum of five is acceptable. The reasons for keeping a small group is that they will feel more secure. Fish that feel well and secure can concentrate on the most important thing when they are young and that is feeding. Fish that are exposed to stress will naturally be more susceptible to disease.

Another advantage to be gained from starting with a small group is that when they mature they can choose their own partner, and the pair will work much better together. The 'signals' are right and the problems you can have with fishes eating eggs and fry are usually eradicated.

Archocentrus centrarchus is found in Nicaragua, in Lake Nicaragua, Lake Managua and in a small lake called Lago Jiloà. This small lake lies just north of the capital city, Managua.

This fish is also found a little south of Managua, in Lago Masaya, near the town of Masaya, in the River San Juan on the border to Costa Rica and in the tributaries to Rio San Juan, which float into the

Caribbean.

The species was first described by Gill & Bransford in 1877 as *Heros centrarchus*, then moved to the Cichlasoma by Regan. Since Dr Sven O. Kullander's revision of the genus Cichlasoma (*Sensu stricto*) in 1983 there are now only a few South American cichlids who can use the name Cichlasoma. The name *Archocentrus* is the name of the sub-group to Cichlasoma into which *A. centrarchus* fits.

There are several small cichlids in this group that are very popular among cichlidiots, but also among people that have seen adult fish and are familiar with their appearance when mature. One of these small cichlids is the well-known *A. nigrofasciatum*, the Convict, other well-known species being *A. sajica*, *A. septemfasciatum* and *A. spilurum*.

Physically the body of *A. centrarchus* is rather high and compressed, and the fish can remind you of *'Cichlasoma' facetum*. But the fishes can be distinguished from each other quite easily, especially semi-adult fishes. *A. centrarchus* has two black spots on the cheek, and is one of the bigger fish belonging to the sub-group in addition to the other cichlids already mentioned.

In various publications the size of *A. centrarchus* is said to vary between 15-25cm. As my male is about 15cm I can assume it has reached the maximum size. The females are smaller, some of them only half of the size of the male.

Spawing site well hidden

A. centrarchus prefer to spawn in caves, or at least try to hide the spawning site behind a rock or bogwood. When it is close to spawning time you can see a change in the female. She turns a darker colour and swims to the male to show off. If the male reacts positively to the female she will start digging at the place she has selected for the spawning. (The first time she spawned in my tank she chose a stone. The second time was on the glass behind a piece of

The female leads the male to the chosen spawning site.

The female laying eggs.

bogwood!). The female become darker when she was digging and she was swimming to and fro to the male to show off and to get him interested in what she was doing.

When the female started to lay eggs the male still had his daily colour evident, which is turquoise with black vertical bands. When the egglaying act was almost finished he became darker, too, and when the spawning was completed the female guarded the eggs with the male watching the outer zone of the territory and keeping other fishes away — even bigger ones.

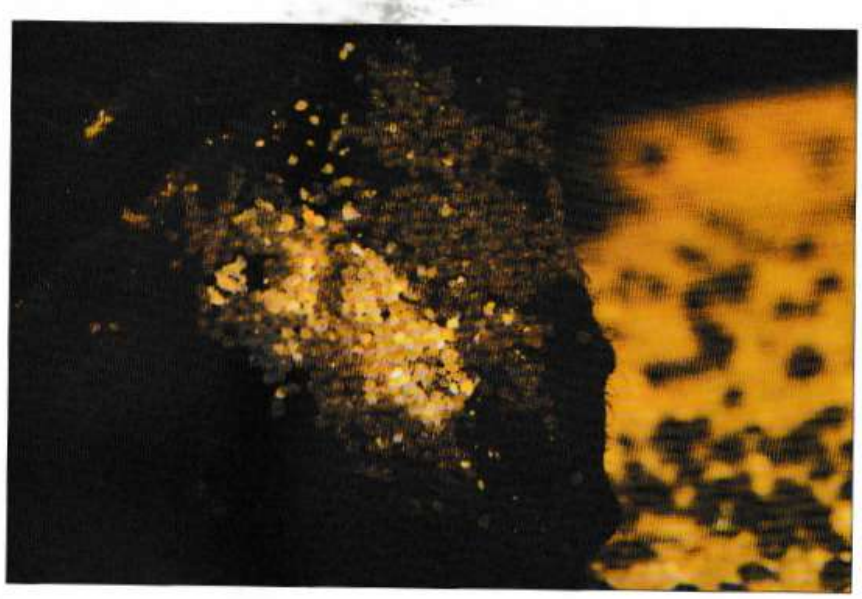
ARCHOCENTRUS CENTRARCHUS

An unfamiliar Central American Cichlid

As the eggs start hatching the female picks out the fry from the eggshell and transports them to a pre-chosen spot — a pit the female had previously prepared or on some nearby plant roots or on the bogwood.

Protective

The time the fry hang on is quite long, about ten days or so, depending on temperature. The fry have a thread on the head, from which they hang just like the fry of Angelfish. When they become free swimming they shoal around the parents who then become very active by keeping other fishes at a distance. The male was also very dark at that time and if other fishes came too close they were attacked at once. And now you can really enjoy the cichlids. Their colours are



The eggs start hatching, to the right. You can see empty eggshell. To the left newly-hatched fry that have been picked out of the eggshell.

The female in striking breeding colours guarding the newly-hatched fry.

fantastic and it is interesting watching how each fish responds to signals from the other partner.

I first fed the fry newly-hatched Brine Shrimp nauplii, which they ate eagerly. Later on I gave them Grindalworm, Cyclops and crushed dry food, and they were growing fast.

The temperature at spawning was 25°C, pH 6.5 and dH 1, but the fish are not particularly fussy about the pH and dH as long as extremes are avoided. The adults will eat nearly everything you give them and earthworms are one of their favourite foods, but I also fed them raw shrimps, green peas, live mosquito larvae (both black and white) and Bloodworms.

So, why not go out and get yourself some of these fishes?

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A couple of days before free-swimming.

1cm fry of A. centrarchus.

IGGY TAVARES, PhD, takes time out to visit the city's public aquarium ...

photographs by the author using a Pentax Z-20 camera

The Vienna Haus des Meeres

Interior of the Haus des Meeres Aquarium.

Vienna, capital of Austria, is a historic city full of palaces and elegant buildings, museums and galleries, churches and of course music. I came to Vienna in October 1996 on a six-day package tour for £700 which included the scheduled flight and bed and breakfast at a three star hotel. Although it rained quite a lot I managed to take time out from the scientific conference I was attending to see the sights and to visit the public aquarium.

Sightseeing

The best way to get a feel for Vienna is to hop on to a tram which runs around the Ringstrasse.

This is the grand boulevard that encircles the city centre which was built by Emperor Franz Joseph and completed in the 1880s. This way one gets to see at least the outside of famous buildings such as the Opera, Natural History Museum, Parliament, City Hall, Stadtpark, the baroque Karlskirche and the Hofburg. Many of these buildings were also built during Emperor Joseph's reign. The best way to get round the city the rest of the time is to use the underground which is clean, fast and capable of getting you anywhere in the city within 15 to 20 minutes. Moreover, a one week pass only costs 140 Austrian schillings (£9) for unlimited travel as opposed to 17AS (£1) per ride.

On my sightseeing trips I was especially impressed by the Schonbrunn Palace and Gardens

which were the former residence of the Imperial family of Austria. Completed in the mid-18th century the grand Baroque buildings contains state rooms decorated in the Rocco style, the Great Gallery used for imperial banquets, the Blue Chinese Salon, the Round Chinese Salon and the Vieux Laque room to name but a few among the many hundreds of other rooms.

The Gardens contain a historic zoo founded in 1752, the Palm House containing a large collection of exotic plants, the Neptune Fountain and a neo-classical arcade called the Gloriette.

