

AQUARIST AND PONDKEEPER

The magazine for every fishkeeper ~ since 1924 NOVEMBER 2000 £2.50

The art of keeping Squirrelfish and Big Eyes



- *Trekking through the wilds of Gabon*
- *Breeding Sea horses at a Sea Life Centre*
- *NEW! Expert panel has all the answers*



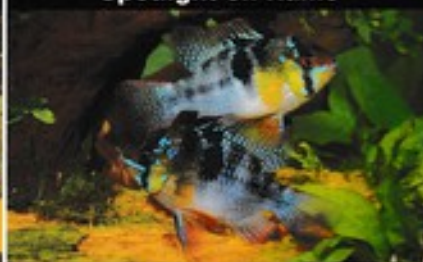
Winter Koi care



Starting out with Marines



Spotlight on Rams



MARINE · PONDS · PLANTS · AMPHIBIANS
TROPICAL · DISCUS · COLDWATER · KOI

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COVER PICTURES

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Small photos left to right:
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Max Gibbs
Arend Van Den Nieuwenhuizen

Welcome to the new look A&P!

After six weeks' intensive work we can finally reveal our new look *Aquarist & Pondkeeper*. Every aspect of the magazine has been overhauled and upgraded. We have a new expert panel to help you with your problems and, of course, I am always on hand to answer any emergency calls from fishkeepers in trouble. With over 30 years' experience as a fishkeeper I can deal with most emergencies and if I don't know the answer, I know who to ask!

Since this magazine will be going out to many thousands of new readers I think I should give you a little background information about *Aquarist & Pondkeeper*. First of all we are the world's oldest aquatic magazine, having started in 1924. From day one enthusiastic fishkeepers have been involved in producing this magazine and that tradition continues to this day with

Catherine Chapman (Koi and tropicals), Lisa Childs (tropicals) and myself (80 tanks of tropicals, goldfish, one pond and several water features), enthusiastic aquarists all!

Throughout its long history, *Aquarist & Pondkeeper* has always contained a range of articles from those that help new fishkeepers to be successful in their hobby, right through to interesting features for people who have been keeping fish for decades. As you can see from this month's issue, the new look A&P continues to do that.

To make finding your way around the magazine easier, we have colour-coded articles depending on which area of



interest they deal with. We have also created a symbol that shows which articles are particularly suitable for the less experienced fishkeeper.

I hope all our regular readers (at least one of whom has been buying A&P every month for the past 40 years!) and the thousands of new ones who have just joined us enjoy the new look and additional content of the magazine that has certainly been a pleasure to put together.

Happy fishkeeping.

Derek Lambert, Editor

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NEXT ISSUE

Tropical

Sonia & Dave look at Fuelleborn's Cichlid, the winner by a nose.

Arend breeds Pyrrhulina Tetras and Kathy strums along with Banjo Cats.

Fish Safaris

Max Gibbs visits Papua New Guinea.

Coldwater

Just because it's winter doesn't mean a pond can't look beautiful.

Equipment

We explain how Protein skimmers work.

Marine

Dave Garratt's regular marine fish feature moves on to Boxfish.





•WHAT Bigeyes YOU'VE GOT!

DAVE GARRATT
LOOKS AT SQUIRRELFISH AND BIG EYES



top left: Big Eye Squirrelfish, *Myripristis murdjan*, are beautiful fish with exceptionally large eyes and are marked by a black vertical bar.

top centre: Mexican Big Eyes, *Pristigerys alta*, are popular with American hobbyists.

top right: This *Holocentrus rufus* was photographed in the Caribbean Sea at Castle Comfort.



The 70-plus species of Squirrelfish, also known as Soldierfish, belong to the Holocentridae Family and although not exactly common within the hobby, the family has a wide distribution with species being found in the Indo-Pacific, Western Atlantic, Caribbean, and the Red Sea.

Nocturnal lifestyle

The Squirrelfish are unusual in that they have gained a place in the home aquarium despite being nocturnal fish. In their native environment they spend the daylight hours hidden among coral crevices, emerging at night to swim as shoals. They are found individually, in pairs or in groups and more than one fish will share the same daytime retreat, being fiercely territorial towards would-be invaders of this shelter. Obviously a fish that you were not going to see, unless you spent all night in front of your tank with a torch, would be unlikely to become

popular. However, Squirrelfish adapt quite happily to tank life and become accustomed to daylight hours provided they are given a suitably large tank with plenty of rocky retreats.

As you may expect, their nocturnal behaviour has resulted in these fish developing very large eyes and a deep red coloration. They have very rough scales, gill cover spines, and the rays of their dorsal fins may project to sharp points. Squirrelfish are very active and reasonably sized fish, requiring a large tank with plenty of free swimming space.

Predatory nature

The Holocentrids are predators; some taking food in mid-water while others feed closer to the seabed. They take a variety of crustaceans and molluscs plus the occasional small fish. Obviously some thought must be given to tank mates as in addition to upsetting more docile fish they also present a threat to any fish or crustacean that is small enough to become a tasty snack. Although they are predators this should not be confused with aggression, as in captivity they are peaceful fish that will just do what comes naturally if presented with the opportunity of a free meal. It is the aquarists' responsibility to ensure they do not keep predators with other livestock small enough to be considered as prey. In captivity most species will quickly adapt

and feed readily on a meat-based aquarium diet such as cockle, shrimp and mussel. Occasionally a newly arrived specimen may have to be weaned off live foods.

Easily damaged

Care must be taken to avoid damaging your Squirrelfish should the need arise to have to catch one in your tank. Their large eyes are very vulnerable to injury while the rough scales and spines are prone to catching in a net so making the use of one very difficult. One method is to use a net to guide the fish towards a small clear perspex tank, the type that is generally available at about 8"x4"x6". Conversely use two such tanks and very slowly bring them together to trap the fish. I have found that providing you move very slowly, fish have a lot less chance of seeing a perspex tank as opposed to a net. If you have to use a net you must use one with a very fine mesh made of the highest quality material.

Spawning

Frank de Graaf in the 1982 edition of the *Marine Tropical Aquarium Guide* reported that *M. murdjan* had spawned in the Artis Aquarium in Amsterdam. Courtship involved the male and female revolving rapidly around each other just above the bottom of the tank. Still circling they moved to the surface where

SQUIRRELFISH



left: Crown Squirrelfish, *Holocentrus diadema*, grows to only about 6" in captivity

mating occurred, producing free-floating eggs that were scattered by the sweeping of the fish's tails.

I have not seen an account of any other Squirrelfish spawning since this book was published although I am sure somebody must have been successful as 18 years is a long time!

Available species

Holocentrus diadema A fish of Indo-Pacific origin that can reach 12" in its natural habitat and is capable of reaching 6" or more in captivity. A very colourful species with white lines along its elongated body. This species adapts well to captivity and will be an active addition to the aquarium, taking to a varied aquarium diet with some relish. Bear in mind its potential for growth when considering tank mates (including invertebrates) and make sure they are large enough so as not to become part of the Squirrelfish's diet.

Holocentrus rufus A smaller shoaling species that lacks the white lines of *H. diadema*. This fish hails from the Western Atlantic where it can reach a size of 8". A predator that will adapt to captivity and feed readily but will also present a threat to anything small enough to be considered as food. Another Caribbean species that is very similar to *H. rufus* is *H. ascensionis*, commonly known as the Long Jaw Squirrelfish.

Myripristis murdjan Like some other Squirrelfish this species is known by the common name of Big-Eye. They are beautiful fish with exceptionally large eyes that are marked by a black vertical bar. A large specimen (12" in the

Indo-Pacific) that remains considerably smaller in captivity, but it is an active swimmer and a bold feeder so representing a considerable threat to any small tank mates whether crustacean or fish.

Myripristis jacobus Known as the Blackbar Soldierfish, it is a common Caribbean species that reaches a size of 8" in its natural environment. It remains considerably smaller in captivity and could be considered for a smaller tank. However, it is still a predator and an active fish and so it still requires ample swimming space. I have no idea why this fish is universally known as a Soldierfish while most of its relatives are called Squirrelfish.

Other species

The three species above are the commonest found in UK outlets although if you pick up any one of a number of marine texts you will find a fair number of species from a variety of locations. For example, Dr. Randall's book *Red Sea Reef Fishes* lists eight species of Holocentrids including two genera not mentioned so far: *Adlorox* and *Flammeo*. Ronald Thresher's book, *Reef Fish*, lists nine species from five different genera adding *Plectrypops* to the genus list.

Big Eyes

Big Eyes are similar to the Squirrelfish, in so far as they are nocturnal and possess the same big eyes and red coloration, but they belong to the Priacanthidae family. They are large fish reaching a minimum of 12" on the reef where they carry on a nocturnal predatory existence. I mention these fish because of their similarity to

the Squirrelfish and the particular popularity of one species seen in the hobby in America - *Pristigeyus alta*. Although not a rare fish, this deep water Big Eye is rarely offered for sale in the UK although it has been a popular species with American aquarists, as testified to by a number of articles in the US magazines. The species seems to adapt well to captivity and behaves in a similar manner to the Squirrelfish already discussed. Although available as small juveniles, the adult can reach a size large enough to instil caution in the hobbyist as to the suitable size of tank mates.

A good choice for the hobbyist

Although not overly popular, Squirrelfish represent a good choice of fish for a hobbyist with a large set-up. They add an attractive and different addition with their large eyes, red coloration and well-defined scales. Although nocturnal they quickly adapt to life in captivity, readily taking an aquarium diet and developing into hardy fish. Bearing in mind their large eyes and rough scales, they must be treated with the utmost care in the event of them having to be removed from your tank. They should not be beyond the beginner but they must only be kept with suitably large fish or invertebrates. ■

below: A large shoal of Blackbar soldierfish, *Myripristis jacobus*, photographed by Max at Scott's Head, south-west Dominica.





Galloping through Gabon





**DAVID ARMITAGE
TREKS THROUGH THE
WILDS OF GABON.**



On my birthday, I had an unexpected telephone call. On the other end of the line were the familiar tones of Allan Brown, who has also made several trips with his wife Barbara to Malaysia, where they have collected many new species of *Parosphenomus* and *Betta*. How did I feel about accompanying them to Gabon? I needed no excuses to visit the home continent of my favourite genus, *Ctenopoma*, in one of the last remaining rainforest habitats.

Centre of aquatic evolution

Gabon has much to recommend it. Eighty-five per cent of the country is covered in tropical rain forest. Its oil and mineral resources have so far protected most of the country from excessive logging and, with a population estimated at only one million in 1980, human impact is still moderate. It is a refuge for tropical forest species and an important centre of endemism (an area where many unique species have evolved). June to September are the dry months, which was obviously the time to go. In late July to mid-August, we found it was usually overcast with high humidity and temperatures in the mid-20s°C (75-83°F).

The success of these trips lies in good preparation; luckily Allan and Barbara had already made several similar trips and were able to advise me. A rigid stainless steel net frame had to be manufactured, capable of taking the strain of being pushed into weeds. A net of appropriate mesh to fit the frame was procured, along with lightweight waders, from an angling shop. Injections for yellow fever, cholera, hepatitis and rabies were all required, together with a supply of two types of anti-malarial tablets to counter the resistant African strains. We surveyed existing literature to pinpoint precise locations of the species and also took pictures of the fish with us to help explain to interested or suspicious passers-by.

main pic: *Aphyosemion rectogaster* – Just one of the many beautiful killifish caught on this expedition.

inset left (l-r):
Near Franceville we experienced a rare contrast from the claustrophobic rainforest. On this high plateau was dry savannah with no trees to deny us views of the rolling scrub land.

The first fish caught was *Aphyosemion lamberti* in this habitat near Moanda.

Wild ginger growing near Makokou.

Unexpected train journey

Things got off to a bad start when the car we'd ordered at Libreville didn't materialise. This meant we had to go to Franceville, at the other end of the country, to get one. The alternatives were air and rail but with all our baggage, the former was too expensive. Imagine the scene, arriving at the 'Gare' in the dark to find people already 10 deep on the platform. Trying to buy tickets was a major effort, with six hands all waving bundles of notes at the same window. On the platform there were great piles of mattresses, produce, even a dog in a large crate that kept biting people through the ventilation holes. In mid-journey we heard that it escaped, ate a large sack of dried sardines and ran off into the bush.

We shared our hard-won compartment with a young Gabonese lady, her mother and child and a biology teacher. Despite our tortured French, we all seemed to understand each other and heard about how Killifish, one of the main objects of our trip, were caught and prepared for the table.

After a tiring overnight journey, we arrived at Franceville, secured the only taxi-car and, bulging at the seams with fish-collecting paraphernalia, headed for the airport where we picked up our trustworthy Mitsubishi Pajero.

At Franceville, the excellent Hotel du Plateau had the twin advantages of a noisy colony of weaver birds and a built-in beetle trap. The veranda outside our bedrooms provided specimens of exotic species that had flown to the fluorescent lights during the night and Geckos ran around the walls. In the morning, Allan presented me with a grisly selection of heavily-armoured, giant Cermabycid beetles which waved their antennae and squeaked indignantly at me. Our arrival coincided with that of a truck full of bush meat, mainly comprising freshly plucked porcupines, which had all seen better times.

Violent storms

We left Franceville after a violent electric storm and travelled, via the thriving mineral town of Moanda and Lastoursville, to Kouloumoutou, in the heart of the coffee-growing area, on the banks of the River Lolo. Of course, we fished on the way, the first catches being *Aphyosemion lamberti* just outside Moanda.

Life quickly settled into a demanding routine. Either driving between hotels, or radiating to the surrounding country, we would locate a likely habitat, usually at the side of the road or crossing under it. →

FISH SAFARI



top left: *Aphyosemion cyanostictum* BBA/90/25.
top right: *Aphyosemion georgiae* BBA/90/18.

right: Suitably booted up and gloved, as protection from *Bilharzia*, Allan can be seen catching *Aphyosemion rectotense* in a habitat near Bongoville.

⇒ Suitably booted up and gloved, as protection from *Bilharzia*, we would fish for 30-60 minutes. Two techniques were used: either trampling weeds towards the net or sweeping the net along the base of the stream, then swiftly up as it met the bank. If fish were collected, the water had to be tested and habitat notes and photos taken.

Because of the distances involved, a maximum of three such interludes were permitted each day, passing only for a lunch of Complan or banana sarnies. The rest of the time was taken up with driving along laterite roads, where conditions generally allowed only 40km/h, dodging the potholes and the goats in the village streets. There was just time for a Regab (beer) and a shower before eating, then the day's fish had to be bagged singly and medicated. Of course, the day's clothes had to be washed as well. In the morning, the bags were aired before we set off again.

We stayed two nights at the Relais Malebi Bouenguidi in Koukoumoutou. On the first morning we found ourselves in a dilemma. There was no diesel in town and although we had enough to get us to our next destination, it wasn't enough for our planned day trip as well. The cousin of the hotel's manageress was despatched to take us to the local DC and Barbara was able to negotiate the purchase of some diesel out of him. Young Eric then asked to accompany us on our expedition to find *Aphyosemion nareum*, an experience he found unexpectedly exhausting. For me, it was a relief to prove to Eric that we could catch fish, because this was the third location we tried that day and the first at



which I was personally able to catch something other than large, red tadpoles or green water-spiders!

Nightmare 'main' road

We then headed on toward Mouilla using one of the worst 'main roads' in Gabon. The road was awful, with deep grooves caused by rain run-off and semi-rotten bridges. After a while it was only a single track, with vegetation rattling past on either side of the vehicle. Often we had to drive through the bush to avoid the potholes in the road. We passed over the Massif du Chaillu, but the dense forest obscured any view our altitude might have shown. I found the experience worrying, to say the least, and hung on in the back seat, grinding my teeth. Taking a break from this ordeal for lunch, we were rewarded with the sight of a tall, terrestrial orchid at the roadside. A few days after we took this route, it was featured on television as a ministerial convoy traversed it, pledging millions of

CFA to bring it up to standard. We had hoped to stay at the Mission Catholique at Mimongo, but a helpful American Peace Corps Volunteer, there to set up a *Tilapia* farm, was able to tell us it was closed and directed us to Mouilla, a further 100km in darkness down a good logging track.

We arrived in Mouilla's Relais Mulebi, the Lac Bleu, in darkness. The next morning, we met our first road block on a round trip via Ndende, Lebamba, Mbougou and back via Mimongo again. On this excursion, we first passed through wet savannah with its characteristic mushroom-shaped termite mounds and much later came across our first *Ctenopoma nanson*, living among the grasses at the water's edge of a small bamboo forest stream, along with Short-nosed elephant fish, Barbs, Catfish and *Aphyosemion privigenicum*. We were able to watch one of the local ladies fishing here with a collapsible basket, shoving it into the grasses near the bank, just as we did with our nets.



top left: *Aphyosemion punctatum* BBA/90/23

top right: *Aphyosemion coeleste* BBA/90/30

left: *Aphyosemion lamberti* BBA/90/1.

Most killifish in the hobby have a code added to their name. This way fish from different locations can be kept separately and genetically pure lines maintained.

long-horned cattle bearing down on us as we tried to drive out of the town. When we returned, a crowd was trying to extract one of them from a ditch.

Fleeting glances of wildlife

Impressions of the wildlife were confined to fleeting glances of squirrels or rodents as they shot across the dirt road ahead of us, or flocks of birds sitting in the middle of the road that exploded upward as we approached. Occasionally we glimpsed hornbills bouncing about in the trees at the side of the road and once, on the wet savannah outside Mouilla, a group of bustards. Sparkling kingfishers watched us while we dabbled in the streams, the red-headed swallows swooped everywhere and, now and then, a flock of parrots would be glimpsed flying overhead. On the odd occasion that we had to drive at night, we would catch glimpses of owls and bats in the headlights as well as the flashing signals of fireflies. There were plenty of interesting insects; mantids, colourful grasshoppers and huge, metallic butterflies. Wandering along the roadside one could often find an exotic bloom or two and the sensitive plant, *Mimosa* was omnipresent. Perhaps the thing that struck me most, however, was the rainforest cacophony; a complex intermingling of bird song, monkey cries, insect stridulations and frog calls. =>

Water so foul

On this excursion, we came across a drying river bed and a small puddle teeming with *Aphyosemion exopoides* and *Epilplatys*. The water was so foul and scarce that we could not use it to bag the fish and instead had to use the heavily-chlorinated hotel tap-water which we had treated with purification tablets. Not one died in this medium!

We then moved on to Lambarene, on the banks of the Ogooue, with exotic waders, such as black-winged stilts, flying overhead. En route we also caught a very orange *Ctenopoma nanum*. This was in another culvetted brook that ran into the forest where we also caught a juvenile Electric catfish. The previous location had produced our one and only free-spawning *Ctenopoma*; a young *Ctenopoma kingsleyae* in a larger river, with shaded banks. Lambarene is the site of Albert Schweitzer's hospital and we visited the small museum that shows the way he lived; his small bedroom, library, microscopes and the like.

Ed's note

Albert Schweitzer, 1875-1965, was a German-born French missionary who from 1913 ran this hospital on the proceeds of his organ recitals of Bach's music. He also wrote books and put forward his own theology based on "reverence of life". He was awarded the Nobel peace prize in 1952.

From Lambarene we drove north to Ndjole where we stayed in the French-owned Auberge St. Jean and then travelled north to Oyem through several roadblocks and gendarme checks. Here the rivers looked like blackwaters; acidic and dark which our measurements bore out. We started to find *Pelmatochromis*-type Cichlids along with the usual *C. nanum* and Killis. We stayed three nights in Oyem (Relais Malebi, M'Vet Palace, of course), travelling out to fish north on the road to Minvoul and south on the road we came in on. One morning, we encountered a herd of the native

'Petite probleme'

⇒ From Oyem, we travelled back south, and then east via Ovan toward Makokou where there is a French biological research station. My guide to Central Africa said there were three hotels in Makokou, so we looked forward to the choice. However, our enquiries met with blank looks, until one gent pointed us in the right direction, although there was a 'petite probleme'. This turned out to be that the hotel was closed, but fortunately they opened it for us. Apparently, the river had risen and flooded the hotels, of which only this one (Relais Muleto! - Relais de l'Ivindo) remained serviceable.

We fished east and west of Makokou, mainly looking for the five species of the exquisite miniature Killi genus, *Diapterina*, endemic to this area of the Ivindo basin. In the course of events we also found a good place for *C. nanum* just out of the town. Here we caught seven in the drizzly gloom of dusk, again in the grasses of an overgrown sluggish stream. Usually we only caught this species singly and widely separated, but here Allan even caught a pair in the same net! This was on a day which started with a rainstorm and ended with a puncture - amazingly, the only one we had.

On one of these trips, the locals took us through the forest to the river behind their village, where we spent a very pleasant and productive hour or so, fishing with their help. This was typical of the people of Gabon who were usually helpful, if amused, at our mission. Since there were few road signs, it was not difficult to meet people as, at every junction we would have to ask which was the right road and this, of course entailed explaining what we were doing: "Bonjour, nous sommes Anglais et cherchons les petites poissons..." Often we were surrounded by groups of young bathers looking through the sheets of fish pictures. Sometimes passers-by, such as hunters, would be able to identify local fishes from our pictures.

We're on the menu!

By now we were used to the lines of giant horseflies with luminous eyes, that would settle on our backs while we fished and bit through our shirts. Because of this, we usually had to drape towels over our shoulders which even those mammoth Diptera couldn't pierce.

right: A typical high street in Africa - shopping for lunch.

far right: Libreville Sunset.

From Makokou we returned to Franceville via Okandja. The next day we fished toward Lekoel where we found Knife fish and a pool that absolutely swarmed with *Aphyosemion rectogouense*. Here we experienced a rare contrast from the claustrophobic rainforest. On this high plateau was dry savannah with the typical tall, pointed termite hills and there were no trees to deny us views of the rolling scrub land.

On the following days we drove toward Okandja and Moanda. Here we caught *Aphyosemion caeleste* and even I had my breath taken away by the shimmering blue of this fish as the sun hit its scales. As indeed it was when a spider, the size of a soap-plate dropped into my net from the overhanging shrubs.

A moment to savour

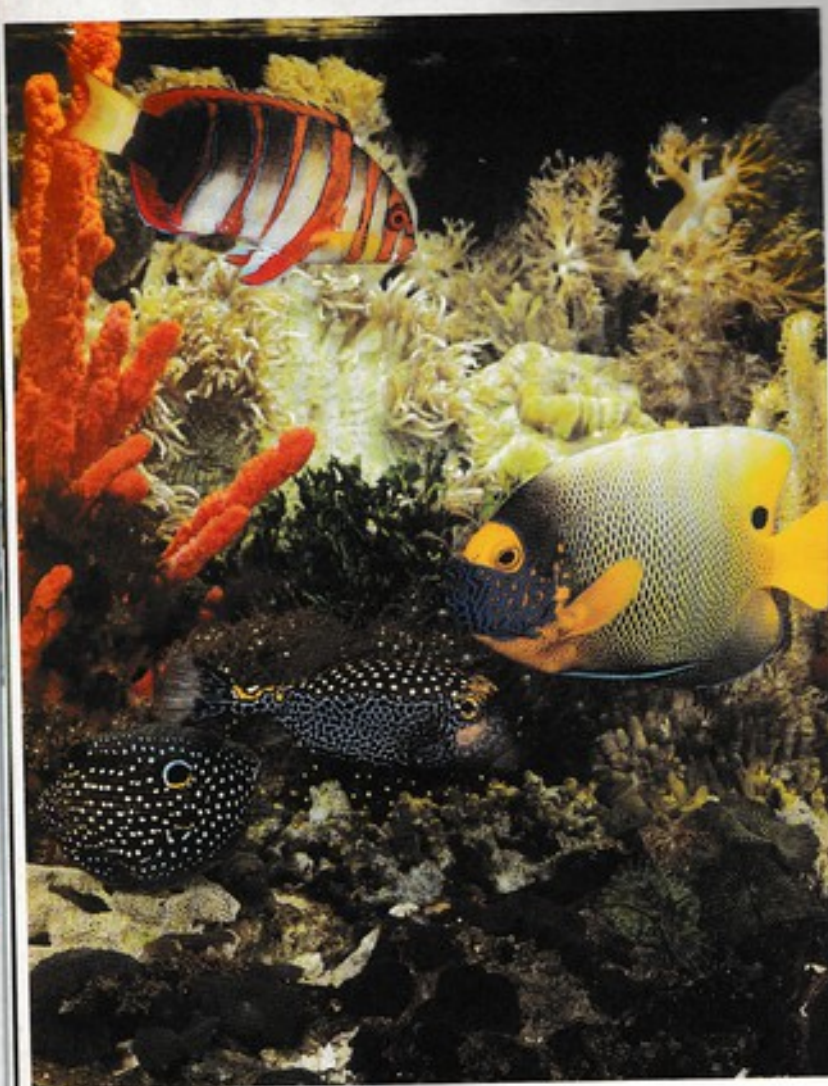
The fish all had to be specially bagged for the 12-hour train journey to Libreville. Luckily all was calm and organisation at Franceville, in contrast with the bedlam of Libreville. Back in Libreville, it took a marathon six-hour session to bag up all the fish in the minimum amount of air and

water for the return trip. Just as we finished, we looked out of the hotel window in time to see the sun set over the Atlantic - a moment to savour.

Gabon in August turned out to be a gentle and organised introduction to Central Africa. True, the hotels were expensive, but not in relation to British prices. The climate was manageable, the roads usually negotiable, the people friendly and the habitat largely intact. The only disadvantage was the cost of hiring our Mitsubishi for 3500km and 16 days which was £3200, shared between three people.

I was surprised to find the fish could coexist with man. Often they abounded in water used for washing, bathing and soaking manioc. This root is pounded after soaking to provide a staple but without careful processing is poisonous. Yet fish lived in the caves formed by baskets of the stuff soaking in water. I was also struck by the lack of water plants. Occasionally we noticed *Crinium*, *Anubias* and *Nymphaea*, but usually the fish seemed to take refuge under banks, among leaf litter or in the tangled mat of terrestrial plants that grew into the water. ■





Listen mate. I've kept tropicals for over five years now and I'm doing alright, OK, when I started I had a few setbacks but I learned by my mistakes, did a bit of reading, and asked my friends. Five years on, I have two tanks and even breed a few fish as well.

The one thing I would have liked to have tried in a marine tank, but have you heard the horror stories? A few people I know have tried and, I can tell you, they know far more about fishkeeping than I do. One of them had a tank full of fish, walked downstairs in the morning, all dead. Another just could not stop white spot killing them. All in all, five of my mates tried and all of them lost hundreds if not thousands of pounds worth of stock.

Keep marines? Me, no way, but I really would love to try.

What you say is unfortunately true, and if I had a pound for every time I heard this story, I would be sunning myself in Fiji, not sat before a computer. However, let's get one fact right, straight from the start - keeping marines is easy.

There are two reasons why people fail, and only two: use of inadequate equipment and a lack of knowledge. The second reason is a little bit more difficult for the beginner; let's deal with that first.

So you keep tropicals. Remember those distant days when you first set out on your adventure of fishkeeping? How did you begin? You read a few books, asked advice from friends, maybe joined a club. However you relied heavily on your local aquatic retailer. Well, surprisingly, it's just the same for marines. However, there are some bottomless pits to avoid when seeking the holy grail.

There are many books on sale and none are cheap, so buy the most up-to-date publication, as the art of keeping marines has progressed rapidly over the last few years. An old book will contain old ideas, many of which can cause trouble. Only take advice from people you know are successful in marines and don't listen to people whose fish keep dying off. They will offer advice and make excuses for their own failings - don't listen.

A good retailer is worth his or her weight in gold. So how do you know a good one from a bad one? It's easy with one simple test. Tell them you have lost a few fish for no apparent reason. If they perform a full diagnostic on your aquarium set-up and its stock, provide →

KEEP marines Who me? No way!

ANDREW CAINE WALKS US THROUGH THE PROCESS OF CONVERTING A DISUSED FRESHWATER SET-UP TO YOUR FIRST SUCCESSFUL MARINE AQUARIUM.

top left: A tropical reef aquarium with compatible fish.



right: Marine invertebrate aquarium with a selection of compatible fish.
 top left: Reef-style aquariums without fish are very much in fashion at the moment. A quick look at this aquarium shows you why.
 bottom left: This wonderful marine set-up shows just how beautiful a marine aquarium could look in your home.

→ test results and explain them, give advice and then refuse to sell you a fish, they are good. This is because they know your tank will take a while to be safe before any new stock can be safely introduced.

So, I've been reading a few books, got advice from some good people, found a good shop and I think I am ready. One thing is that the wife's not too happy about the cash part. However, let's get down to business, I have a spare 36" x 18" x 18" tank, cabinet and hood with equipment for tropicals - where do we go from here?

Your tank size is really the smallest I would recommend for marine fish, having a capacity of around 30 gallons, accounting for water displacement. You have emptied your tank and cleaned it, so let's sort out your old equipment. First you will need to remove your little internal filter and old light tubes. Your heater, light starters and thermometer are the only things we can use. So get your Visa card warmed up and we shall go to that shop you have found.

Let's see what's on our shopping list. First a good external filter, and let's go with a capacity of at least 45 gallons. We shall fill it with high grade filter media,

and guess what, we can now filter a marine aquarium; put this in our basket, please.

Let's look along the top shelf. No, not for naughty books, but a little protein skimmer. There are two types here for your sized tank: internal and external models. Both will do the job but the internal one is half the price of the other, but you also have to buy a good air pump for it, so in reality they are about the same in price. So the question is which do you want? OK, we go for the external.

Listen Mr. Advisor, it's not your cheque book you are using here! I have been told that a protein skimmer is not really needed.

Not needed! If you don't have a skimmer you are risking a protein explosion, which will result in the total wipeout of your tank. Remember, do not skimp on equipment, so put it in the basket.

Further along the top shelf, what do we see? A lovely 8W UV unit. Absolutely essential for any marine tank. Let's stop the parasites from invading your lovely stock. In the basket for this one, along with a pump and paperwork to suit.

Let's look at the lights. You have two starters, so we will go for the tubes, not the inexpensive ones, but the correct

ones. We shall have a nice 10,000k-rated, to really light up the tank and one actinic or blue moon to enhance the colour of the fish and also to simulate dawn and dusk.

Well that's it. That's all the hardware we are going to need, but we're not quite finished. How are you going to aquascape the tank? Let's see what they have on offer. First we will need some high-grade salt, which is phosphate and nitrate-free, then some coral sand or gravel, and nice ocean rock. A hydrometer to ensure we have the correct salt content in our water. We shall also need ammonia, nitrate, nitrite and pH test kits and a filter activator and biological culture just to give the bacterial colonisation in the filter a boost.

To the check-out old chap, a total bill of \$449.71. Okay, so it's not inexpensive, but you now have the beginnings of a successful aquarium, not a problem-ridden tank. So back home we go, not to set up the tank, but to sit down and play with the equipment, examine all the working parts and read the instructions in readiness for the following day. ■

Next month 'Mr Advisor' will walk you through the initial process of setting up your first marine aquarium.



Over the Rainbow

DEREK LAMBERT, CHAIRMAN OF THE BRITISH RAINBOW AND GOBY SOCIETY, HAS BRED MANY DIFFERENT SPECIES OF RAINBOW. HERE ARE JUST SOME OF HIS FAVOURITES...

below: Red New Guinea Rainbowfish
(*Glossolepis incisus*) spawning into plants.



W & C. PEGOR



RAINBOWFISH

Rainbowfish have been a passion of mine for many years but limited aquarium space has meant I could never have more than two or three species in the fish room at any one time. Even so, I have managed to cycle through a fair number of species over the years and still have a few more on my 'hit list'.

In many ways aquarists have only just begun to scratch the surface of this group of fish. There are at least 277 known species and many more waiting to be discovered. Of these only some 20 species are commonly found in the trade. Things have improved over recent years but they are still very thin on the ground.

Almost all the fish we see for sale in aquarium shops are captive bred now. This means they are perfectly adapted to aquarium life and will make hardly additions to your aquarium. They will also be fairly young fish not showing their full adult colour. In fact, most of them look pretty drab if truth be told. That, combined with a relatively high price on the more unusual species, often puts prospective buyers off - after all who wants to pay over \$5 for a drab grey fish?