I spent a few hours wandering round the Shonbrunn Palace and Gardens. I visited the Belvedere Palace, built between 1714 and 1723, and surrounded by beautiful gardens with many statues of sphinxes. The Upper Belvedere is now home to 19th and 20th century paintings by Austrian artists. The Lower Belvedere houses the Museum of Austrian Baroque Art and contains works by artists and sculptors of the 18th century. The Belvedere Palace is, therefore, an important stop for art lovers.

Stephansdon, the huge cathedral in the centre of Vienna, is a sight not to be forgotten. The cathedral, which took centuries to build, was started in the 13th century. Stephansdon has a 450ft high Gothic spire and a colourful roof which is made up of 250,000 glazed tiles. Inside the Stephansdon Cathedral is rich in medieval and Renaissance monuments.

The entrance to the Haus des Meeres Aquarium, opposite the Apollo Theatre at Esterhazypark.

The second floor housed a range of tropical fish including these Rainbowfish and Gouramies.

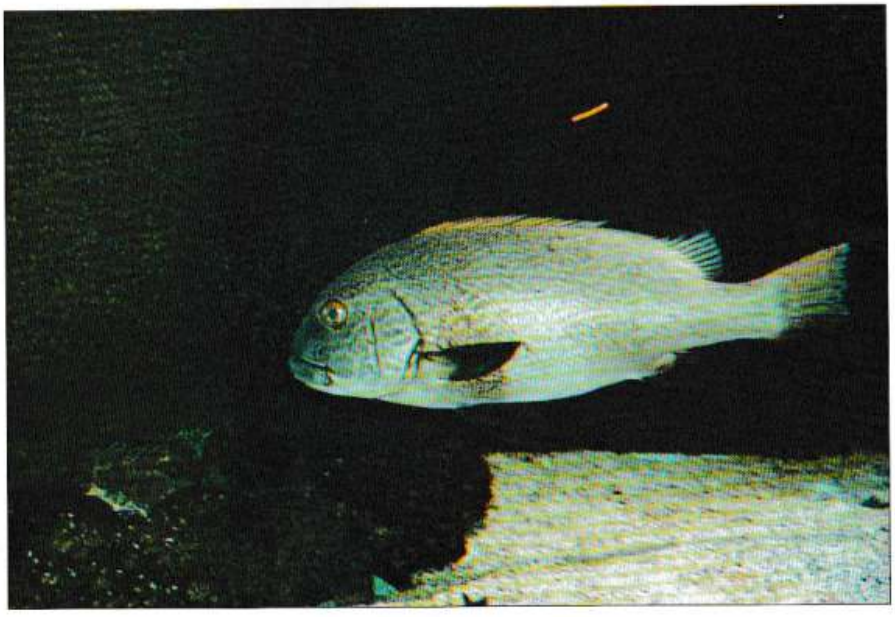
The Vienna Haus des Meeres

Haus des Meeres

Haus des Meeres, the Vienna Aquarium, is housed in an imposing, ugly tower opposite the pink Apollo Theatre at Esterhazypark, 1060 Wien. It is best reached by underground train, the nearest stop being Neubang on U3, followed by a five-minute walk. First sight of the scruffy appearance of Haus des Meeres on the outside is enough to put anyone off but I paid the entrance fee of 65AS (£4) and went in anyway.

Haus des Meeres which is on three floors, is more than just a public aquarium. The first floor housed the Vivarium where the star attractions were two species of Crocodile in a largish, natural-looking enclosure. Other large tanks

***Naso vlaminghi*, part of the Tropical Sea Section on the third floor.**



***Cephalopholis argus*, Blue Spotted Grouper.**

were home to large Boa Constrictors and a large Lizard. There was a good selection of Snakes, which included Cobras, Rattlesnakes, Puff Adders and King Snakes, to name a few. There is a snake-touching session open to the public on Wednesdays at 2pm. The reptile feeding session at 10am on Sundays is apparently also very popular. The Vivarium also contained 12 small tanks containing

***Heniochus acuminatus*, Whimplefish.**

One of the many lizards contained within the Vivarium section.

The Vienna Haus des Meeres

several different species of large Spider.

The second floor had an interesting tropical freshwater section and a Mediterranean Sea section. On entering this floor one was immediately greeted by a huge well planted paludarium giving the appearance of a tropical pool, containing a large shoal of big Piranhas. The emphasis of the freshwater section seemed to be on beautifully planted tanks which contained common tropical fish ranging from Tetras to Angels and from Rainbowfish to Discus. A larger tank in the middle of the room was furnished with a central area of rocks all the way to the water level to provide numerous nooks and crannies for the motley collection of cichlids from the Lakes of Malawi, Tanganyika and Victoria.

The Mediterranean Section

The Mediterranean Section with one large tank and many smaller tanks had 21 different species of fish on display. Here a selection of different species of animals living in the Mediterranean Sea included Sea-anemones, Snails, Mussels, Crabs, Sea-urchins and Starfish housed in the smaller tanks. The large tank housed medium sized Tunny (*Thunus thynus*) and Swordfish (*Xiphias gladius*) while another tank had young Porbeagle Sharks (*Lamna nasus*).

Mackerel (*Scomber Scrombus*) and Anchovy (*Engraulis encrasicolus*), Bass (*Dicentrarchus labrax*) and Sea Bream (*Spondyliosoma cantharus*) swam in one tank while a shoal of Sheppy Argentine (*Maurolicus muelleri*) shared their tank with other small species. This section, although not as colourful as that of the tropical species, did make an informative and educational display of fish that we tend to eat.

The climax of the aquarium was the Tropical Sea Section on the third floor. In keeping with the rest of the aquarium the emphasis was on beautifully furnished aquariums for common fish such as Yellow Tangs (*Zebrasoma flavescens*), Clownfish (*Amphirion clarki, Amphirion ocellaris*), Damsels (*Dascyllus aruanus, Chrysiptera cyanea*), Lionfish (*Pterosis antennata*), Angelfish (*Pomacanthus imperator*) and Butterflyfish (*Hemitaurichthys zoster, Chaetodon lunula*) to name but a few. Larger fish such as a Powder Blue Surgeon (*Acanthurus leucosteron*), a Picasso Trigger (*Rhinecanthus aculeatus*) and a red Argus Grouper (*Cephalopholis miniatus*) shared a larger aquarium.

The Aquarium are particularly proud of their 2m long Nurse Shark which, unfortunately, spent a lot of time resting on the bottom. The Shark was apparently very active on Wednesdays and Sundays at 3pm during the public feeding sessions. As if to compensate for the laziness of the Shark an adjoining large aquarium housed a very active Sea Turtle.

I spent a happy 90 minutes wandering around several times through the various sections taking photographs, interspersed by the 'oohs!' and 'aahs!' of young school children who happened to be visiting at the same time as me.

Viennese food

There is more to Viennese food than Schnitzel and Strudel. Schnitzel, which consists of a saucer-sized thin piece of veal coated with crumbs and fried until golden, is also available in chicken, pork and beef. It is usually served with a side dish of sliced potatoes drowned in butter.

Veal does seem to be an important part of the meat diet and I also enjoyed it grilled or cooked in a sauce. Breakfast at my small hotel, which was included in the price of the room, was very substantial. Served as a buffet it consisted of a whole range of sliced cold meats, cold scrambled egg salads in various flavours, cheeses and bread. Served with orange juice and coffee it was a good way to start each morning. At cafes coffee was horrendously priced (38AS, £2.25 upwards) while with food many restaurants and cafes offered a daily special at a reasonable price (100-120AS, £5-£7). I also enjoyed the various Austrian white wines at only 25AS (£1.50) for a huge glassful (25cl). I must, however, admit to having a pricey, but splendid, Chinese meal organised by an American-Chinese colleague, while in Vienna.

Music

Vienna is the music capital of Europe. Many classical concerts are to be enjoyed at various venues including the famous Opera House. The music of Mozart, Vivaldi, Strauss, Brahms and other famous composers comes to life here in Vienna, especially as some orchestras perform in magnificent historical costumes and wigs recreating the baroque era in all its glory. Tickets start at around 300AS (£20) and ticket touts in costume promise an unforgettable evening of music.