If you do, however, you will be in for the shock of your life when they develop their full coloration. Most species positively glow with oranges, reds, yellows and blues, combined with bold splashes of black on their fins or body for these are true gems of the fish world. Most of the smaller species show their full colours by the time they are four months

A species for every aquarium

What really appeals to aquarists about these beautiful fish is that they make perfect community members. Depending upon their tank mates there is probably a selection of over 10 different species you can pick from for any tank. Small fish communities can include *Melanotaenia praecox*, just about any of the *Pseudomugil* genus, *Iriatherina werneri*, and the perennially popular Celebes rainbowfish (*Marosatherina ladiges*). For medium- to large-sized communities there are a whole range of *Melanotaenia*, *Chilatherina*, and *Glossolepis*, species to choose from. Another excellent choice for a large community aquarium would be Madagascan rainbowfish (*Bedotia geayi*).



above: *Melanotaenia boesemani* make a stunning addition to a community aquarium.

old. Sadly, they are short lived and will survive for only 18 months to two years. The large species, however, may live in excess of five years and make a stunning display in any aquarium.

Aquarium conditions

Certain conditions are vital if you are to keep your Rainbows healthy and happy. Firstly the water must be kept clean and pure at all times. These fish are particularly susceptible to ammonia poisoning. Even moderate nitrate levels will stress them, so make sure you change 15% of the aquarium water weekly and regularly maintain your filters.

The other very important aspect of their aquarium is a high oxygen requirement. These are fish of generally moving waters. Good water circulation is therefore vital and all species seem to appreciate the inclusion of an airstone or two in their aquarium.

This impacts very heavily on how Rainbowfish can be transported. Too many fish in a bag is a recipe for disaster. Add in a warm day or long journey and everything will be dead by the time you reach home. While most shopkeepers are aware of this, it is still wise to check that they are only placing one fish in a bag. This is a safety measure which means if one fish dies on the journey the rest will stand a chance of reaching home safely.

Rainbowfish are very easy to feed in captivity. They will accept all commercial foods while it is on the surface or falling through the water column. Once on the bottom some species will ignore it, but most will still try to gobble up any flakes they can find. A quick look at their mouth structure will show you why they are none too keen to feed off the bottom. The mouth of most Rainbowfish points directly forwards or slightly upwards. Perfectly adapted to eating from the mid-water or surface area but very difficult if they want to pick up food lying on the substrate.



Apart from a good quality flake or granular food you should add some live or frozen food to their diet as well. Once a week is fine for this supplement, although more often will be much appreciated by your fish.

Breeding

One of the very first egg layers I bred was *Melanotaenia nigrens*. In hindsight it probably was not that species, but that was its trade name at the time and 28 years on it is difficult to know for sure which species it was. What I do vividly remember is the spectacular courtship. This occurred most mornings shortly after sunrise and was worth crawling out of bed for.

Males would flare their fins in front of the females and chase them around the tank. Every so often they would come



left:
Melanotaenia nigrens
six-day-old fry.



together close to a clump of plants and scatter a batch of eggs into them. Years later I was to see an even more stunning courtship at the home of Jan Rotwitt – a well known Danish aquarist. He had several pairs of *Chilatherina bleheri* which spawned most mornings.

The males of this species not only heightened their colours during spawning but a bright yellow stripe would "flash on and off" as they displayed to their mates. It was just as bright as a neon sign!

Melanotaenia, *Chilatherina*, and *Glossolepis* tend to produce large numbers of small eggs. These take about a week to hatch out and the fry are another couple of days before they are free swimming. Now comes the tricky part. You need to feed them enough infusoria or liquid fry food to keep the whole brood growing but not too much or you can pollute the water. Gentle aeration should be added at this stage. After a week most youngsters can be moved on to newly hatched Brine shrimp. From here on growth is steady but never very rapid. ■

top: *Melanotaenia trifasciata*
'Goyder river' strain male.

left: *Chilatherina bleheri* have
the most beautiful courtship display.

Sea horse Slaughter Scandal

ZOOS ARE DESTROYING HUNDREDS OF SEA HORSES AND OTHER ENDANGERED SPECIES OF FISH DUE TO RULES BEING IMPLEMENTED BY THE ZOO FEDERATION. A&P INVESTIGATES...

ENDANGERED SPECIES breeding programmes have been used by zoos to help justify their very existence for decades. Now comes the shock news that the Zoo Federation has ordered its members to establish where the end home for a fish will be before they are allowed to release stock. This means they can no longer pass on surplus stock through trade outlets and those fish surplus to requirements are being 'put down'. In other words, fish living in what should be a safe house now find themselves in a slaughter house!

Thousands slaughtered

The exact numbers of fish and species involved are still secret but our sources have confirmed hundreds of Sea horses, Lake Victorian Cichlids and various Goodeids have so far been destroyed. Thousands more survive for the time being with a death sentence hanging over them. What makes this wholesale slaughter of fish worse is that these are perfectly healthy, robust animals that could grace aquarists' tanks and help relieve pressure on wild stocks.

We asked John Dawes for his personal view of this appalling slaughter. He said he felt it was "a great shame and highly regrettable". The OFI (of which John is the Secretary General) actively supports captive breeding, ethical collecting and sustainable harvesting of Sea



horses for the aquarium trade and this flies in the face of everything that they have been trying to do. "Surely finding a good home for any fish is far better than killing it. When it is a highly endangered species, like some of these are, it is a terrible waste," said John.

Policy for extinction

For years zoos have been looking for funding for endangered species captive breeding programmes. Since that funding has been very difficult to find for fish (Pandas = big news; fish = no news!), most programmes are supported to a greater or lesser extent by sales of surplus stock. This means that the financial life blood for most endangered fish species work has been cut off, and many projects will now have to be curtailed or scrapped altogether. There is now a very real risk that some endangered species will become extinct due to this policy.

Aquarist & Pondkeeper is calling on the Zoo Federation to change the rules governing release of surplus fish stocks so they can be sold into the trade. We know these rules were originally drawn up to prevent endangered mammals going to unsuitable homes via the pet trade but they have a devastating effect on captive breeding programmes and are leading to the wholesale slaughter of hundreds of fish. ■

● Cute & condemned?

Froglife Project

THE 'POND DOCTOR' IS NOW ON HAND TO HELP LONDONERS CREATE WILDLIFE-FRIENDLY PONDS.



From left to right: Ken Livingstone, Mayor of London; Sarah Ruff, Project manager for London Ponds; Peter P Rigby CBE JP, Chairman, Bridge House Grants Committee.

IN SUMMER 2000, Froglife, with the financial support of the Bridge House Estates Trust, started a new project to improve quality of the urban wildlife in Greater London and to raise the public's awareness of its value. The London Garden Pond Project will focus on helping owners to improve London's garden ponds and allotments.

Understanding the problem

Ponds are one of the most vibrant small-scale wildlife habitats in Britain. They are not only part of our traditional landscape but also provide the perfect opportunity for both young and old to learn about wildlife and ecology. Despite their benefits, Britain's pond landscape has changed dramatically over the last century with up to 90 per cent of it lost from a countryside under increasing agricultural and developmental pressures. However, in recent years many new ponds have been created, partly due to the reduction in cost of pond liners. A significant number of ponds have been created in urban and sub-urban gardens.

As there are estimated to be around 200,000 garden ponds in the Greater London area, gardens are already providing an important refuge for much of London's

wildlife. At present, relatively little is known about the value of these ponds. With correct design, stocking and sympathetic management, ponds can quickly become havens for many species of native wildlife but many of them are unsuitable for our native species. Commonly identified problems include steep-sided slopes that do not allow emerging young amphibians to escape, stocking with exotic and invasive

species of plants or animals, and inappropriate pond management which removes the very aspects of the pond that attract wildlife.

In recognition of the potential importance of gardens in supporting our wildlife species, Froglife, through this project, is here to provide all wildlife-friendly Londoners with the advice required to ensure that gardens and allotments can realise their potential and help to save many of

our declining native species. Due to the many garden pond and allotment owners and the growing public interest in wildlife gardening, the London Garden Pond Project aims to bring community benefits to a vast number of Londoners through the course of the next two years.

Useful education

The project will provide up-to-date literature on creating and managing gardens and allotments for wildlife and, in particular, for our native species of amphibians and reptiles. The project 'Pond Doctor' will be available to make on-site visits to gardens and allotments to provide advice and literature. Later in the year the Pond Doctor will also be available to give community and school talks. The project is available to help Londoners who wish to encourage wildlife on to their land. The first contact point will be the Froglife Project support staff on the London Garden Pond Project telephone enquiry line. Enquirers should call to receive initial advice, order literature or book a visit from the Pond Doctor. ■

Froglife contact

Froglife, Mansion House,
27-28 Market Place,
Halesworth,
Suffolk IP19 8AY.
Tel: 01986 873733



Froglife wants to see more happy frog families like this. ●

Trade Talk Glee Roundup

TRADE EXHIBITIONS ARE SOMETHING NORMAL AQUARISTS AND PONDKEEPERS ARE GENERALLY UNAWARE OF. HOWEVER, THEY ARE THE PLACE WHERE VIRTUALLY ALL NEW PRODUCTS ARE AIRED FOR THE FIRST TIME. FOR THIS REASON A&P SENT ITS OWN TEAM TO GLEE 2000 TO TRACK DOWN ALL THE NEW PRODUCTS. THIS TURNED OUT TO BE A MAMMOTH TASK DESPITE THREE DAYS AT THE SHOW!. HERE IS A BRIEF OVERVIEW OF THE RANGE OF NEW PRODUCTS ON SHOW; OVER THE COMING MONTHS WE WILL BE LOOKING MORE CLOSELY AT MANY OF THEM AND PUTTING SOME TO THE TEST.



● Interpet's Aquarium solutions.

Anglo Aquarium Plants had Planted Mini Bio Rolls. These are coir matting rolls planted with pond plants that can be placed directly into the pond without the need for plant baskets.

Arcadia has several new lamps and lighting units. These include a natural sunlight lamp with a lower UVA/UVB output than its D3 Reptile lamp. It also has a new waterproof lamp holder which is much safer than the ordinary type.

Casco Europe Ltd had a new lighting range called EffectLight while **Hozelock Cyprio** was undertaking a major launch of its new Vorton 'Turbulator' UV clarifiers. These rotate the water around the UV light source so increasing the length of time it is in contact with the lamp.

Intersolar launched a new solar powered floating fountain and range of floating lights, and **JMC** were there to re-launch its freeze-dried fish food and catfish pellets. Both have had their packaging changed to one which will have more impact and the company plans to work its way through the whole range.

John Allen Aquariums was introducing a new range of shaped aquarium sets. The bow fronted aquaria were particularly liked by our team and looked spectacular stocked with a shoal of Moss-green tiger barbs. Ideal for a corner or put two together to make a semicircular display. It also exhibited the new updated Eheim professional filters.

Interpet updates its test kits

Interpet brought along a whole range of new products but foremost among these was their **Blagdon Filter Pump 3000**. This has a maximum flow rate of 3000 litres per hour and a maximum head of 3.1m. On the aquarium side it has a new range of chemicals called **Aquarium solutions**. These include an aquarium descaler, disinfectant and glass cleaner. It also launched new liquid test kits into the Easy Test Range.

OASE has 73 new products!

OASE brought a huge range of new products to GLEE. With 73 to choose from it is very difficult to pick out just a couple to highlight. New water features, water fall units, pumps and pond skimmers all looked interesting.

J&K Aquatics Ltd had a new background range called 'Back to Nature'. These are absolutely stunning hand made backgrounds that are used within the aquarium.

Neil Hardy Aquatica Ltd introduced the unique Bubble-Bead Filter System to the European Market. These are designed for set-ups of between 2,000 and 20,000 gallons and are well thought of by American Koi keepers.

Nishikoi Aquaculture Ltd. is very well known for its excellent range of Koi foods, but has now released a range of aquarium fish foods. Called Nishi-Aquaria, they include Cichlid, Catfish and Goldfish pellets, as well as Goldfish Flake food. Given its track record in the Koi world this is one company that will be shaking up the tropical fish world in the coming years.

Pet Mate Ltd previewed a new range of Fish Mate pond pumps

New beginners range from Aquarium Pharmaceuticals

Aquarium Pharmaceuticals brought along the new Rena Filstar external power filters. These filters have plenty of room for media, are extremely quiet and self priming. Under their own name they were launching a whole range of plain and simple to use medications and water treatments. These are aimed specifically at beginners and include a step-by-step aquarium set-up kit.



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

which will be ready for next season. These have a high efficiency impeller able to handle solids up to 10mm and an outlet that can be adjusted for either side or top.

Pet Products International had a new addition to its range of MiracleBeam lighting system. This is a rotating lighthouse which looked very dramatic in their darkened aquarium. While this may be a novelty item it will certainly go down well with the family – just as the MiracleBeam Hi-lite and laser systems do.

Rolf C Hagen (UK) Ltd was there with a new range of water features, Laguna foods and Phos-X (designed to reduce phosphate and hence eliminate blanket weed and algae). It has also recently redesigned the Biolife filter range and these were on display as well.

Rotorflush Filters exhibited its new Gunge Trap option which filters out weeds, leaves and large fish waste.

Technical Aquatic Products Ltd brought along its new range of Pond Foods. These include Flake, Pellets, Sticks and the like. Also on display were its recently

introduced Medi and Algae pads. It also had a new range of tropical hardwood aquarium decorations.

Tetramin Pond was launching a new pond fish food called TetraMin Pro. This is produced using a low heat process that

protects heat-sensitive vitamins. A tropical version was launched a few months ago and is already available in retail shops. The pond version will not be out until the new year. →



TAP's Algae pads.



Safapond makes life safer for children

Safapond Ltd is a new kid on the block but brought two products that every parent should think about installing in their pond. Safa-Deck is a grid which fits into your pond and is so strong a child can walk on it without falling through. Safa-Larm tells you when the little dears are mucking about where they should not be!

→ **Trident Water Garden Products** brought along its new products for this year including a range of water features including barrels and an urn.

TM International launched its Propolis cream which is applied directly to wounds on Koi or other fish. They also had a liquid food additive and a new Japanese food called Kazufo.

● Vitakraft have big plans for the UK.



● SafaPond has a new range of products every parent should think about installing in their pond.

Underworld has a new range of synthetic plants called SeaGarden Aquarium Decor. These are modelled on 14 real plant species and come in several different sizes. ■

Vitakraft has big plans

Vitakraft has the distinction of being one of the few aquatic companies established before Aquarist & Pondkeeper – 150 years old! It brought a new range of fish foods, test kits and water treatment products to display at GLEE. While few aquarists in the UK will recognise the Vitakraft brand name, it is well known on the continent and there are plans to make a big splash in the UK market.

Club News

PAT LAMBERT REPORTS ON WHAT MIGHT BE THE LAST YORKSHIRE AQUARIST FESTIVAL.



● Specialist society stands like these were a source of good information and some beautiful home-bred fish as well.

THE YORKSHIRE Aquarist Festival was held on August 19/20 at the Doncaster Racecourse Exhibition Centre. Attendance at this event was very much down on previous years, which was a big disappointment to all the Yorkshire aquarists who have worked so hard over the years, with great success in the past.

The venue was too large for the number of stands and traders who attended, and there were large, empty, open spaces. However, Aquarian had its large stand supporting the hobby as usual. David and Judith Kershaw did a good trade in old aquatic literature and in their latest venture into snakes. Wharf Aquatics had a stand selling rare and unusual fish as well as the 'bread and butter' ones. Specialist societies were there to give advice and information to hobbyists. They also sold home-bred specialty fish of the highest quality. Aquarist & Pondkeeper had a stand with a furnished aquarium

Wharf Aquatics did a roaring trade in rare and difficult-to-find fish. ●

of unusual species that attracted some attention. Exhibited in the tableaux were many fish of a very high standard.

Saturday night's barbecue was well attended and enjoyed by all. Steve Jones was the Chef for the night and a couple from Scotland provided the camp fire as the evening cooled down.

It is thanks to the efforts of the Yorkshire Festival committee spearheaded by Ray & Sandra Stansfield, Derek & Marie Harrop and Steve & Trish Jones that this event has been held for so many years. They have put on some great festivals – let's hope that this is not the last one. ■



Diary dates

Wed 1	Corby & DAS. Club meeting. Contact 01536 761736 Oasis Fish Club (Sunderland). Contact 0191 3841433
Thurs 2	
Fri 3	
Sat 4	
Sun 5	
Mon 6	
Tues 7	Gloucester F.C. Club meeting. Contact 01453 824810 Southend & Leigh Club meeting. Contact 01702 305740
Wed 8	Hounslow Club meeting. Contact 01784 259230
Thurs 9	Bristol Tropical Fish Club meeting. Contact 0117 9732145 Telford & D.A.S. Club meeting. Contact 01902 372945
Fri 10	

Major Dates in 2000

October 20-22

Supreme Festival of Fishkeeping, (FBAS) New Horizons, South Downs Holiday Village, Bracklesham Bay, Near the Wittering's & Chichester.