Alternatively, one can enjoy the many buskers usually playing the accordion as they fill the evening air with music, especially in the centre of town.

Conclusions

Vienna reflects its long history, from Romans to Turks, although the greatest influence at least in architecture and music today is the legacy of the Habsburg Dynasty. There are many fine palaces, churches, historic buildings and galleries to visit. Together with a wide range of musical entertainment Vienna has a lot to offer the visitor but remember to visit Haus des Meeres!

National Marine Aquarium

Two marine biologists from the National Marine Aquarium, based in Plymouth, recently flew out to Africa to spearhead an expedition in search of Seahorses along the coasts of Tanzania and Mozambique and to monitor threats to their survival from dynamite fishing, the curio trade and Chinese medicine.

Each year, in Asia, between 20 and 60 million Seahorses are used in traditional medicine in the Orient to treat everything from simple pain relief to heart disease and childbirth.

Over the centuries billions have been taken from the sea. In Africa, the main threat is the dynamiting of fish for food. Local records show that this can happen up to 40 times each day.

The expedition will involve coastal surveys, discussions with local fishermen and carefully planned dives among the coral reefs and mangrove swamps to identify the diversity of populations and the variety of species.

National Marine Aquarium Curator Juan A. Romero and aquarist Dominic Boothroyd will be leading the expedition with international conservation organisation Frontier.

Frontier has been working extensively in the region since 1989, surveying a broad section of the coastal zone to discover the most threatened areas. Their contacts and facilities will be essential in ensuring the success of the expedition.

Other international conservation agencies, such as Traffic International, will be assisting the National Marine Aquarium team in this valuable work.

Juan A. Romero believes that research will add significantly to the body of international knowledge on Seahorses. He said: "Scientists and the general public alike have long been fascinated by Seahorses yet so little is actually known about them.

"Unlike most other animals, there is no consistent global method for classifying the various species and little information about the number and diversity of species world-wide. A major tenet of the work of the National Marine Aquarium is to increase our understanding about marine life while raising awareness of their plight on a global scale."

The expedition's results will determine a future course of action and will involve further research with the University of Plymouth in the UK and the University of Dar es Salaam in Tanzania on Seahorse biology including nutrition and genetics.

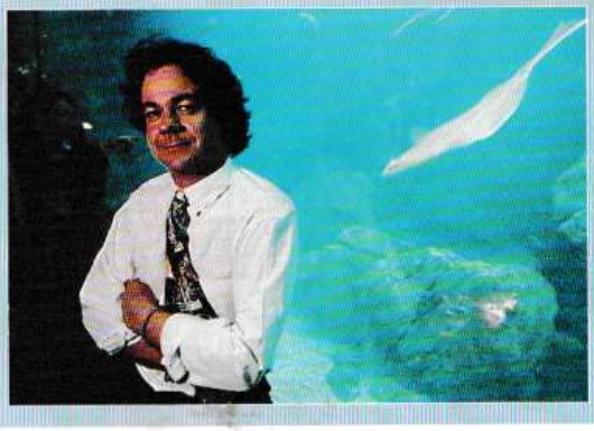
The National Marine Aquarium and Frontier will also work with the local population on Seahorse rearing and other conservation projects by applying captive breeding techniques developed by biologists at the Aquarium's Plymouth laboratories.

The National Marine Aquarium is a charity committed to education, conservation and research about the marine environment. The Aquarium opened in Plymouth in May 1998 with displays of marine habitats from around the globe.

As well as exhibiting marine life the Aquarium is at the forefront of marine education programmes and research, both nationally and internationally.

The Aquarium already has a significant collection of Seahorses amounting to nine different species, most of which have been bred in captivity.

For further information, please contact: Kelvin Boot, Head of Education & Information, National Marine Aquarium (01752 600301).



National Marine Aquarium Curator Juan A. Romero who, with Dominic Boothroyd, an aquarist at the Plymouth based aquarium, is leading an African expedition in search of seahorses and to monitor threats to their survival from dynamite fishing, the curio trade and Chinese medicine. The two marine biologists are accompanied by Frontier, the international conservation organisation.

Ornamental Fish Health, Welfare and Conservation Conference

Organised jointly between the University of Liverpool Small Animal Veterinary Teaching Hospital and Blue Planet Aquarium, Ellesmere Port, the Conference will be held on Saturday, February 13 1999 at the Blue Planet Aquarium, Ellesmere Port.

The line-up of excellent speakers include: Peter Scott, FRCVS, an RCVAS Specialist in Zoo & Wildlife Medicine and in 'Fish Health & Production' who will be talking on Public Aquaria; Dr David Ford (Aquarian), Ornamental Fish Nutrition; Dr peter Burgess (Aquarian), on Cryptocaryon Infestation in Marines; Jane Lloyd (Sparsholt) on Aspects of Water Quality; Bernice Brewster (Aquatic Consultancy) on Aspects of Koi Health; Justin Bell (Chester Zoo) on Conservation and Environmental Enrichment.

The price of this Conference includes admission to Blue Planet Aquarium, and there is time allowed in the schedule for visiting this stunning Aquarium with all its attractions!

The Admission price for the Conference is £13 (adults) and £8 (children and OAPs).

To register for this conference, please write to: Ornamental Fish Conference, Arowana Enterprises, PO Box 299, Haverfordwest, Pembrokeshire SA61 2YE, or telephone Blue Planet Aquarium on 0151 357 8804, or e-mail BluePlanetAquarium@compuserve.com

First National Aquarium Conference

Dr David Ford, Aquarian Advisory Service, reports on this two-centre event

Imagine your aquarium was 20 feet high, that it contained giant Sharks and Rays and the water had to be crystal clear for hundreds of visitors to look into it every day of the year!

This is just part of the problems that face the curators who run the 30-plus Public Aquariums in Great Britain and Northern Ireland.

On Saturday and Sunday, November 21 and 22, the two aquariums in London, The London Aquarium at County Hall, and London Zoo Aquarium in Regents Park, held a joint programme of lectures just for curators.

Chaired by Jo Pecorelli (London Aquarium) and Jen Nightingale (Bristol Zoo) the first day was held in the lecture room at London Aquarium. Chaired by Colin Grist (Blue Planet Aquarium) and Dr Heather Hall (London Zoo Aquarium) the second day was held at The ZoologicalSociety Rooms at London Zoo.

A Shoal of Experts

No less than 29 speakers gave slide, even video, presentations on subjects ranging from Conservation and Welfare (Laura Andrews of Sea Life Centres) to Fish Nutrition (Dr David Ford of Aquarian Fish Foods), from Parasites (Stan McMahon of Plymouth University) to Shark Displays (Adrian Tolliday of the National Marine Aquarium).

The history, problems and plans of UK public aquaria were shown and discussed, from the Macduff Aquarium of Northern Scotland to the Oceanarium of Bournemouth, from Exploris in Northern Ireland to The National Sea Life Centre in Birmingham. Plus veterinary matters, water filtration techniques, diving in deep tanks, data display methods and so on.

A question and answer session followed with lively debates, in which everyone agreed that the symposium was so successful it should become an annual event. Both Blue Planet Aquarium and Chester Zoo bid for the 1999 venue.

Aquarist & Pondkeeper will keep you posted about where and when, since hobbyists are welcome as well as professional aquarists to this unique event in the aquatic calendar.

Colin Grist (Blue Planet Aquarium), Justin Bell (Chester Zoo Aquarium), Mark Geech (International Zoo and Vet Group), Stan McMahon (Plymouth University), Dr Dave Gibson (Deep Sea World), William Wildgoose (Fish Vet), Robin James (SeaLife Centres), in group session answering questions.