October 28/29

British Aquarist Festival, (FNAS) George Carnall Leisure Centre, Kingway Park, Urmston, Manchester.

Federation Contacts

AofA	Ian & Rhona Walker,	01252 668747
FBAS	Paul Corbett,	01983 721246
FNAS	Arny Chadwick,	0161 652 6207
FSAS	James Sheekey,	01475 704219
USA	John Reid,	01738 634689
YAAS	Terry Nelson,	01724 289736

Copy for A&P's Diary Dates

Copy for Diary Dates should be sent to: Aquarist & Pondkeeper, Winchester Court, 1 Forum Place, Hatfield, Herts AL10 0RN. Tel: 01673 885352 or fax 01707 276555. Copy deadline four weeks before publication date.

NOVEMBER'S SHOW, AUCTION AND CLUB MEETING DATES.

Sat 11	
Sun 12	
Mon 13	Ilford & D A&P Society meeting. Contact 020 8550 7329
Tues 14	Southend & Leigh Club meeting. Contact 01702 305740
Wed 15	
Thurs 16	
Fri 17	
Sat 18	
Sun 19	Oasis Fish Auction at Thompson Park Com. Centre, Off Newcastle Road, Monkwearmouth, Sunderland. Contact 0191 384 1433
Mon 20	Thorpe & D.A.S. Club meeting. Contact 01953 605394
Tues 21	Southend & Leigh Club meeting. Contact 01702 305740
Wed 22	Hounslow Club meeting. Contact 01784 259230
Thurs 23	
Fri 24	
Sat 25	
Sun 26	Viviparous - Livebearer Information Service Convention and Auction. Contact 01977 709790 or by email at White.Shark@btinternet.com
Mon 27	
Tues 28	Lincoln D.A.S. Club meeting. Contact 01522 703620
Wed 29	
Thurs 30	



Share your news, views and experiences through the A&P Postbag. Have you built a new pond, installed a new aquarium or revamped an existing set-up? Then send us the photographs and tell us how you did it. Every month the star letter wins a fantastic prize worth £25 – all for the price of a 27p stamp...

star letter

GORDON WIGGINS



Harald looking out of his newly completed palace.

Redtail project

I originally bought a Redtail catfish for my 2' community aquarium without realising just how large they grow. Since then I have moved it into a much bigger tank (8' x 3' x 3') and have now finished its permanent home – a 12' x 8' x 8' indoor pond. This has been constructed in what was originally my garage but the car now sits in the drive and my Redtail has the home he deserves. The pond has a large front glass panel so he (Harald as he has

become known) can see out and we can see him cruising around in his new palace. While we wouldn't be without Harald we have learnt our lesson and always read up on a fish before buying it. One 6' catfish, no matter how much we love him, is quite enough. The whole project has cost several thousand pounds to complete and our local Koi specialist was most surprised when we told him what we planned to keep in our newly constructed 'Koi' Pond!

Richard Bull, Lincoln

Hydra problem solved

Here's a useful finding for helping remove a serious pest when breeding fish. Occasional outbreaks of hydra have been a constant problem here while using *Artemia nauplii*. These constitute a threat to young fish and can be efficient competitors for the nauplii against juvenile fish.

The most recent outbreak was in an aquarium which had been set up to breed *Corydoras panda* and also to raise on some young *Telmatherina* sp. The next tank had been set up to breed Apple Snails, and there was a good population of young snails about 10mm in diameter there. One snail crawled its way out of this tank and into the tank with the hydra, where it was noticed and left alone because of the thought that some hydra may have attached themselves to its shell and would get further spread around in this way.

The remarkable thing is that within a few days the number of hydra had visibly been reduced. It was decided to place a few in a 30 gallon aquarium used for breeding halfbeaks which also had a heavy

infestation of hydra that hadn't responded to any treatment long-term. Within 48 hours the numbers had dropped significantly, and an hour before I typed this I watched a snail happily eat half-a-dozen hydra within a 15-minute period.

No chemicals, no heat treatment, just four young Apple snails. I'll watch things over the next few days to see what happens but this would seem to have potential to solve a problem that troubles a number of breeders I know.

Pete Liptrot, Bolton Museum, Art Gallery and Aquarium.

Not so pretty

I am writing to express my thorough disgust with the Bubble-eye poster you published recently. This fish looks so repulsive! When there are so many beautiful specimens available to photograph, the choice of such a monster is beyond my comprehension!

I am not someone who hates Fancy Goldfish and actually have a large aquarium in which I keep a shoal of very beautiful Goldfish of my own (I am

enclosing a picture of my tank). It is just these grossly deformed types that upset me. ■

J.A.M. Alvarez, Colombo, Sri Lanka



WINTER

Countdown to winter

ROY OSMINT LAYS THE FOUNDATIONS FOR A SAFE WINTER FOR YOUR FISH.

With rapidly diminishing daylight hours combining with that subtle yet unmistakable crispness that invigorates the evening air, summer finally begins to announce her intention to yield to the changing season!

For the water gardener the shortening days and bracing nip present a clear signal that the harsh conditions of winter may not be far away. Over the next few weeks as the pond gently slides towards its period of dormancy it is time to make some basic preparations for the punishing period ahead.

It is an indisputable fact that no matter how well balanced an ornamental pond may be, there will come a time when a complete strip-down and clean out will be required. It is not possible, nor wise, to attempt to generalise on how frequently such action may be necessary as this will be governed by a whole range of local circumstances. Suffice to say, as a basic guide, every three to four years will be fine.

Major clean-outs of this type carried out on a 'more than necessary' basis are,

in fact, totally undesirable and serve only to unsettle and disturb an otherwise well balanced pond system. However, when such action does eventually become necessary this, in my opinion, is the right time of the year to undertake it.

For the most part, provided your pond has been properly planned and constructed – that is to say well sited, of suitable size and appropriate depth, supports a good quantity and assortment of healthy plants and has not been overstocked with fishes – pre-winter preparations should be quite straightforward and non-disruptive!

Revitalise your pond

Partial water changes are a wonderful way of revitalising and refreshing the water garden at any time throughout the season. Now, as we prepare for the ravages of winter, it is an especially beneficial moment to carry one out. Using a siphon or a pump remove approximately 25 per cent of the water drawing it from the bottom section of the pond. This will extract the dirtiest water

along with a great deal of other accumulated detritus. Once this is accomplished, replace with tap water preferably treated with a good quality conditioning and de-chlorinating agent. This helps significantly to reduce the 'shock effect' upon fishes from the chemicals used in the purification process.

It is a very sound idea at this stage to cover the water garden with close mesh netting. This will prevent leaves entering the water which are then likely to decompose, generating toxic gases, a major threat to fish health during winter. This is especially so when there is an ice covering, as such gases are then unable to escape into the atmosphere.

Plants

As aquatic and marginal plants begin to die back, which in many cases is likely to coincide with the first frosts, trim off expired growth, remove dead foliage and generally tidy up the site. Bear in mind that some of the more hardy forms will often continue to flower up until Christmas and sometimes even beyond in favourable years. The Water Hawthorn (*Apogoneton distachyos*) is a good example of this sort of plant.

To avoid loss, any particularly tender subjects must be removed from the pond before the appearance of frost. These can then be over-wintered in a garage, greenhouse or other frost-free location. It is a good idea to lower into the deeper water areas of the pond any half hardy marginals such as *Lobelia cardinalis*. By placing these below the anticipated ice layer their chances of survival will be greatly enhanced.

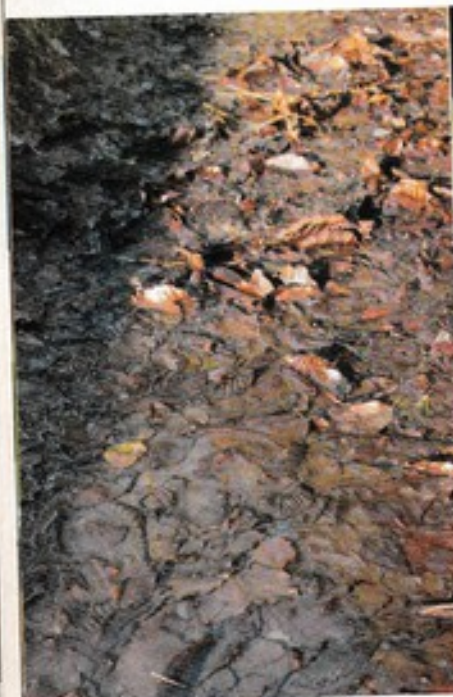
Leaves and spent flowers of old water lilies should be removed and their stems cut back as close to the base as possible. Next season they will sprout again from the root. Underwater oxygenating plants such as *Elodea* will now have served their purpose for this year and there is little to be gained by leaving the now straggly stems to become frozen in the ice. Cut them back severely now to within 15cm (6") of their pots. Next year they will come again, healthy and strong, to perform their vital function. =>

main picture: Trim foliage back to about 3" (7.5cm) after the first frost has killed it off.

left: Partial water changes are beneficial at any time of the year but are particularly important now.



GEOFFREY HUNT/NEWMAN PPD/SCIENCE



Fishes

→ All other things being equal, your fishes at this time of the year should be in superb condition. After a fruitful summer they will exhibit a powerful, sleek appearance and will have amassed considerable body reserves – qualities that will be required in no small measure to get them successfully through the demanding months ahead. If they enter this period in anything less than fine fettle chances are they may not survive through a severe winter!

Feeding desire will now gradually begin to diminish as the fishes' metabolisms start to slow, but continue offering it in appropriate quantities while any interest is still shown. Wheatgerm-based food is best at this time as it is more easily digested. It is not desirable for undigested food to languish in the body too long during this slow down period towards dormancy. Once the water temperature has dropped to a certain level feeding will stop. Normally no further food need be introduced after this until the following spring.

Equipment

Where electrical pumps and filters are to be shut down for the winter always remove, drain, clean and store strictly in accordance with manufacturers' recommendations. If the pump is left in

top left: A fine meshed net over your pond will prevent leaves from falling into the water and rotting.

top right: Water Hawthorn will flower right through to Christmas.

right: The water garden at Pensthorpe in autumn.

the pond make certain it is sufficiently deep not to become trapped in ice and also run it occasionally so as to ensure the bearings remain free. Remember, a disconnected pump releases a very convenient electrical supply to which a small pond heater can then be attached. This is very useful during freezing conditions to ensure that at least one area of the surface always remains ice-free. A vital consideration! Allowing life-giving oxygen to be absorbed into the water while at the same time permitting potentially injurious gases release into the air.

Winter will almost certainly place many heavy demands on the water garden and its inhabitants. In anticipation of these we should seize the opportunity that autumn offers to make ready. By undertaking a few simple maintenance tasks together with some basic preparations over the coming weeks the chances of safely overwintering our livestock can be significantly improved. At the same time we will be laying the foundations for a trouble-free spring next year! ■



Ultraviolet

THE MODERN WORLD OF AQUARIUM FISH KEEPING HAS SPAWNED A NEW GENERATION OF EQUIPMENT. ALL OF IT HAS ITS USES, BUT MANY AQUARISTS ARE CONFUSED AS TO WHAT IT DOES AND HOW IT WORKS. IN THIS REGULAR LOOK AT AQUARIUM TECHNOLOGY WE AIM TO UNRAVEL THE MYSTERIES SURROUNDING THIS AREA OF OUR HOBBY AND SIMPLY EXPLAIN WHAT CAN SEEM LIKE ROCKET SCIENCE TO THE AVERAGE AQUARIST.

The theory

High levels of ultraviolet light can cause serious damage to living organisms and in extreme cases will be lethal. This fact has been well publicised in recent times because of the risk of skin cancer to sunbathers caused by UV light in the sun's rays.

The level of damage will depend on both the intensity of UV rays and the duration of contact. So long term exposure to even low levels of UV can

cause far more damage than a fleeting contact with fairly high levels.

What happens at a cellular level is that the DNA is disrupted. In humans this can lead to cancers developing as the cells fail to replicate correctly, in smaller organisms, such as bacteria and algae, the damage may be so severe that they die during cell division or the chlorophyll sac may rupture killing algae instantly. Either way green water becomes clear, numbers of bacteria are reduced and even larger parasites may be killed outright.

UV light generation

Ultraviolet light can be generated in a number of ways. The aquatic industry uses a form of mercury vapor lamp. Since normal glass will absorb almost all UV light another substance has to be used to encase the mercury vapor - Quartz glass. There are two forms of this available. One allows UV light down to wavelengths of 184nm to pass through. This is fine for an incandescent light fittings but will produce harmful ozone if used in an aquarium setting. For this reason a different form is used which absorbs UV light at wavelengths below 220nm so preventing the formation of ozone.

Another problem with UV is that it only penetrates a few centimeters into water. This means for it to be effective, water depth must be kept to a minimum. In UV units the water passes through a glass sleeve which is just a little wider than the UV light bulb. This shallow depth means that sufficient UV light will penetrate through all the water to have the desired effect.

Clarifiers vs sterilisers

It is important to remember there is a distinct difference between a UV Steriliser and a UV Clarifier. A clarifier is designed to destroy single celled algae. This takes far less UV than would be needed to destroy larger parasites.

For this reason water can flow through them at a much higher rate and the bulb wattage can be fairly low. A typical 30W



above: The Vecton UV15 UV Water Steriliser is available from TMC.

Sterilisers

clarifier can handle a flow rate of 1800 gallons per hour and is designed for ponds up to 6000 gallons.

UV sterilisers are designed to destroy both bacteria and parasites. They tend to contain higher wattage bulbs or need slower flow rates to be effective. A typical 15 watt steriliser will have a flow rate of 95 gallons per hour. A new version can handle much higher flow rates (over double) and is just as effective as the old type.

After about 5000 hours of use the bulbs UV output will dramatically fall off rendering the unit useless. If it is a clarifier then all that will happen is your green water will return but if your steriliser fails the consequences may be more serious. For this reason it is important to keep a record of your bulb's use and replace it when its 5000 hours is up. As a guide aim to replace your bulb

every six months. Most pondkeepers replace the bulb at the beginning of each season. This means that for at least part of the year it is not really effective but this coincides with autumn/winter when algae is not a problem.

Positioning a UV

If you have a UV clarifier it can be incorporated either before or after the filter unit. Some people think placement after the unit is best, since this will make sure the water has little solid matter in it and UV penetration will be at its maximum. Others feel you should filter out the destroyed algae before returning the water to your pond. UV sterilisers are positioned outside the aquarium for ease of maintenance.

You may hear rumours of side effects from using UV sterilisers all the time. In

fact it is impossible for them to do your aquarium inhabitants any harm whatsoever. All they do is reduce free floating algae, bacteria and parasites. For this reason they are considered a vital part of any well run wholesaler's setup these days and most marine aquarists would not be without one.

Freshwater aquarists have yet to catch on to just how useful they can be. By attacking the free swimming stage of parasites they prevent re-infestation without the use of chemicals. With fish sensitive to chemicals like members of the *Botia* genus this can be a safe way to treat whitespot, velvet and the like. ■

below: Even freshwater fish can benefit from the inclusion of a UV Steriliser.





PHOTOS: MARK GIBBS UNLESS INDICATED

Delightful Danios

LINDA LEWIS HIGHLIGHTS A FEW OF THE MORE COMMON DANIOS FOR YOUR AQUARIUM.

Do you ever wonder about the people who gave some of our most popular tropical fish their common names? I do. The small group of fish known as Danios are a case in point. The most popular is, of course, the Zebra Danio. When I think of a Zebra I think of a sedate animal, only given to a turn of speed when it's being chased by a Lion. I also see vertical stripes. The Zebra Danio (*Brachydanio rerio*) has stripes, but they are most definitely horizontal. It is also one of the most restless, active fish that you can get, only becoming still when it is ill or in the middle of the night.

The famous stripes are not black and white. Look more closely and you will see a rich, dark, deep blue overlaid on to a silvery background. Male Zebras in good condition are different again. Their stripes are laid over a rich golden background, although this is more noticeable in some light conditions. While you are looking closely at these fish, try to spot the fine, hair-like barbels, which are found on the fish's chin. They are extremely slender and very easily overlooked.