KOI NEWS

Nishikigoi Existence: The Yamakoshi Trilogy, Part 2

"There is a place far away where dreams are forged in the hearts of dreamers. The territory, and its people, are shrouded in a mist of fascination empowered over time to beguile and entice. The path of these people is like a great river — while its flow may vary, its course is steadfast and the fruits of their labours are a wonder to behold."

"If you thought Part 1 was good then wait till you see this one! Unique footage of feeding, selecting and the painstaking culling process makes fascinating viewing, and delivers a genuinely unique insight of how the best Koi breeders in the world consistently produce world class Koi."

The above quotations are from *Nishikigoi International*, November 1998, and serve to introduce this second video in the series entitled 'Nishikigoi Existence.'

The Yamakoshi Trilogy is a series of three programmes filmed in Niigata, and follows the lives of some of the greatest masters of Koi ever. From in-depth, one on-one interviews, through the fascinating culling procedure, to the pinnacle of mudpond harvesting, the Yamakoshi Trilogy is am incredible journey and a unique insight into the Japanese Koi industry.

The first part of Nishikigoi Existence: The Yamakoshi Trilogy was released in August 1998, with a promise to bring the Nishikigoi masters of Niigata into your homes. Since its release Part 1 has received phenomenal critical acclaim from all areas of the industry, for doing just that and more, and whilst it provided am insight into the hearts and lives of the breeders, Part 2 shows them in action, as the intense summer sun rests over the Yamakoshi communities and the real work begins.

It is the culling and feeding operation that dominates this programme, something never before shown in a professional presentation, as the breeders select from literally hundreds of thousands of fry Nishikigoi that in a few years time will be those of dreams. Shown in incredible close-up detail the secrets that have remained inside Niigata are finally revealed, as names such as Miyatora, Shintaro and Miyaishi, amongst others, allow us into their operations, sharing the mysteries behind the culling of Koi.

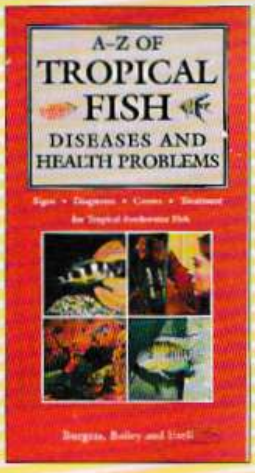
As this trilogy continues the story goes on and further aspects of the unique Japanese culture are explored and explained, and for anyone with a fascination or true desire to learn Part 2 simply cannot be ignored.

Nishikigoi Existence: The Yamakoshi Trilogy is slowly building into the most comprehensive and concise interpretation of the phenomenon of Japanese Nishikigoi ever produced. Breathtakingly filmed and highly entertaining in its content and presentation it is truly not to be missed.

Parts 1 and 2 are both available now. Price per video, £15.95 + £1.50 p&p (£3 p&p outside the UK). To order your copy simply phone our hotline (01206 827338), or mail or fax (01206 824845) your order back to us.

New Vision Video Productions, Unit 19, Wivenhoe Business Centre, Wivenhoe, Essex, CO7 9DP. http://www.koi.uk.com/newvision

A&P Reader Book Offer



Through generous co-operation by the publishers, Ringpress Books Ltd., readers of *A&P* can obtain copies of **A-Z of Tropical Fish Diseases and Health Problems** by Dr Peter Burgess, Mary Bailey and Adrian Exell at a special price of £16.99 post fee.

Orders for copies should be sent to the following address: *A&P* Offer, Ringpress Books Ltd., PO Box 8, Lydney, Gloucestershire GL15 4YN.

Cheques should be made payable to Ringpress Books Ltd.

Alternatively, readers can phone in their Credit Card orders on 01594 845577, fax them on 01594 845599 or e-mail them to a&poffer@petbookshop.com. When phoning orders, please mention *A&P*.

SPECIAL FEATURE

SUSAN BREWER has an early warning, well ahead of warmer days to come ...

photographs by the author

Messing about on the River!

The tranquil scene of an unpolluted lake in Wales.

Imagine, it's a bright spring morning and you're strolling along a river bank admiring the willows, watching the kingfishers, being dazzled by dragonflies. Bees drone in the blossoms along the towpath, swallows swoop as they hunt for insects and you hum contentedly as you put all your cares and worries behind you.

Suddenly, you round a bend — and yeeah! The river has turned into a mass of mouldering, smelly algae; oil scum floats on top, drink cans peek coyly from the ooze, and a mournful frog sits sadly on the bank trying to pluck up the courage to

leap into the foul murk.

Sadly, this scenario can still be found along some of our inland waterways due to sewage effluent, agricultural by-products, silage, household waste, fishing line, general rubbish or motor oil. Take your pick — any of these things seeping or being dumped into water will cause pollution, endangering not only wildlife but, in some cases, human life, too.

Ideal food for bacteria

Another problem is scattered litter along banks and towpaths — discarded bottles, plastic drinks can holders, fishing line and polythene bags can kill, trap or maim wildlife.

When effluent enters the water it provides an ideal food for bacteria which rapidly multiply until the oxygen is exhausted. Eventually a chemical change results in the production of hydrogen sulphide, smelling like rotten eggs. The water will appear unpleasant, foetid and stagnant as the oxygen disappears. Without oxygen the fish, invertebrates and other water organisms will die.

Encouragingly, however, the NRA (National Rivers Authority) recently announced a slight, but decided, improvement in the water quality of Britain's inland waterways, including rivers and canals, although there are still unresolved issues which need to be dealt with.

The NRA have a quality assessment scheme which grades inland waterways into one of six classes based on sample analysis over three years and they state that no discharge can be made to inland waters without their consent. Their latest scheme is to sample invertebrate life in rivers and canals, using 7,000 survey sites. Points will be given to each site, the highest to those with certain species of Mayfly which are known not to be pollution tolerant, down to the worms and midge larvae which can survive in quite heavy pollution.

First sign of serious pollution

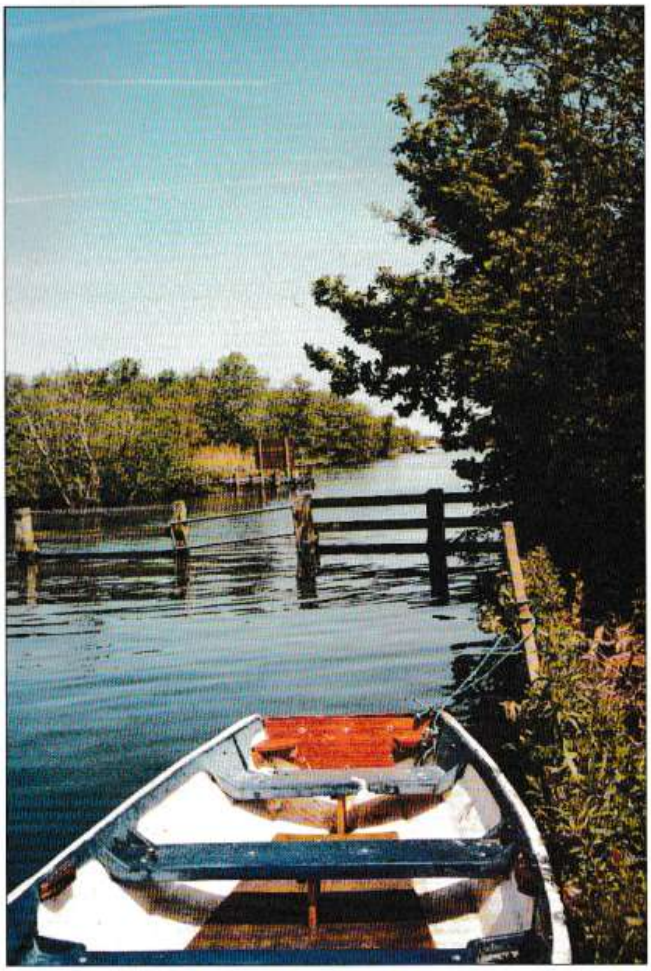
The fisheries section of the NRA investigates all reported incidents involving fish deaths, as often this is the fist sign of serious pollution. They have special aerating equipment which can be used to save fish in a major pollution incident affecting oxygen content of the water.

Just recently they successfully prosecuted a famous hunt for allowing partially treated sewage from the hounds to drain into a brook. The aquatic life in the brook became threatened when ammonia levels rose to 20 times the permitted level. The hunt was fined £4,000 plus costs.

One of the greatest success stories of recent years has been that of the River Thames. The growth of industry and population in London led to so much pollution that in summer the river really stank, as untreated sewage discharged straight into the river. The MP's in the Houses of Parliament would often use the smell as an excuse to go home!

Eventually new sewage works were installed but even as recently as the 1950s there were no fish in the Thames. Now the condition of the river is so improved that over 90 species have been recorded. The Thames Salmon Rehabilitation Programme (started in 1979) aims to help at least 1,000 salmon return to their breeding grounds over the next 15 years, which might not seem a lot, but only 338 made it in 1993. Just after I had written this I opened my morning newspaper only to read of an angler gloating that he had caught an 8lb salmon at Canary Wharf ...!

In other parts of the country, however, there are still problems. The most common are caused by outfalls from factories, seepage from silage pits, oil from boats, general litter, or lines left by anglers. Most responsible angling clubs, tired of being blamed over the years for polluting river banks with abandoned tackle, now lay great stress on their members' efforts to clear away rubbish from the riverside, and I know of a local society which regularly walks the five-mile stretch of the towpath to make sure that it is litter-free. I'm



A riverside scene in Norfolk.

MESSING ABOUT ON THE RIVER!

The dangers of pollution in our waterways

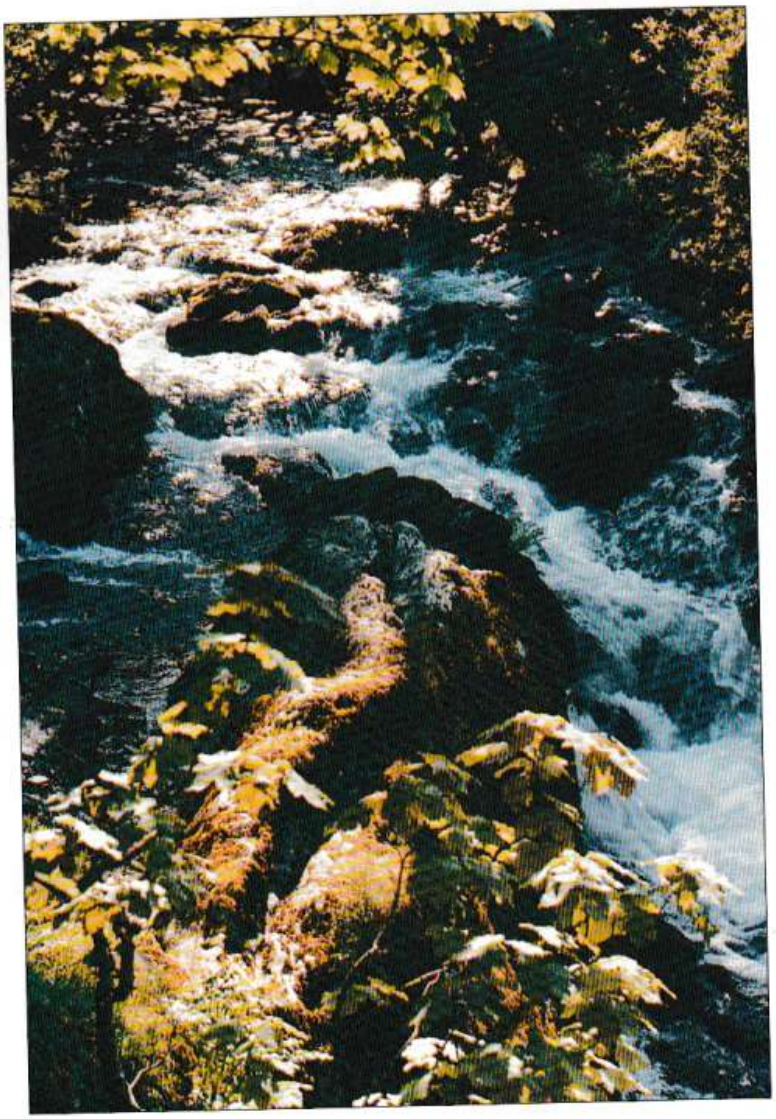
sure that many others have the same policy.

Recycling scheme for engine oil

There was a report recently that thousands of gallons of engine oil was polluting our rivers. This oil is dumped by motorists who pour it down the drain, probably thinking that such a small quantity won't matter. It does. Oil spreads rapidly in water, skimming across the surface, contaminating everything it touches. The oil ends up in storm overflows which run into rivers or streams. It is an offence, punishable by law, to pour waste oil into a drain. Many councils and garages offer a recycling scheme for engine oil.

Some household and garden chemicals can be harmful and shouldn't be tipped into surface drains, which discharge into rivers. It is illegal to dump garden waste and any household rubbish into rivers because, as well as being unsightly, it can be a hazard to wildlife. (Of course, I know that *Aquarist & Pondkeeper* readers wouldn't dream of doing such a thing.) Agricultural silage is another problem. According to the NRA silage liquor can be 200 times stronger than untreated domestic sewage, and, in fact, silage seepage is top of the pollution league of British rivers and waterways.

All gardeners will know how substances such as nitrates and phosphates drastically reduce plant growth. The same thing happens when rivers are enriched by these chemicals. Plant growth goes mad; rushes, reeds and algae choke the river. Although plants are essential for the proper ecological balance of the water excess growth blocks the light from reaching the fish and invertebrate inhabitants, and even though plants produce oxygen in sunlight, they blot their copybook by absorbing it at night.



The magnificent beauty of this Welsh mountain stream.

Algaes important in water ecology

There has been a lot of publicity in recent years about blue-green algae; natural inhabitants of many rivers and the sea. Algaes of all kinds are important in water ecology: they are part of the food chain. However, sometimes, due to increased nutrients entering, or being discharged, into the water, the algae can form extensive growths, often frothing into a foam scum.

This blue-green algae is capable of producing harmful toxins which have caused the deaths of many creatures and, in humans, can cause rashes when in contact with skin and various illnesses when swallowed. The NRA are constantly monitoring this problem, and strongly advise anyone encountering this algae to leave well alone.

Canals seem to be much cleaner than they once were. British Waterways, who own

and manage most of those in Britain, report very encouragingly, stating that the majority, approximately 90 per cent, meet with the required minimum water quality. A spokesman said that this result could be attributed to the unique character of canals.

Compared with rivers there tends to be not quite so much drainage of effluent into them, and as canals are fed from certain limited sources the water quality is often much better and also more easily monitored.

Canals create a diverse habitat

An important part in Britain's ecology is played by canals. The very nature of their setting, often in their own cuttings, can create a diverse habitat, suiting not just aquatic creatures but insects, birds, mammals and all kinds of plant life. Many species of water life have been able to colonise more easily by taking advantage of these artificial links between rivers — the zebra mussel, water fern and Canadian pondweed are three examples of organisms which have flourished.

You have only to walk along the towpath to see the many anglers, testament to the fact that canals are an excellent place for fish. The water is home to numerous invertebrates, including waterbeetles, pondsnails and caddisfly larvae, which, in turn, serve as a tasty meal for many of the common fish species — tench, roach, pike and bream.

Excessive nutrients

Because canals are punctuated by lock gates it means that the water is sluggish and slow moving. This suits certain species very well, but equally means that if there *is* any pollution it will be retained for a long time, and so the presence of excessive nutrients (often of agricultural origin) can cause excessive growth of algae and waterweeds. The situation is continually monitored by British Waterways.