To keep a Zebra Danio happy is easy. Give it plenty of company, at least a group of six is best, lots of uncluttered swimming space, so it can use up some of its energy, and food. Any food. Zebras are not picky eaters. They will eat anything they can get into their mouths, including catfish pellets. Do not be fooled by their

upward pointing mouths. The books may tell you this designates a surface feeder, but Zebras don't read books. They eat from the top middle and bottom layers – anything and anywhere. Space and company are essential or Zebras may well vent their frustration on other fish by constantly chasing and harassing them, even to the extent of fin nipping.

How do you breed Zebra Danios?

You don't really have to. They will just get on with it, even in a well-stocked community tank. The spawning is often an en masse affair, with groups of males chasing females at an alarming rate in, round and through the plants. Eggs and sperm are simply dropped meaning that the majority of eggs become fish food. The worst egg eaters are the danios themselves. If you are lucky, and the tank is roomy and well-planted, some fry may escape and grow. However, it is best to lend a bit of a hand. A separate breeding tank with shallow water is a good idea, as this allows you to select your best fish rather than relying on chance. Less water allows eggs to reach the protection of the substrate that little bit faster giving the adults less time to catch and eat them. Using marbles or pebbles instead of gravel in the breeding tank gives eggs

more crevices and nooks to fall into away from the parents' greedy mouths.

If you remove the adults once you see that spawning has taken place (even more frantic activity than normal) you can then use the breeding tank to raise the young. The eggs are tough and most will hatch. Once fry are free-swimming, it's time to begin to feed. Liquid fry food will do nicely followed by newly-hatched Brine shrimp. Even crushed flake food will bring results, although a proper fry food is better. Much like dogs, Zebra Danios always appear hungry when food is offered. Beware of this. They may look hungry, they may eat as greedily as ever, but excess food will just go straight through their bodies, undigested, and end up polluting the tank.

Variations on a theme

Often found, and kept with Zebras, Leopard Danios also bear little resemblance to their namesakes. They do have spots but are not at all leopard-like in colour or habit. In behaviour they are just the same as Zebras. This is not so very surprising. The two fish are actually the same species, just different variations. To verify this, simply breed Zebra males with Leopard females. You will end up with some Leopard-like fry, some Zebras and others which are a mixture of the two. Once called *Brachydanio frankoi*,

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top from left to right: Bengal Danios are one of the largest of the group, yet still make good community fish.

Pearl Danios are possibly the most beautiful of the group.

Giant Danios are best described with a photograph! Leopard Danios are actually the same species as Zebras.

you may still find Leopards sold as such, but they are really *B. Revio*.

Leopards and Zebras are not long-lived. They live life at a fast pace so a couple of years is a good innings for one of them. This does mean, however, that there is little point in buying full-grown fish, for they may not have too many more months to live. Go for smaller, cheaper, fish. Then you can enjoy watching them grow.

Many people use the small danio species to break in a new tank. They are ideally suited to this job because they are really rather tough little fish and will put up with a much wider range of conditions than many other fish. Ideally they prefer a temperature between 23 and 27°C (74-81°F), but they will adapt to a temperature range of 18 to 30°C (65-86°F). As usual, avoid sudden changes in temperature as it is these that prove stressful and eventually fatal.

Precious pearls

Possibly the most attractive of the danios is the Pearl Danio (*Brachydanio albolineatus*). These reach a length of about 6.5cm (2.5") and are a bit less boisterous than Zebras. The body is a subtle mix of colours, mother of pearl hues that seem to shift and change with the light intensity and direction. As with Zebras, females tend to be plumper than males and their colours are less intense. Again, they need room and company. Not quite as easy to breed, they may need an increase in water temperature – to 26°C (78.8°F) – to prompt them to spawn, otherwise their care is very similar.

Giants – well not quite

The next Danio to be looked at here is not seen as often as maybe it should be. Perhaps its strange name puts people off which is a shame. It is called the Giant Danio (*Danio aequipinnatus*) which is totally inappropriate as it only grows to about 10cm (4") – hardly a giant in anybody's language. Giant Danios are best described with a photo. They have a beauty which is hard to capture in words. The flanks are covered with golden

stripes, both horizontal and vertical. These are broken up into blotches of various sizes and are set against a blue background. Different colour variants also turn up occasionally.

Another active fish, Giant Danios again need lots of company and plenty of room. They lay, without much prompting, up to 300 tacky eggs. Putting a couple of spawning mops in the breeding tank will almost certainly catch you some eggs. Fry hatch in around 36 hours and are easy to raise, as long as they are kept well fed.

Popular for decades

Zebra Danios have been popular for decades and have maintained their top 20 position despite competition from many other, more exotic fish. The reasons for this are simple. They are numerous and easy to breed. This keeps the price down. Another reason is because they are so very active and therefore give huge entertainment value as well as value for money. Finally, and perhaps most important, they are undemanding and easy to keep, making them an ideal beginner's fish.



One of the largest

At up to 15cm (6") in length, the Bengal Danio (*Danio devario*) should, arguably, be called the Giant Danio as it is the largest of the group which is regularly imported. It, however, seldom reaches its maximum size in captivity, 10cm (4") being more usual. This species was once popular but is no longer so. This is another fish which, thanks to its delicate colouring, is hard to describe. It has an aquamarine top and a silvery underside but it is the subtle markings that add the finishing touch – a mix of blue bands and yellow markings.

Why it has become unpopular is unclear. It may be because it only shows its beauty when settled and therefore does not look at its best in the often unplanted tanks of a retailer. It is also more timid than the rest of the Danios and needs a bit more consideration especially as regards water temperature. This should be kept in the range of 24-26°C (75-79°F) if the fish are to bloom. Bengal Danios also need company and may pine away if kept alone.

If you are just starting out in the aquarium hobby and are looking for a tough little fish that will cope with the odd beginner's mistake, or if you are a seasoned campaigner, there is a Danio out there for you. Why not give them a go? I feel sure you won't regret it. ■



A breeder



Young eight-year-old Robin accompanied his parents on visits to the aquarium where he became fascinated by the fish he saw there. He wanted to keep fish himself but his father (the vet consulted by Bolton Metro Aquarium) insisted that he find out how to care for them first. They visited various local shops looking at the quality of the stock and information on offer for three months before Robin was considered ready to become a fishkeeper.

He bought his initial stock from Paul at Fintastic (this wonderful shop has now

closed due to Paul's ill health). Paul gave him good advice and helped him as much as he could in his beginning fishkeeping days. Robin's first tank was 3' long in which the usual community fish were kept, his very first purchase being five young Platies.

At the ripe old age of eleven, Robin purchased a second tank. A little later, more tanks followed and a stable was used to house the 10-12 tanks that he now possessed. At this time he was helping out at Fintastic where he worked for about three years over weekends,

Flag Cichlid, *Laetacara curviceps*

This is just one of several species of Dwarf Cichlid Robin that has spawned. Here we can see a male caring for his eggs. As adults they grow to only 8cm (3") and can be kept in a normal community aquarium without any problems. For breeding purposes they are best kept as a pair in a separate breeding tank.

lapart

PAT LAMBERT MEETS ROBIN BARTON, A 17-YEAR-OLD FISHKEEPER WITH A PARTICULAR INTEREST IN BREEDING FISH.

Bolivian Butterfly Cichlid, *Microgeophagus altispinosa*

This species spawned for Robin but he has yet to rear any of the fry. A good spawning can number 500 eggs which the female is supposed to tend. Sadly a lot of Cichlids eat the first few broods before settling down to rear a brood of young.

meeting people who were deeply into fishkeeping and learning a great deal. He also acquired most of his stock of unusual fish while there. At this time he was popping in to Bolton Metro Aquarium to see what was happening there as well, chatting to Peter and Tim who run the public aquarium. Both are very knowledgeable aquarists who were only too willing to help a budding aquarist.

Timely success

Robin's interest grew and fish breeding became the focus of his interest. Robin has bred many species of fish

including rare, seldom bred species. His particular interests are Characins and Dwarf Cichlids but if he sees a species and is attracted by its looks or mannerisms, his main aim is to breed it. Robin was one of the first to breed *Moenkhausia 'Columbia 95'* shortly after it was imported.

What was Robin's most memorable experience in fishkeeping? Spawning of *Ctenopoma hajeta hajeta*, one of the Pike Characins. "On entering the fish house on Monday morning," he said, "I noticed the cover glasses on the tank seemed misted up, but on closer inspection it was in fact covered →"





Checker Barbs, *Barbus oligolepis*

Checker barbs are considered one of the easier egg scatterers to spawn. Here we can see a pair courting. Spawning pairs flip over on to their sides and press against each other as eggs and milt are released. Since most Barbs are avid egg eaters you need to be on hand to take the adults out as soon as spawning has finished.

→ with eggs. Several thousand eggs were covering the cover glasses and the splash zone." Robin's article on spawning this fish was published in the February 1999 issue of *Aquarist & Pondkeeper*, when he was just 15 years old – few aquarists this young have ever been published here.

Robin has a strict feeding regime. Youngsters receive newly-hatched Brine shrimp twice daily and the adults have two feeds, one of flake and one of frozen foods. Robin recommends frozen foods as his fish have done very well on them.

Because the fish that he breeds are mostly of the unusual species and of good quality, he has experienced no problems in selling his surplus stock.

More space for expansion was required but it was not until his parents moved house last year that Robin was able to begin his Fish House Project. Next month Robin will tell you how he set about creating his new fish room. ■



below: Robin beside the family pond. This is mainly inhabited by Goldfish but there is plenty of wildlife coming and going all the time.



The Foxface

(*Lo vulpinus*)



BY DAVE GARRATT

The Foxface is usually the only member of the Siganidae Family seen for sale within the hobby, and even then not on a very regular basis. I have no idea why this species or its cousins are uncommon as the Foxface certainly has a number of attributes that make it worthy of consideration for many marine tanks, including those of beginners. The Siganidae are a small Family of fish found in Indo-Pacific locations where they may be caught for food. They have laterally compressed bodies and their facial shape and features are supposedly similar to that of a rabbit hence the Family's common name of Rabbitfish, although the Foxface is different in this respect due its protruding snout-like mouth.

The Rabbitfish are closely related to the Surgeons and share the characteristic of venomous spines with this group of fish. However, the Rabbitfish have a greater number of spines on the anal and pelvic fins, but unlike the Surgeons they have no caudal spines. The spines are sharp and venomous and will cause painful wounds to unsuspecting human fingers or hands, so they must be treated with respect.

The Foxface with its striking black and white facial features bears a closer resemblance to its less common name of

the Badgerfish than to its common name of Foxface. Whatever you choose does not alter the fact that its facial marking and contrasting bright yellow body colour make for a very striking fish. The yellow colour is brighter in juveniles than in mature fish. I can find no record of this species spawning in captivity.

The Foxface, like all Badgerfish, is a herbivore and this must be catered for in its aquarium diet. It will readily adapt to such a diet and will also accept flake food but the diet must be supplemented with a vegetable content, for example, blanched lettuce and herbivorous commercial foods. It may reach 12.5 or 15cm in captivity (up to 25cm in wild) and is a very active fish requiring plenty of swimming space. The species is a peaceful fish but will not mix with its own kind and it cannot be trusted with sessile invertebrates. The specimen I kept was an excellent community fish and held its own with other boisterous tank mates. If it was threatened it would adopt a head down stance with its dorsal spines fully extended and pointed towards the aggressor, who then very sensibly backed off. However, if truly stressed, such as when first added to the tank, it played dead by resting on the bottom of the tank, propped against a suitable rock and

CV

Family:	Siganidae
Species:	<i>Lo vulpinus</i>
Origins:	Indo-Pacific
Aquarium type:	Community but not with own species or sessile invertebrates.
Feeding:	Herbivore; accepts a normal aquarium diet but needs a vegetable supplement.
Size:	12.5-15cm in captivity, to 25cm wild.
Difficulty:	Active, hardy, relatively easy fish for beginners.

changed body colour to a mottled brown, returning to normal after a short while.

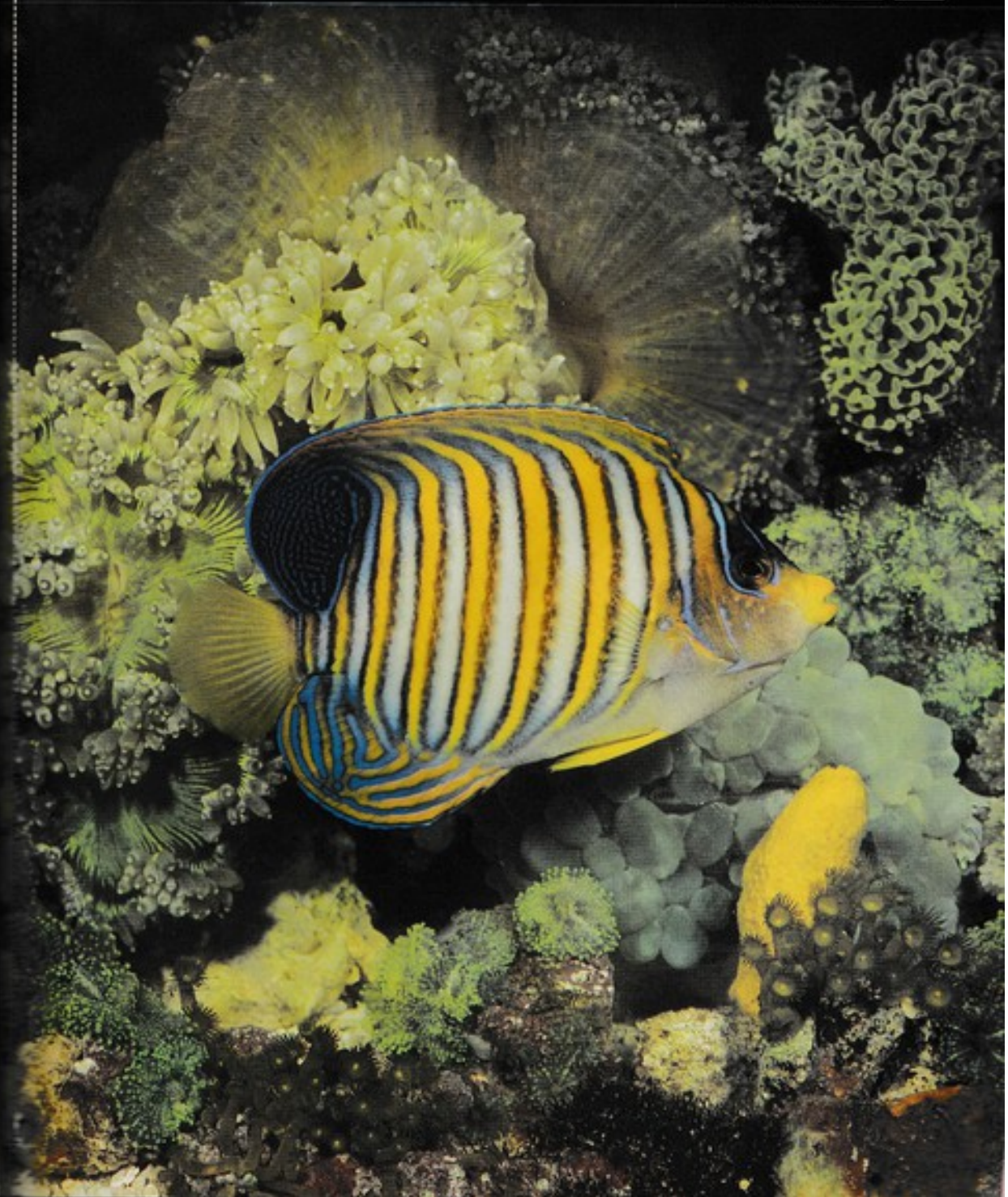
The Foxface can be regarded as a fairly hardy species that is easy to keep, feed and find tank-mates for, while being active and colourful. All in all it should make a good choice for a beginner. ■