Ponds are a unique problem. Over the years many have disappeared, been built on, filled in or just completely neglected; yet to counteract this thousands of private gardens now have ponds. Water gardening seems to be a rapidly increasing hobby. Obviously it would be impossible, not to say unrealistic, to have control over these features — gardeners and fishkeepers across the country would be up in arms if they were told that their ponds had to conform to strict water quality controls or be filled in!

No doubt we've all visited a municipal park and been horrified at the polluted boating lake, duck pond, paddling pool or water feature. Much of this pollution is caused by thoughtless or heedless people who toss their picnic litter, or worse, mattresses, supermarket trolleys and babies' disposable nappies into the water.

Litter is not only an eyesore, and dumping it a punishable offence — it can kill or injure wildlife. (And humans, too; many is the toddler who has trodden on a shard of glass in a paddling pool or been gouged by a sharp, jagged tin.)

So, yes, the quality of water in Britain's rivers, canals, ponds and lakes is gradually improving, but the public need to be made more aware of the penalties for dumping litter, more care needs to be taken in the disposal of harmful substances and more prosecutions need to be made.

If you ever discover any river or canal pollution, or dead fish which could indicate the presence of harmful substances, please notify the National Rivers Authority — they welcome calls from vigilant members of the general public, knowing that if they act promptly they might prevent a major disaster.

Let's hope that very soon the little frog, sitting sadly on the river bank, will be able to leap into crystal clean water (with sufficient water organisms floating around to keep him happy, of course!) and swim around contentedly without needing to take evasive action because he's hopped into a coke can, jumped into a plastic bag or caught his flipper on a piece of fishing line which no-one wants!

THANKS TO GRAHAME NEWMAN OF THE BRITISH WATERWAYS AUTHORITY AND CAROLINE ANDERSON OF THE ANGLIAN NRA

Useful Addresses

- ***National Rivers Authority, Rivers House, Waterside Drive, Aztec West, Almondsbury, Bristol BS12 4UD***
- ***Anglian Region, National Rivers Authority, Kingfisher House, Goldhay Way, Orton Goldhay, Peterborough PE2 5ZR.***
- ***Thames Region, National Rivers Authority, Kings Meadow House, Kings Meadow Road, Reading, Berks RG1 8DQ***
- ***British Waterways, Llananthony Warehouse, Gloucester Docks, Gloucester GL1 2EJ***

Facts & Figures

- ***Just one gallon of oil, in water, will spread to cover an area the size of two football pitches.***
- ***Magistrates' courts are now allowed to impose fines of up to £20,000 for pollution offences.***
- ***The number of NRA prosecutions for pollution offences average 70 a year in the Thames Region.***
- ***One litre of solvent is enough to contaminate the contents of approximately 500 Olympic-sized swimming pools.***
- ***Water normally contains dissolved oxygen to the extent of 10 parts per million by weight, but it varies slightly according to temperature.***

BUY LINES

NEW PRODUCT REVIEW

Nishikigoi International

The situation when your valuable Koi is ill is bad enough, but when you need to actually 'operate' on the fish rather than just isolate it for medication then you will want to take even more care of it and lessen even further any risk of unnecessary stress.

Wrapping it up in a wet towel might seem to be the norm but a modern modern alternative is at hand.

Koi Mat is the answer to Koi keepers looking for something to put their anaesthetised Koi on safely, whilst treatment is administered.

It's a generous 36 x 18 inch waterproof soft Koi treatment mat with velcro fixing flaps to gently (but firmly) constrain Koi safe and secure.

After using simply wash it down and fold it away into a neat package with custom retaining bands. Banish those smelly towels forever!

Koi Mat costs just £12.50 including postage and packing.

Further details from: NI, Halton House, Rosedale Avenue, Lowton, Warrington, Cheshire WA3 2RW. Tel: 01942 726864. Fax: 01942 723914.

Interplay

Many years ago there were Sea Monkeys, small living creatures that could be hatched out from rehydrated eggs (they were *Artemia*, of course), and now another similarly fascinating animal has come on to the scene.

Triassic Pond is the latest 'just add water and watch it come to life' attraction aimed at youngsters. The animal in question is *Triops*, a survivor from pre-history whose state of suspended animation (or diapause) can be reactivated by immersion in water.

Living for up to one month in a jar of water these 37 pairs-of-legs-equipped creatures have apparently lasted so long throughout time because nothing preys upon them.

Suitable for seven-year-olds and upwards each Triassic Pond Kit contains a Tank Thermometer, *Triops* Food Packet, Growing Tank with Lid and Dry Mixture of *Triops* Eggs in Detritus.

Further details from: Interplay, Crown Lane, Marlow, Bucks SL7 3HL. Tel: 01628 488944. Fax: 01628 476700. e-mail: sales@interplay.co.uk Website: www.interplay.co.uk

BioPlast

A new device (and a new name to remember) is the Refractometer from Acquamarine. This easy to use, incredibly accurate piece of equipment makes testing water in marine aquariums a doddle.

Just place a couple of drops of water on the prism and hold to the light. Readouts are presented as a percentage and as the usual Specific Gravity numeric ratio.

This optical device needs no batteries and is calibrated with distilled water. It has an adequate eyepiece, carrying case, pipette and calibration screwdriver.

Readers having seen the entries in this issue with regard to algal problems can find extra help by using Nitrate Reducer, Phosphate Eliminator and Algae Reducer, also from Acquamarine. Algae in marine aquariums can sometimes be unwittingly encouraged by 'keep dry' ingredients found in salt mixes. The Marine Salt Mix from BioPlast is essentially 'wet', having no such added agents and so represents total value for money — every last grain or crystal goes towards making safe, salt water for your aquarium.

Whilst excessive light may also encourage algae there is no doubt that the Exclusive Hood from BioPlast is a well designed product. Made in a non-warp black finish it provides waterproofed fittings for two tubes and the starter gear is neatly stowed away without causing any unevenness of weight distribution.

An ingenious design point is that the flat cover is not only hinged for easy opening during feeding but a handy locating notch allows the hood to be left in a semi-open position, which makes maintenance and fish catching a lot easier.

Further details from: BioPlast Pet Ltd., PO Box 1212, Rugby CV21 2ZH. Tel/Fax: 01788 544298.

Red Sea Fish pHarm

Two new test kits for the marine aquarist have been released by Red Seas Fish

▶ **Mini-Lab Test Kits from Red Sea Fish pHarm.**

◀ **The range of products from Interplay.**

pHarm. Marine-Lab includes Mini Lab Tests for pH, Alkalinity, Ammonia, Nitrite, Nitrate and Sample of Reef Supplement Buff. The Reef-Lab includes Mini Lab tests for Phosphate, Nitrate, Calcium and samples of six Reef Supplements — Calcium, Strontium, Iodine, Trace, Vita and Green.

All full size Reef Supplements are formulated to treat a 75 gallon (300 litre) aquarium for 20 weeks. The range comprises: Calcium (to promote Hard Coral growth), Strontium and Molybdenum (essential building elements of corals and invertebrates), Calcium + 3 (calcium replenisher combining Strontium, Molybdenum and Iodine), Trace (replaces trace elements depleted by filtration), Green (to stimulate higher algae growth), Vita (a vitamin complex to stimulate macro-algae, invertebrate growth and provide essential vitamins for invertebrates and fish), Buff (to maintain a high buffer capacity and a stable pH) and Paracure (a non-chelated copper treatment, contains eight complete 10 day treatments for a 10 gallon (40 litre) aquarium.

The Coral Reef Red Sea Salt (yes, it's actually made 'on site'!) is exceptionally soluble and contains no phosphates or nitrates.

If you're looking for a Protein Skimmer then The Berlin range offers several models to choose from. These range from two internal, air-driven models of 240 or 350 litre capacities to the external larger models (1,000 and 1,500 litre capacities) which can either hang on the aquarium or be operated in a separate sump location, featuring venturi air injectors and more sophisticated designs for maximum efficiency.