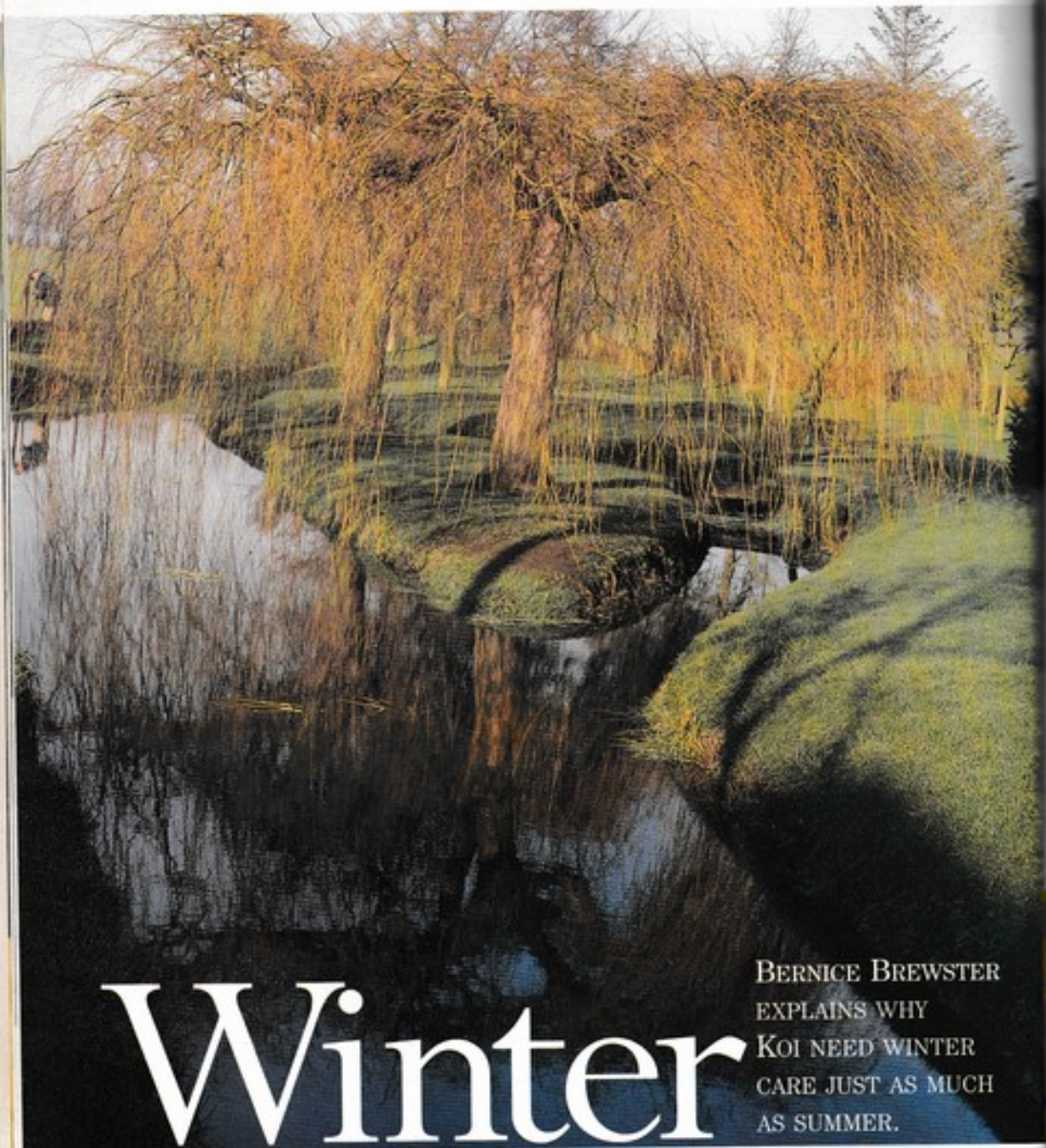
Regal Angelfish

(*Pygoplites diacanthus*) SIZE 10"

AQUARIST
AND PONDKEEPER
GALLERY

PHOTO: AREND VAN DEN NIEUWENHUIZEN





Winter

BERNICE BREWSTER
EXPLAINS WHY
KOI NEED WINTER
CARE JUST AS MUCH
AS SUMMER.

Koi Care



Winter should be a rather quiet time in terms of maintenance work on the Koi pond. In colder weather, Koi are relatively inactive and once the water temperatures drop below about 8°C, they cease feeding. This does not mean that we should ignore the pond or our Koi for the coldest period of the year. It is important to visit the pond on a daily basis, to ensure that pumps are still running and in icy conditions that none of the pipes have fractured.

Gas bubble disease

We are very aware that in the summer months, oxygen is only sparingly soluble in the warm water but in the winter months, air is readily soluble in water. It is, therefore, worth checking that there are no holes or leaks in pipes or sand filters, where air can be drawn into solution under pressure, often called 'air entrainment'. Where there is too much air dissolved in the cold water, it causes a problem known as 'gas bubble disease', which is very similar to decompression sickness or the bends, which can affect human divers.

Gas bubble disease can be difficult to detect in the early stages but is recognised by the formation of gaseous bubbles in the fins and around the eyes in the later stages of this environmental problem. As strange as it would seem, the water in the pond needs to be sprayed or better still struck by a solid object to help disperse the dissolved gas. The source of air entrainment should be found and rectified. Most fish will recover from gas bubble disease, providing it is correctly identified.

Correct cover important

In order to prevent the water from becoming too cold in the winter months, many hobbyists prefer to cover the pond. Often plastic, such as bubble wrap or polythene covers, which float on the water surface are used as insulation. Whilst this type of insulation retains some of the heat in the water, it does cut down the surface area available for gas exchange. Oxygen is not a problem at this time of the year because air is readily soluble in water but the covers can prevent the waste gas carbon dioxide from escaping from the water. Dissolved carbon dioxide can be quite harmful to the fish and will certainly cause the pH

Blanket weed war!

Blanket weed is a permanent problem in Koi ponds in many parts of the country, causing many hobbyists to resort to chemical treatment to eradicate this nuisance algae. It may be quite surprising to realise that the best time to start any chemical treatment for blanket weed is in the late winter. Blanket weed actually begins to grow as soon as the day length begins to increase, which is very early in the year. Most of us begin to treat the blanket weed once the summer has arrived but this nuisance algae has already begun to thrive and is well established at this time. By commencing any treatment earlier in the year, the growth of the algae is retarded, which will make it easier to control once the warmer weather arrives.

to become depressed and the water to become more acidic. It is better to cover a pond by building a timber frame, raised above the water surface and with ventilation. This method will keep the pond water warmer but will allow air to circulate over the water surface and carbon dioxide to escape. Overall a much more healthy environment for the Koi!

Although Koi are relatively inactive in winter, they still produce ammonia as waste and it is good management practice to continue routinely monitoring the water conditions. It can be very easy for pipes or filters to become congested and go unnoticed, leading to water pollution and sick Koi. Even in the winter months, mechanical filters such as brushes should be kept clean and free of organic detritus, which can potentially lead to pollution with ammonia. In the event of a fish becoming sick, or even dying, it is always worth testing the water, if only to eliminate the water quality as the cause of the problem. ■



main picture (left): Ponds in winter are quiet tranquil places.

below left: Gas bubble disease can be seen as silvery bubbles lodged in fins and around the eyes.

bottom left: Many Koi keepers prefer to cover their ponds in winter to prevent ice forming a solid sheet over them.

below right: At below 8°C Koi stop feeding. Who said? I am still hungry!

RONICE BREWSTER, BRIAN BEVAN, GAVIN BEVAN





MORE HELP ON GETTING THE BEST FROM YOUR AQUARIUM...

This month we have another Dutch 'aquatic garden' for you. Once again it is a 200cm x 50cm x 50cm aquarium although this time it has been fixed directly to a wall. This has the advantage of leaving plenty of space underneath for the cat basket but you have to make sure the wall is capable of supporting such a huge weight.

Drifts of the same species have been planted to create a patchwork quilt effect and single specimen plants have been spot planted to good effect. Bogwood has been used to add structure to the set-up but differing heights have primarily been achieved by using low growing species in the foreground and taller plants towards the rear.

As with most Dutch-style aquaria, fish are present but not in huge numbers.

Clown Rasboras, Emperor Tetras and Pencil fish have been included in this aquarium. As with the planting it is best to have a shoal of any species rather than one or two. Even those fish not classically thought of as shoaling species still look better when kept in a group.

Three keys to success

Looking at a set-up like this most British aquarists would think they could never create such an aquarium themselves. In fact you can – all you need is the correct lighting, fertiliser and carbon dioxide.

The lighting in this aquarium will consist of at least six tubes of 30 watts each. These will normally consist of daylight tubes, with a spectrum designed to mimic daylight, and possibly two tubes designed to enhance the fish and plant colours. They may also have included a moonlight-type tube. This will be used when all the other tubes are off to recreate the effect of moonlight and encourage nocturnal species out where their owners can see them. While designed for marine aquaria they can still be a worthwhile addition to a freshwater tank.

Fertilisers for aquarium plants can now readily be purchased at your local aquarium shop. Never be tempted to use those designed for house plants and always dose at the rate suggested. Too much can cause more harm than good. If your plants start to turn yellow it is probably caused by an iron deficiency and a good fertiliser will solve this problem. Some substrates also have fertiliser built in and these are the best way to start your plant orientated aquarium. They provide nutrients direct to where they are needed – at the roots.

Carbon dioxide is vital to growing plants. Having fish in your aquarium will provide a source of this vital compound but with so many growing plants in such a small space you will need to subsidise the set up with carbon dioxide. There are several companies which provide complete CO₂ systems including AquaMedic and Bio Plast.

Provided you make sure you look after the three keys to success, a living aquatic garden like this can become the focal point of your room. It takes time and you still need to prune and weed your underwater garden but it is well worth the effort. ■



Have I got newts for you

BOB AND VAL DAVIES REACH THE LETTER N IN THEIR A-Z ON AMPHIBIANS AND OFFER SOME USEFUL ADVICE FOR BEGINNERS.



The name 'newt' comes from the Anglo-Saxon *efete* or *evet* which became *eft* in Medieval English. The word 'eft' from the same source is used for the young of the American red-spotted newt (*Notophthalmus viridescens*). Newts belong to the family Salamandridae which includes the Fire salamanders (genus *Salamandra*) and the Brook salamanders (*Euproctus*). All tailed amphibians are

often referred to as salamanders but the name newt is applied to species that return to the water each spring to breed.

Most familiar are newts of the genus *Triturus* which contains our three British species: the Common or Smooth newt (*T. vulgaris*) the Palmate newt (*T. helveticus*) and the Great crested newt (*T. cristatus*) plus six others. The USA has two genera: the small *Notophthalmus* (four species) and the larger *Taricha*.

Of the three species of *Taricha* the best known in the hobby is the Californian newt (*T. torosa*). Once commonly imported, it is rarely seen these days. The skin secretion of this species is exceptionally toxic but there are no reports of it affecting keepers.

Also known as newts are four Asian genera: the Hong Kong newt (*Ptychocheilichthys hongkongensis*); the Paddle-tail newt (*Pachytriton brevipes*),



main picture left: Marbled newts are one of the most attractively coloured of all species.

from top: Red-spotted newt – juveniles are known as 'red efts' because of their colour.

Dwarf fire-bellied newt – a cheap and easy subject.

Montandon's newt (*Triturus montandoni*) – a European species occasionally available.

the Spiny newt (*Echinotriton* spp) and the Fire-bellied newts (*Cynops* spp) The first two are regularly on sale but Spiny newts are seldom if ever seen and very little is known about them.

Alpine and Marbled newts

The genus *Triturus* is widespread in Britain and Europe, even extending into Western Asia. Nine species and numerous subspecies occur. The Alpine newt

(*Talpestris*) and the Marbled newt (*T. marmorata*) are possibly the most attractively coloured of all the newts. Also found in Spain and North Africa is the genus *Pleurodeles* with only two species, one of which is the Ribbed newt (*P. waltl*). Once widely kept, their popularity seems to have waned although they are occasionally offered for sale. *Pleurodeles* species are often referred to as ribbed salamanders.

Like other amphibians newts are secretive, mainly nocturnal creatures. Their soft skin is permeable to moisture and is used as a secondary means of respiration. Because of this they seek out cool, moist conditions to avoid desiccation. The skin produces secretions that are unpleasant tasting or toxic to predators although some predators can eat newts without being harmed. ■

Amphibians for beginners



Over the next few issues we will look at the requirements for starting to keep amphibians and will examine the suitability of various species. Many people move on to keeping amphibians and reptiles after having kept fish or even alongside being an aquarist. Old, unused aquaria are often pressed into service and switched into amphibian housing. A word of caution: these should be thoroughly sterilised with a weak bleach solution and given a good rinsing to avoid the risk of disease. Other items such as filters and heaters are usually at hand if needed. Some of the most commonly kept amphibians are likely to be seen in tropical fish outlets rather than in specialist reptile dealers' shops. These are the Hong Kong newt (*Paromesotriton hongkongensis*), the Dwarf fire-bellied newt (*Cynops orientalis*) and Dwarf clawed frogs (*Hymenochirus* spp). All are relatively cheap and fairly easy to keep provided basic rules are observed.

Start with hardy species first

Complete beginners are advised to try their hand with hardy species before moving on to more exotic ones. The advantage of hardy amphibians is that no heat is required. All that is needed is a suitable vivarium and the materials to furnish it. Furnishing need not be elaborate for most species; certain amphibians will quickly wreck a carefully landscaped vivarium. A few amphibians such as Axolotl and Clawed frogs are totally aquatic and need an aquarium set-up – even plants are optional.

The most important point when starting with amphibians is to think carefully about all the implications. A basic rule is that the vivarium must not be sited in direct sunlight otherwise the occupants will be baked as the heat will build up in a greenhouse effect. Secondly, the vivarium must be as large as possible for the species. This depends on the number and size of creatures to be kept – overcrowding soon leads to pollution and disease. Small vivaria soon become polluted.

Three-lined Pencilfish

(*Nannostomatus trifasciatus*)



BY IGGY TAVARES PHD

N*nannostomatus trifasciatus* (Steidachner, 1876), the Three-lined Pencilfish, is aptly named to denote the three horizontal black lines on a pale pinkish brown body. Red spots on the fins add further colour to these small fish which can grow to 6cm. Both male and female are equally colourful, but can be told apart because adult females tend to be plumper. The Three-lined Pencilfish are found in the feeder streams of the middle Amazonian basin as well as British Guiana, where the waters are soft and acid containing lots of submerged vegetation including grass. The Three-lined Pencilfish is comparatively more abundant than the other species of Pencilfish. Most Pencilfish that appear in the shops are probably wild fish, as the tiny Pencilfish fry can be difficult to raise.

The Three-lined Pencilfish is by nature a shy retiring fish. Shoaling fish always find security in numbers and hence one way of encouraging the Three-lined Pencilfish is to have several of them. Another way of offering security is to have plenty of hiding places that shy fish can take refuge in, which in this case would involve having a well planted tank.

PHOTO: IGGY TAVARES

Other members of this tank have to be small and not too bolsterous. They could be some of the smaller Tetras such as Neons, Cardinals or Glowlights to name but a few. Under such conditions, the Three-lined Pencilfish should show itself in its prime colours. The soft, mildly acid to neutral water should be maintained between 24-28°C, and should be well aerated and filtered. If the Three-lined Pencilfish is a wild-caught fish, it will definitely show a preference for live food and might have to be coaxed into eating flake. In the absence of live food, some small frozen food such as Bloodworm should be offered occasionally.

Bearing of the fry is said to be difficult but probably no more so than many small egglayers. Male and gravid females should be introduced into the prepared tank at night and should deposit their eggs on the underside of plant leaves at first light. The parents are removed after spawning. For success, one needs very soft water in the spawning tank and for the eggs to be maintained in darkness until they hatch and the young are free swimming. Eggs hatch in about a day, but require another few days to reach the free swimming stage. One should have sufficient

CV

Family:	Lebasiinide
Species:	<i>Nannostomatus trifasciatus</i>
Origins:	British Guiana, middle Amazonian basin
Aquarium type:	36" high community tank
Feeding position:	Surface and mid-water
Size:	5cm
Temperature:	75-80°F
Diet:	Flake, live and frozen foods

prepared infusoria to feed the hungry fry if they are to survive. This can be followed by newly hatched brine shrimp after about a week.

The Three-lined Pencilfish is a shy Amazonian beauty, which can be encouraged to show its full potential if kept in a shoal in a nicely planted aquarium. ■

Blood-red Jewel Cichlid

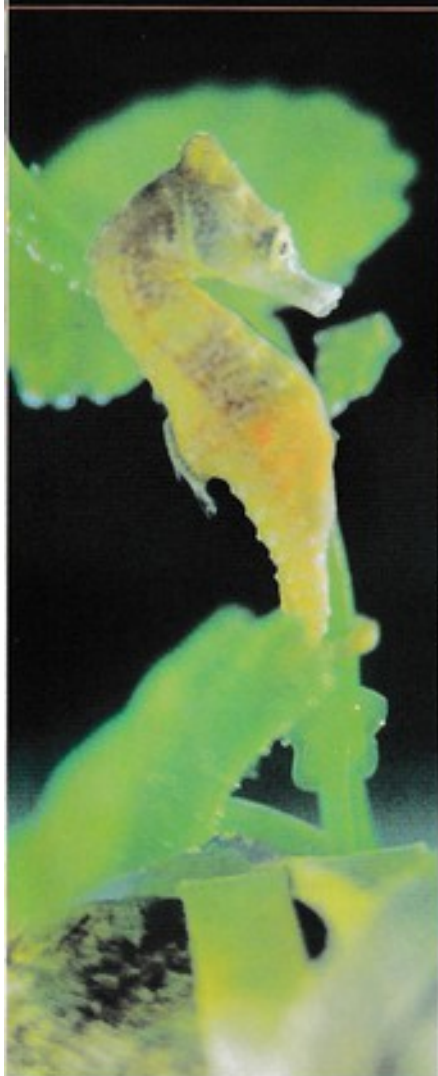
(*Hemichromis lifalili*) SIZE 4"

AQUARIST
AND PONDKEEPER
GALLERY

PHOTO: M.P. & C. PIEDROSE



Miniature marvels



SERGIO RIVERA/AGF/ISTOCK/SCIENCE TV

SEA LIFE CENTRES PLAY AN IMPORTANT ROLE IN CONSERVATION. A&P SPENDS A DAY AT GREAT YARMOUTH LOOKING INTO THE SEA HORSE BREEDING PROGRAMME.

Sea Life Centres are strategically located throughout the UK and provide a wonderful window to the aquatic world. As you wander through the various halls you pass an outstanding range of exhibits that really show our native marine life off at its best. They also contain touch pools where you can actually stroke stingrays and other tame fish as well as see many tropical fish living in surroundings very similar to their native habitats. I was particularly impressed with the mangrove swamp exhibit where archer fish rubbed shoulders with monos and other brackish water fish.

Originally set up to home in on people's interest in aquatic life, concentrating on the spectacle of walk-through displays containing sharks and

the like, Sea Life Centres now have a much more important conservation role to play. Through their SOS (Save Our Seas) campaign, sea turtles, seals, otters and sea horses are all cared for at various centres throughout the UK. Great Yarmouth is involved with turtles and sea horses and it was to see their new sea horse breeding programme that A&P visited this location.

Sea horses are some of the most endearing and instantly recognisable fish in the world. Sadly these two qualities have led millions of them to an untimely death embedded in glass paperweights and other cheap

right: Weedy sea dragons are very strange looking fish, but if you look closely they are still basically sea horses.

souvenirs. This trade alone would not have caused too many problems for these wonderful fish but add it together with the tens of millions taken every year for traditional Chinese remedies and numbers started to decline at an alarming rate.

Several species are now considered to be in trouble in the wild and captive breeding programmes are underway all around the world. Currently five species of sea horse are being cared for at Great Yarmouth: *Hippocampus adonivalis*, *Hippocampus fuscus*, *Hippocampus reidi*, *Hippocampus kuda* and *Hippocampus capensis*. Staff are looking forward to seeing their first little 'ponies' any day now. Another exciting event will be the arrival of a pair of *Hippocampus teaniolatus*. These strange creatures are still basically

sea horses but have weird extensions over much of their body, hence the common name of weedy sea dragon.

Looking to the future, a coral propagation unit will be added next year and other conservation displays may follow. Much of this work is sponsored by commercial companies. Aquatic Solutions supplies Kent Sea Salt, D&D Marine Skimmers and Flowtrons, Seabray tanks are used to house the sea horse breeding project, and Henderson Plastics have provided the tubes for filters.

All in all, a wonderful partnership that will make a real difference to species survival in the long term. ■

A&P would like to thank Richard Briggs for kindly showing our team of aquarists around Great Yarmouth Sea Life Centre.



DISCUS

Discus



WATERGARDEN

When confronted by a tank full of young 2" Discus in a shop or breeder's fish house it can be very difficult for the hobbyist purchasing his or her first Discus to select the best fish. Hopefully this article will give some tips to help you choose what should later grow into beautiful fish.

First of all, always remember that Discus are a very strong shoaling fish and if you buy two young ones out of a shoal of, say, 50 in a tank, then you will most certainly have problems. Discus, particularly young ones, should always be kept in a shoal of at least six or they become very nervous and insecure.

left: This young discus has yet to develop its full colouration but is still an attractive fish.

below: At 4.5-5 months old, the young Discus will be approximately 3.5" body size.



Pool

Look at the parents

If the dealer is also the breeder always ask to see the parents of the young fish as this will give you a good indication of what to expect from them in later life. Breeders who will not show you the parents for whatever reason are hiding something they do not want you to see and should be avoided. Ask the age of the young fish; as a rule, 2" Discus should be approximately 3 months old, 3" Discus should be approximately 4-4.5 months old, and a 6" Discus will be at least 13-14 months old.

Look at the sizes of the fish in the tank. If they are all from the same spawn there will be slight differences in the sizes. I once overheard a dealer tell a customer to choose two of the larger 2" fish and two of the smaller 2" fish as then they would probably have two males and two females. This is utter rubbish - what they would have would be two dominant fish and two sub-dominant fish that would grow more slowly, if at all. Try to select all the same size and remember that the larger ones are obviously getting more food so are usually more dominant, but these are just as likely to be females as males.

Shape is important

Next check the shape. Young Discus should be a nice circular shape, all their fins intact and gill covers that extend to the base of the pectoral fins. Never buy a young fish with a fin or part of a fin

missing or mis-shaped - it will not grow at a later date. What you see is what you get.

Next check the eyes. These should be small in proportion to the body. In the arc that runs from the front edge of the dorsal fin, down through the eye to the ventral fin, you should be able to mentally fit three imaginary eyes above and below the actual eye. The eyes of the young Discus should be clear, bright and alert. Dull eyes denote something is wrong and should be avoided.

Finally, check the colour. Two-inch Discus should be showing some colour. If the fish's parents are Steel Blue then the young fish at 2" will have a blue tinge to their bodies. If the parents are Brilliant Turquoise then the 2" fish will have a green tinge to their bodies, while if the parents are Red Turquoise then the 2" fish will have a base colour of brown.

Beware of full coloured fish at 2". This is not natural as some inducement may have been used to bring the colour out early, or worse still, added that will later fade away. In the natural order of things a young Discus like any other young animal will try to get as much food as it can to grow as fast as it can to compete in life. The colours are displayed much later in life to attract a mate. ■

above left: Two-year-old Steel Blue male. At 6" body size he is almost fully grown and well able to breed.

below: A look at the parents will often give you an idea of how the youngsters will turn out.



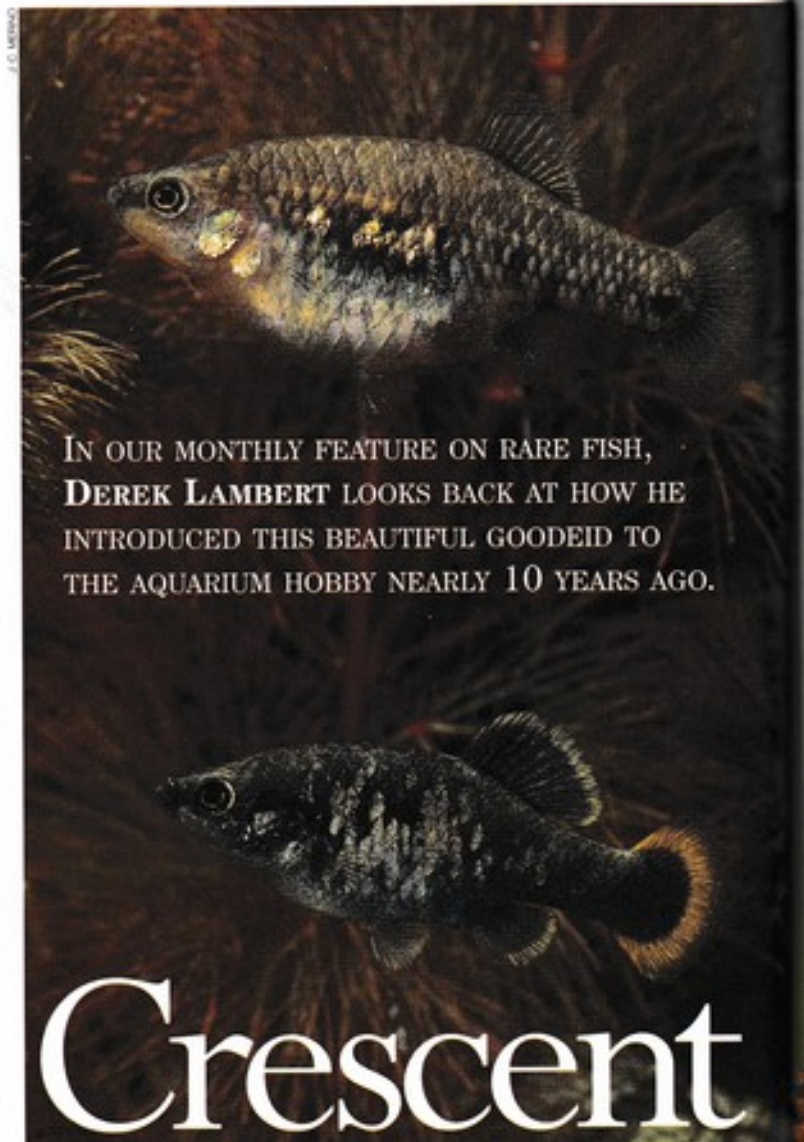
right: A lovely adult pair of Crescent Zoes. The lower fish is a male.

Now that the Crescent Zoe has been described by science and is available through the trade, I thought it was time to re-cap its history. Have you ever spent ages searching for one thing and found everything else but? I have, and *Skiffia francesae* was the species I had been looking for, but a new species of *Zoogoneticus* was what I found instead. I can remember that day so clearly even though it was nearly a decade ago and dozens of collecting trips on.

I was on a trip to Mexico, collecting fish with Dr Michael Smith and two of his students. My job was to keep the fish alive while on the road, help with IDs and show them a couple of species I had caught previously, which I thought might be new (one was and one might be). All the most important collecting had been done and we still had a couple of days in hand. I had been searching for two goodeids thought to be extinct in this part of Mexico for some time, so this gave me another chance to check out a few more habitats.

We set off that morning with only minimal expectations. After all, dozens of scientists had been looking for *Skiffia francesae* at the headwaters of the Rio Teuchitlan over the last few years. Still, we wanted to try again as you never know your luck. As usual the students grabbed the nets first and started catching fish. With each sweep of the net it would be showed under my nose to check. The very first sweep produced a net stuffed full of fish. A quick search through and they could all be released. Another sweep and another glance produced almost the same result, except - what was that tucked away in the corner?

A closer look revealed our first Crescent Zoe, a stunningly beautiful male. Others followed and we soon had plenty of specimens for all the scientific work that needed to be done on a new species, plus enough extras to establish several captive breeding colonies. Some of these stayed in America with Bob McKeand of the American Livebearer Association and the rest returned to England with me. My fish soon reproduced and were gradually spread throughout the hobby. We also established several breeding colonies in public aquaria. It has turned out to be fairly robust in captivity and is now being bred by several commercial fish farms in Europe but is still something of a rarity in aquarium shops. ■



IN OUR MONTHLY FEATURE ON RARE FISH, DEREK LAMBERT LOOKS BACK AT HOW HE INTRODUCED THIS BEAUTIFUL GOODEID TO THE AQUARIUM HOBBY NEARLY 10 YEARS AGO.

Crescent ZOE

(*Zoogoneticus tequila*)

Where can I buy rare livebearers?

This year's Livebearer convention will be held at the Midland Hotel, Derby on the 26th November. Non-members are welcome to attend both the lectures and auction. This is the largest livebearer auction in the country and normally has upwards of 100 species and cultivated varieties on offer. For further details contact Peter Moore on 01977 709790 or by email at White.Shark@btinternet.com



Rams

Rams (*Microgeophagus ramirezi*), or Butterfly Cichlids as they are sometimes called, are one of the true gems of the Cichlid world, indeed of the tropical hobby as a whole. Unlike many other Cichlids they don't dig up plants, rip other fishes fins to pieces, or grow too large for a small community aquarium. All in all they are very un-cichlid like indeed!

They were first introduced to the aquarium world over 50 years ago and were immediately popular. Since then many millions of them have graced aquarists' tanks around the world and several different colour forms have been bred. In more recent times a long finned form has also been produced. Despite the work of fish breeders, the wild form, as pictured here, is still probably the most beautiful.

Over the years a lot of the gorgeous colours of the wild fish have been lost in captive breeding, so exporters in Venezuela and Columbia found a ready market for wild fish when they started to export them again a few years ago.

These have since been crossed back into the captive strains improving both their colour and vigour. The revamped captive bred fish are now just as colourful as their wild counterparts and are perfectly adapted to aquarium life.

Aquarium conditions

While Rams are ideal community fish, some community tanks are not ideal for them. They need a warm aquarium, 27-29°C (80-84°F), which is well planted and contains some bogwood or rocks. Companion species should be placid community fish like Honey gouramis, Pencil fish, Corydoras, Loricorid catfish, Hatchet fish, and most smaller Tetras. Small Danio species can also be included but boisterous Barbs may unsettle them or even nip their fins.

Captive-bred Rams are fairly tolerant of differing water conditions and can usually be adapted to your local pH and hardness without any problems.

Wild caught fish, however, are much more picky. They need soft, acidic water and are intolerant of medications or wide fluctuations in pH or hardness. They are also particularly sensitive to ammonia and nitrites so you must pay particular attention to aquarium maintenance.

Captive diet should include a good quality flake food, some live food or a frozen alternative. Blood worms are particularly good, but all small live foods will be greedily taken. ■

Which name?

As with many fish you will find this one under various names both in the trade and literature.

Here are the usual ones:

Common names: Ram, Butterfly Cichlid, Ramirez's Dwarf Cichlid.
Scientific names: *Apistogramma ramirezi*, *Papiliochromis ramirezi*, *Mikrogeophagus ramirezi*, *Microgeophagus ramirezi*.

Netted Corydoras

(*Corydoras sodalis*) SIZE 2"

AQUARIST
AND PONDKEEPER
GALLERY

PHOTO: AREND VAN DEN NIEUWENHUIZEN



Koi World

OUR MONTHLY
LOOK AT WHAT'S
HAPPENING WITH KOI.

At this time of year it is wise to stock up on a low temperature food to feed your Koi in the coming weeks.



With the show season finished, the Koi world is slowly slipping into its winter slumber. This month it is a good idea to check out Bernice's winter Koi care article, just to make sure you have everything ready for the cold season. You also need to stock up on foods suitable for low temperature feeding and make sure any tender plants are safely under cover.



Koi society meetings & events

There are numerous koi clubs and societies throughout the UK. Here, A&P publishes contact details each month.