Further details from: Alpha Aquarium, 62 High Road, Byfleet, Surrey KT14 7QL. Tel: 01932 353600. Fax: 01932 349718.

Aquaponics

If you're into growing plants seriously the Aquaponics Guide to Aquarium Plant Care is a concise set of instructions you would do well to consider. Everything from lighting, substrate heating, CO_2 Injection, fertilisers and special substrates is considered.

A wide range of RO (Reverse Osmosis) Units, from Aquatic Nature, are also available to provide perfect water as a basic ingredient for aquarium needs. (Using RO water on its own is not recommended for freshwater uses and most aquarists add a proportion of other water for this purpose).

The units range in performance from 60-300 litres per 24 hours and some come with a manometer (to measure water pressure), and activated carbon filters.

Further details from: Aquaponics, Hobby-Fish, Towcester Road, Old Stratford, Milton Keynes MK19 6BD. Tel: 01908 543210. Fax: 01908 542149.

Hanna Instruments

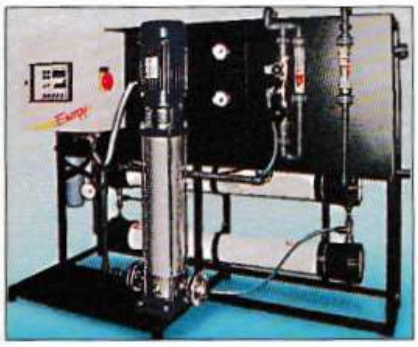
Many applications in the field require the measurement of both TDS and Conductivity and the new HI-9635 meter, recently introduced by Hanna Instruments, is the ideal, value-for-money solution.

This user-friendly meter utilises an innovative processor to enable dual measurement in one portable instrument. The meter has been tested by the British Standards Institute for certification of water and dust resistance and is rated to IP67.

With automatic temperature compensation (ATC) and a rugged ABS plastic casing, the meter is designed as an essential aid in the field. It is calibrated at one, two or three points using standard solutions and allows the TDS factor to be switched from 0.5 to 0.7, so is suitable for use in a range of industries.

The Conductivity/TDS range changes automatically for further ease of use, ensuring the reading is always displayed with the highest resolution. The meter is priced at £350, including probe and carrying case and therefore represents excellent value for money.

Further information from: Hanna Instruments Ltd., Eden Way, Pages Industrial Park, Leighton Buzzard, Bedfordshire LU7 8TZ. Tel: 01525 850855. Fax: 01525 853668. Website: http.l/www.hannist.co.uk



Eliza Tinsley

Whenever you need a piece of hosing or tubing to complete a job — filling/emptying tanks, connecting up external filters, pond pump, fountains, waterfalls, etc. — Eliza Tinsley & Co Ltd supplies the most suitable tubing and hosing for it.

West Midlands based Eliza Tinsley & Co Ltd are market leaders in the manufacture and distribution of flexible connectors and hardware and have introduced a brand new range of reeled tubing and hosing to complement its existing portfolio. To complement the range a number of accessories are also available including spring and hose clips, end fitments and connectors.

The range includes: Unreinforced Poly Tubing — flexible and transparent and ideal for fish ponds and aquariums; Reinforced Poly Tubing — suitable for general home and garden use; Flat Reinforced Hose — easy to store and makes an ideal garden hose; Ribbed Water Hose — a number of uses. It is a flexible hose with a smooth inside for garden use. It is also suitable for internal and external protection of electric cables; Soaker Hose — environmentally friendly made from recycled tyres. For use in bog gardens, this hose takes water to exactly where it is required by dispersing drip by drip through the hose wall; Mains Water Tubing — used for the safe conveyance of mains hot and cold water. It is ideal for mobile homes, caravans and boats and is approved by the Water Research Council; Air Hose — used for high pressure compressed air applications such as air tools; it is fully flexible with superior UV, fuel and oil resistance; Professional Hose — a versatile yellow hose suitable for any climatic conditions. It is often used for garden and irrigation applications.

Ask for Eliza Tinsley reeled tubing and hosing in your local hardware store or look out for the eye catching displays which allow the facility to cut exact lengths as required for added convenience.

Alternatively, contact Eliza Tinsley's customer service line on 01384-566833.

Further information from: Eliza Tinsley & Co. Ltd., Reddal Hill Road, Cradley Heath, West Midlands B64 5JF. Tel: 01384 566066. Fax: 01384 639156.

▶ **The Eliza Tinsley range.**

◀ **One of the RO Units from Aquatic Nature.**

Famous Faces in Fishkeeping

A&P meets the faces behind the names and lets them tell you of their own individual aquatic interests.

This Month:
KATHY JINKINGS

A&P: How long have you been in fishkeeping and what started you off?
KJ: I can't actually remember how long, but I remember quite clearly how it started! I was driving back from a particularly stressful customer (in my capacity as a computer programmer) when I passed a large sign on the side of the road. "RELAX, KEEP TROPICAL FISH" it said. An hour later I completed my journey weighed down with tank, hood, lights, filters, and fish, which of course I now know I should not have added until later. With this introduction I discovered that the sign was actually a total lie — the fish didn't relax me at all but provided a whole new gamut of things for me to worry about!

A&P: Can you remember your first aquarium and what you kept in it?
KJ: The two and a half foot tank mentioned in the previous answer started off with the usual pretty fish — mostly Guppies and Cardinal Tetras. It wasn't long before the dreaded algae took a serious hold, and I had my first real encounter with the fish which has since proved to be my main interest — the Bristlenose. Two tiny fry joined the tank and made short work of clearing the glass, as well as evincing completely charming personalities (and I'm not usually anthropomorphic about fish!). The tank went through a lot of reincarnations, housing Gouramis, Gobies, and assorted Cichlids, although, fortunately, not all at the same time. The original Bristlenoses endured through all these reincarnations and rapid changes of flatmates, and are still to be found, usually with a batch of eggs or fry, in the same tank.

A&P: What are your special interests?
KJ: I seem to be making a habit of having just answered each of the questions in the previous one! Bristlenose Catfish and their Loricariid kindred are my main interest and I have several groups of different species. Most of the fish that hold my attention comply with two main rules — they hav e to look after their eggs, and be peaceful. Although spawning and raising fish is one of the most enjoyable parts of the hobby, being out at work all day and often in the evening as well often presents difficulties. As the fish seem to know I want them to spawn in a particular tank at a particular time and flatly refuse to participate, it makes life a lot easier just to let them spawn when the urge strikes them in their "home tanks", and when I finally come home the proud father will be guarding the new arrivals. Apart from the Bristlenoses favourites have been various species of Goby, Gouramis and Golden Minnows.

A&P: Are you into breeding?
KJ: Oh dear, I've done it again. Yes, not only do I find being able to raise tiny little fragments of fish to maturity immensely satisfy ing but much of the range of the fish's fascinating behaviour is only revealed during pre-spawning, spawning and fry rearing. Apart from this, there isn't much of interest in life in a glass box — they don't have to look far for food, so it would be selfish to deprive them of their only amusement.

A&P: Do you belong to any aquatic society?
KJ: Yes, I belong to the Clacton Fish Keeping Club, the Northern Area Catfish Group (who were kind enough to ask me to speak there last year, and I seem to have become attached), and the Rainbowfish and Goby Society. I think many people fail to appreciate the benefits of being in a society, even if you can only get to a couple of meetings a year. Getting to know other people who share your interests, swapping fish and stories, learning from their experiences and telling them yours, are all not only fun but tremendously usesful.

A&P: What do you think about fish shows?
KJ: I think the main concern must always be for the health of the fish, and to minimise all possible stress. There are some types of fish that are particularly nervous, such as Halfbeaks, whose extended jaw is very prone to damage. Personally, I would not show a specimen that I thought would be too stressed by the experidnce. Fortunately, my catfish appear to regard the whole thing as a day out — one pair of Bristlenoses spawned immediately on return home after a weekend away spending most of their time in plastic bags! Provided propie exercise common sense in the choosing and care of their fish then shows do provide a great opportunity for beginners to see not only new species of fish but also excellent specimens, so that they know what to aim for. Although a show-standard fish is certainly not the "be-all-and-end-all" of the hobby seeing full grown specimens at their best is often inspiring to other keepers and helps promote less common species.

A&P: If money was no object what aspect of the hobby would you like to follow?
KJ: With my interest in Loricariids, the first thing to do when I win the Lottery is to take a trip to South America to study the fish in their natural habitat. If I only get four numbers it will be an indoor pond/river simulating the Rio Xingu, in which I will house Bristlenoses, Zebra Plecos, and other Loricariids of the area. Of course, having to have that room superheated will only be an advantage!

A&P: What fish would you never keep and why?
KJ: There are a lot of these, for a variety of different reasons. Just to list a couple of objections: Sturgeon and Mississippi Paddlefish, which are unsuited even to a home swimming pool, and one of which I am ashamed to say hastened to an early death many years ago after being assured it would love life in a tropical fish tank being fed with flake. Celestial Goldfish, which are so misshapen they are never going to have fun chasing through the weeds and grubbing about in corners of a pond.

A&P: What's your favourite aquarium book?
KJ: What, only one! For initial reference I have to choose a series anyway, the Baensch Aquarium Atlases. Not only lots of pictures for identifying fish, including some pretty obscure ones, but words as well! More specialist books that I am particularly fond of include John Dawes' *Livebearing Fishes*, David Sands' *World of Catfishes*, and Hans Mayland's *Adventures with Discus*, which makes it to the favourites list even though I don't keep Discus! Since I am a book addict who cannot pass a bookshop without making a purchase only four choices is immensely restrained for me.

A&P: How do you think fishkeeping is keeping up with other modern day attractions?
KJ: I think fishkeeping is alive and well, but the problem is the up-and-coming generation. Now that children, and even young adults, can no longer go out alone safely in the evenings or on train journeys they are increasingly isolated in the hobby. Cut off from other fishkeepers who may stimulate their interest their interest may wane, without ever getting past the Goldfish or "Tetras in a tank" phase. Fish are ideal for the modern way of life, since they are not fussy about what time you get home (or even if you don't get home at all for a few days), and can be kept in relatively small areas.

A&P: What do you get from fishkeeping that keeps you interested?
KJ: There is always something new to be interested in. Starting from my original community tank fish have led me through the libraries of the British Museum to discover why they behave in the curious ways they do, through the Internet and the development of websites when I discovered that there was nothing for British fishkeepers (although this has now improved greatly) and through intense frustration in my endeavours to photograph tiny fish that won't keep still. I have met and made new friends, and continue to do so. It would now be hard to define where fishkeeping begins and ends in my life, as it hes been the direct reason for taking up many other hobbies!

A&P: What's next in your fishkeeping plans?
KJ: I'm not sure what's coming next (which is part of what makes it fun). I've just finished working on a book about *Ancistrus*, and I'm waiting for another fish to catch my eye and make me wonder: "Why's it doing that?"

SOCIETY WORLD

Interested in Cichlids? — join the BCA now!

Cichlids are interesting — even fishkeepers who have misunderstood them and come a cropper will admit that they bold a unique fascination.

So if cichlids are your obsession, or you want to further your knowledge and meet like-minded cichlidiots, membership of The British Cichlid Association really is a must for you and your family.

This is no 'here today, gone tomorrow' organisation — the BCA was founded in 1971 and is still going strong. Joining up gives yon colossal benefits and insider information about your favourite fishes, both old favourite and newly-described species, for very modest subscription fee.

BCA members annually receive six quality Newsletters; three issues of the Association's journal *Cichlidae*, which goes into the topic of cichlid-keeping in great depth; and three sets of colour Information Pamphlets which provide the latest accurate scientific data and husbandry bints on cichlids across the board.

Every spring the BCA holds its annual Convention — the 1999 event is in Yorkshire on April 11 — of which two internationally-renowned speakers give illustrated talks.

The day is combined with an auction of 300-plus lots, where you can either sell your own surplus cichlid stocks to committed hobbyists or buy new fishes at attractive prices. The bargains to be had are unbelievable!

Every October the AGM is combined with another grand auction. Through the Newsletter many members choose to extend their cichlid social life by attending events abroad.

In 1998 the American Cichlid Association's Convention saw a number of Brits flying the BCA flag and enjoying every minute of it.

BCA membership is also the route to the responsible keeping of rare or endangered species — either by liaising with Chester Zoo in their ongoing breeding project with Lake Victoria cichlids or through the Species Controller, getting in touch with other members via the database that details who keeps what.

And if you want to really get involved with the BCA there are always committee posts to stand for, and opportunities to help in the running of outside events.

The BCA now has its own website — bttp://www.bcazetnet co.uk

So why not visit it and sample the benefits of membership? Or you could send for a generous sample pack (£3 cheque made out to the British Cichlid Association) to: BCA, Putnams, Hawridge, Bucks HP5 2UQ.

New UK membership applications are £15 single, £13 joint. Send your details with cheques made out to the BCA to Membership Secretary Ken Hilton, 248 Longridge, Knutsford, Cheshire, WA16 8PIL.

Membership of the BCA is the ideal New Year present to yourself, so join now — a whole new world of fishes and fishkeepers will be opened up to you.

LEFT Brisk bidding during the BCA auction at the Maidenhead AGM in October.

PHOTOGRAPH: NICK FLETCHER

Sorry!

Apologies are due for an incorrect caption to a photograph in 'Goldfish Memories of 1998' (*A&P*, December 1998). Best in Show winner Keith Waters ended up having an extra 't' in his surname whilst Jim Amos emerged as Jim Cumos — my handwritten caption on the rear of the print had been deciphered incorrectly. We hope the two gentlemen were not too upset nor embarrassed by the undoubted numerous phone calls from their society's fellow members.

Show Dates, Events & Festivals

(Rule Codes: A = A of A; FB = FBAS; FN = FNAS; FS = FSAS; I = International Goldfish Standards; N = NEFAS; U = USofA; Y = YAAS)

21 February Northern Area Catfish Group Convention
6 March FBAS General Assembly
7 March Eastleigh A.S. (FB)
7 March FNAS Annual General Meeting
20/21 March Yorkshire Aquarists Festival, Doncaster (Y)
4 April Oldham A.S. (FN)
11 April Aberdare A.S. (FB)
25 April Robin Hood A.S. (Y)
25 April Strood A.S. (FB)
1 May Southend, Leigh & D.A.S. (FB)
9 May Corby & D.A.S. (FB)
14/16 May Grocklemania, IoW (FB)
5 June FBAS General Assembly
6 June Erith A.S. (FB)
13 June Bracknell A.S. (FB)
13 June Tameside A.S. (FN)
19 June Bristol Tropical A.S. (FB)
27 June St Helens A.S. (FN)
25 July Merseyside A.S. (FN)
1 August Three Counties Area Group
3 September FBAS General Assembly
5 September Alden A.S. (FN)
12 September Silktown A.S. (FN)
19 September Northern Area Catfish Group Open Show
26 September Darwen A.S. (FN)
3 October Halifax A.S. (FN)
23/24 October British Aquarists Festival, Manchester (FN)
4 December FBAS AGM & General Assembly

Auctions

28 March Merseyside A.S.
4 April Oldham A.S.
25 April Robin Hood A.S.
9 May C.A.S.T. 88
13 June Tameside A.S.
27 June St Helens A.S.
25 July Merseyside A.S.
5 September Alden A.S.
12 September Silktown A.S.
26 September Darwen A.S.
3 October Halifax A.S.
7 November Merseyside A.S.
21 November Northern Area Catfish Group