The British Koi-Keepers' Society

Birmingham and West Midlands:

Alan Smith - 01214 223869

Central: Christine Green - 0121 360 6601

Cheshire & District:

Keith Grainger - 01782 773592

Chilterns: Bill Hone - 01582 841108

Crouch Valley: Brenda Scott - 01375 642321

East Pennine: Betty Koerner - 0114 234 1151

Essex: Margaret Spurr - 01702 292766

Ireland: Trevor Geary - 01247 466865

Isle of Wight: Mike Giddens - 01983 527520

Kennet Valley: Terry Speight - 01488 686294

Lea Valley & Harlow:

Michael Nunn - 0208 524 3681

Leicestershire Koi:

Les Hadfield - 0116 223 7670

London: J Carey - 020 8657 9036

Lower Thames Side:

Val Radley - 01702 529675

Manchester & District:

Sue Ennis - 0161 480 5821

Middlesex & Surrey Border:

Jim Freeston - 020 8641 2686

Mid Lines: Val Gilbert - 01673 858354

Mid Staffs: Val Stokes - 01543 278359

Northants: S Day - 01604 407361

North Herts & District:

B Blows - 01767 261135

North Wales: E Parry - 01492 580303

Plymouth & District:

Sandra Crocker - 01752 210118

Potteries & District:

Tina Burgess - 01782 617526

Scottish: J McCogray - 01259 750484

South East: Mick Wright - 01634 718943

South Hants: T Clark - 01489 573374

South Wales:

Christine Worthcroft - 01443 207279

Suffolk & North Essex:

Alan Carter - 01206 866011

West Wales: Basil Evans - 01554 772190

Worthing & District: K Martin - 01273 220818

Yorkshire Section:

Andrea Thornton - 01924 275749

Independent Koi Clubs

Birmingham & West Midlands Koi Club:

Alan Smith - 0121 422 3896

Black Country Koi Society:

Tony Bowcott - 01384 395299

Bristol & West Koi Club:

Larry Lerway - 01454 898207

Cambridgeshire Koi Club:

Graham Hagger - 01487 711129

Dorset Koi Keepers: Alison Allen - 01202 875437

East Coast Koi Club: Alan Wright - 01502 587116

East Midlands Koi Club:

Richard Jones - 01283 224975

Eastbourne & District Pondkeeping Club:

Brian Dale - 01323 731369

East Yorkshire Koi Society: Steve Mattinson - 01964 527863 / Chris Hill - 01482 346777

Fylde & District Koi Club:

Chris Ingledeu - 01772 635581

Heart of England Koi Society:

Paul Stacey - 01203 674821

Merseyside: Syl Bennett - 01942 204948

Midland Koi Association:

Keith Hanson - 01527 545230

Nishikigoi Association:

Neal Kean - 01202 713600

North East Koi Club:

Jean Hope - 0191 416 5794

North Lines Koi Club:

Ken Bush - 01472 883377

North of England ZNA Chapter:

Yvonne Muse - 0114 289 1437

North Wales Koi Society: Keith Parry (Chairman)

- 01492 580303 / Rachel Wilkinson (Secretary)

- 01487 741846

Northern Koi Club (ZNA Friendship Club):

Glynis Morgan-Davies - 01706 218243

Norwich Koi Club: Jenny Allen - 01603 452932

Nottingham & District Koi Keepers:

Shirley Hind - 0115 981 0923

Oxfordshire Koi Club:

Kevin Newton - 01865 874008

Scottish Koi Club:

Marc Raeburn - 01236 731908

South Devon Koi Club: Stan Moreing - 01803

843109 / Christine Brackstone - 01803 833472

South of England Koi Club (ZNA Chapter):

Peter Webber - 01722 340313

South Essex Koi Club:

Mick - 01702 342460 / Barry - 01268 565738

South Kent Koi Club:

Lawrie Sharp - 01843 604861

South West Koi Club:

John Sprouting - 01934 822620

Wessex & Southern Koi Society:

Mrs Jenny Lenton - 01425 276885

Wirral & District Koi Society: Dave McCulloch -

0151 677 1582 / Steve Cope - 0151 327 7487

Witham Valley Koi Society:

Ray Lee - 01522 872733

York & District Koi & Pond Fish Club:

Andy Hudson - 01904 340185

Yorkshire Koi Society:

Rita Thomson - 01723 864867

Copy for Koi World

Copy for Koi World should be sent to: Aquarist & Pondkeeper, Winchester Court, 1 Forum Place, Hatfield, Herts AL10 0RN. Tel: 01673 885352 or fax 01707 276555. Copy deadline four weeks before publication date.

Product reviews

A&P PUTS TETRA'S IN600 INTERNAL FILTER UNDER THE MICROSCOPE FOR ITS FINAL PRODUCT REVIEW AND CHECKS OUT KATHY JINKINGS' NEW BOOK.

Tetratrec IN600 Final product review

We first reviewed this internal power filter in November last year. Since then it has been busy working away in one of our 80 test aquaria.



Those of you who read our initial review of this filter will remember that the unit was too high (27cm top to bottom) for our tank (only 25 cm) so had to be angled along one side to fit in. Being designed for tanks up to 90cm x 30cm x 30cm this would be a common problem for many aquarists who purchased the unit. However this has in no way affected its working.

The feature we initially liked of an adjustable water flow has proven invaluable as successive broods of youngsters have passed through the aquarium. Small fry could still have a filter running, albeit slowly, but as they grew the flow rate could be turned up. Even messy Cichlid babies have not overstrained the unit and water quality has remained good throughout.

Another feature we liked was the easy-to-remove cartridges but at that time

these proved a little difficult to place back in position. After a few attempts, even our clumsy editor managed to get the knack of slipping them into position, so just about anybody else would be able to cope easily!

A&P's Star Rating

While this filter has performed brilliantly over the months, our initial concern about its height prevents us giving it our highest award. Nevertheless, it is a worthy winner of our Silver Star Award.

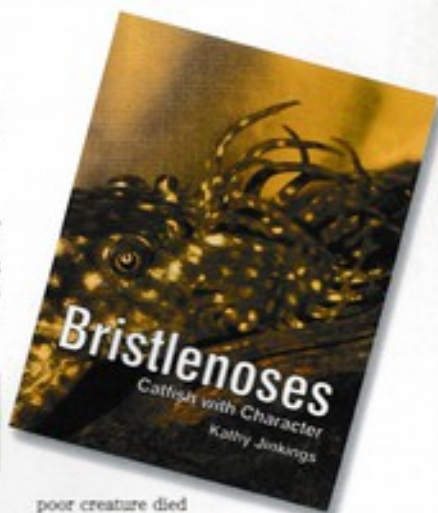
Manufacturer information

Tetra, Mitchell House, Southampton Rd, Eastleigh, Hants SO53 9XD

Bristlenoses – Catfish with Character

It is rare for a small book to contain more than the most basic information, yet this one, written by A&P's Catfish expert, Kathy Jinkings, goes far beyond the realms of normal 'little books'. Bristlenose catfish have always been popular fish for community aquaria but with dozens of new and attractive species coming in through the trade they have suddenly been propelled into the limelight. Kathy does an excellent job of bringing together all the available scientific information and combining it with hands-on practical information on how to keep and breed these fascinating fish.

For those aquarists who want to know more about their fish than just what they can see on the outside, Kathy has included a series of photographs of a stained *Ancistrus ranunculus* specimen supplied by The British Museum of Natural History. This clearly shows a number of characteristics not seen in other books and helps explain how they work. Another series of photographs of an *Ancistrus temnuchki* skeleton are also shown. This



poor creature died in Kathy's aquarium and was laid to rest next to an ant nest. Over the coming days it was watered regularly to keep the flesh moist and supple enough for the ants to eat. In due course only the bones were left and Kathy could photograph all of the characteristics she wanted to illustrate in this book.

A&P's Star Rating

Bristlenoses - Catfish with Character, is an outstanding new book that every catfish enthusiast should have on their shelves. A worthy winner of the A&P Silver Star award. ■

Publishers details

T.F.H. Publications, Nest Business Park, Martin Rd, Havant PO9 5TL
Tel: 023 9248 1133

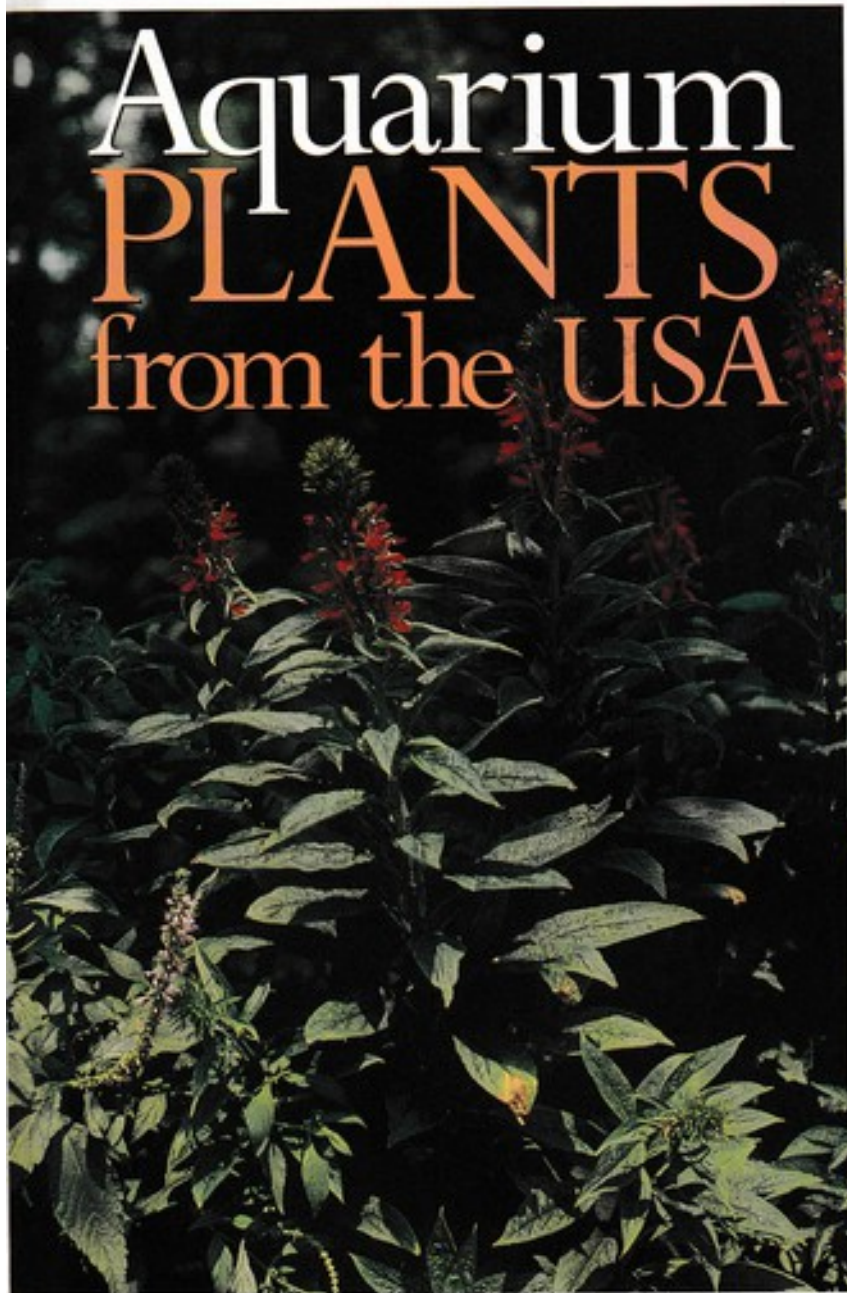
Manufacturers are invited to send new products to A&P for independent testing and assessment. An initial review is published as space permits and this will be followed up later with a full report and star rating.



PHOTO: ADRIAN COOKE/ASA

Aquarium PLANTS from the USA

ARIE DE GRAAF
REPORTS ON A TRIP
THROUGH AMERICA
TO STUDY SOME OF
THE NATIVE PLANTS.



A Fullbright Scholarship of The Netherlands-America Commission for Educational Exchange (NACEE) made it possible for me to make a journey through the United States beginning in June and ending two months later. The purpose of this trip was to visit a number of herbariums for my *Echinodorus* research. Additionally, I wanted to collect

in the southern part of the US, such species as *Echinodorus berteroi* (Spreng) Fosselt, *Echinodorus coriifolius* Grisebach, and *Echinodorus tenellus* (Mart.) Buch.

From July 13 to, and including, August 4, I worked at the Herbarium of the Missouri Botanical Gardens in St. Louis, Missouri. During that time I made three trips to *Echinodorus* biotopes. During the last

far left: *Lobelia cardinalis* grown as a land plant in Missouri Botanical Gardens.

left: Examples are often found in community aquaria.

trip on August 4, my birthday; Alison Colwell of the Washington University of St. Louis and I were lucky enough to find the very rare and endangered *Echinodorus tenellus*. Earlier, on July 23, Allen Brand, Richard Carter and I made a trip into the swamps between Mississippi and Missouri. The following is just one of the plants we examined on these trips.

Lobelia cardinalis

One of the plants that was growing along the Current River in Missouri was *Lobelia cardinalis*. It can be cultivated as a real land plant as, for example, in the Missouri Botanical Garden in St. Louis. However, it is an extraordinarily suitable aquarium plant and, in fact, can be seen in every Dutch community tank. In The Netherlands, *Lobelia cardinalis* was first imported in 1947 under the trade name 'Cryptofolia' ('hidden leaf'). The correct genus name, *Lobelia* was mentioned in honour to the German botanist, Mathias de l'Obel (1538-1616).

The species name, *cardinalis* means 'cardinal red' and is related to the colour of the flowers. *Lobelia* belongs to the family Campanulaceae.

In summer, the first buds appear in a raceme at the top of the plant in the leaf axil stand. The flowers bud at a little short pedicel sprung from the leaf axil which is surrounded by five small sepals. These terminate in a point and curl up after the opening of the bud. Standing between these is the ovary with the corolla. This is tube shaped and the upper part is split up into five lacinulas. The two upper lacinulas are very narrow while the three below are more than four times as broad. In the tube of the corolla there is what could be described as a little tube of connected filaments, standing upright with the anthers at the end growing together. These are turned back like a ribbed grey box positioned more or less in a horizontal direction.

The pollen is hidden on the inside of the anthers. At the end there are two hairy brushes. The style and the stigma are hidden in the tube of the filament.

below: *Lobelia cardinalis* in full bloom...

right: ... and in florescence.

Below and around the stigma a whorl of hairs grow together between the two white brushes and press the ripe yellow pollen outside from the anthers. The flower is male (proterandry) because the pistil is still hidden. Once outside, the pollen can be transported by insects. Finally, the stigma grows outside between the two brushes and can be pollinated by another flower. The stigma consists of two semi-globular red lobes. ■



PHOTO BY BOB ROSS/STV



Close encounters

JOHN DAWES STARTS A NEW SERIES ON HIS ENCOUNTERS WITH FISH AROUND THE GLOBE.

of the fish kind



left: An all-gold male Leeri Gourami.

I've been keeping fish for about 47 years now although, from where I'm sitting, it doesn't seem anywhere near that long. In that time, I've obviously kept and bred more fish than I've had hot dinners. I have also seen, swum with, collected, written about, read about, talked about... and heard about so many more that, to write it all down (a hopelessly impossible challenge) would fill a whole library's worth of text - never mind the pictures!

Surprisingly, perhaps, many of the most interesting experiences have been short-lived, sometimes lasting no more than a few seconds. Yet, in this remarkably short period, indelible memories have been created. I will never forget, for example, having the tip of my forefinger sharply (and painfully!) bitten by a protective clownfish in the Red Sea. The 'attack'

lasted no more than a second or two, but I close my eyes now - several years after the event - and I can see it all again in minute detail. I can even hear my muffled underwater gasp of surprise and taste the mouthful of seawater I involuntarily sucked in.

Other experiences have lasted much longer, of course. These, added to all manner of information gathered over many years, have led me to a deeper understanding of fish, their way of life, their biology, environment and conservation, and the people who collect, buy/sell and keep them.

Much of this information, though, 'arrives in small packages' which are insufficiently detailed or lengthy to be passed on in the form of complete articles. Sometimes it's just an observation, sometimes a question,

sometimes a train of thought, sometimes a scientific paper or bit of news that, I feel, fellow aquarists would appreciate hearing about. In other words, what we are talking about is a huge 'mixed bag' of fish-related items and stories just itching to see the light of day.

Enter our editor, Derek Lambert, who's known about my desire to launch this type of column for some time now. No sooner had A&P moved on to the latest, exciting phase in its ongoing 'evolution', than he was on the 'phone to tell me that now was the appropriate time to run with the idea. So, here comes the first of my monthly selection of 'goodies'. I hope you will find them both interesting and informative.

Answering the call

Have you seen or heard of people 'calling' dolphins or sharks by slapping the water with a canoe paddle, or rattling empty coconut shells in the water? I'm sure you have, so you'll know that it is quite possible to 'call' animals to come to you by making a particular noise.

But Cardinal Tetras? After all, in biological terms, Cardinals (*Paracheirodon axelrodi*) are 'light years' removed from sharks... and even further from dolphins. Yet, they too can be called out of hiding. I'm aware that this sounds unlikely but it's perfectly true. I know, because I've seen it happen.

I was in a canoe in a backwater of the Rio Negro (ideal Cardinal territory).



Diamond Harlequins!

IN THIS OCCASIONAL COLUMN WE WILL KEEP YOU UP-TO-DATE ON ALL THE NAME CHANGES AND OTHER DEVELOPMENTS IN THE SCIENTIFIC COMMUNITY. THIS MONTH STEVE GRANT BRINGS US NEWS OF A NEW GENUS NAME FOR SOME OLD AQUARIUM FAVOURITES.

The intention of this article is to allow aquarists to differentiate the three species of Harlequin that have so far been described by science. Only two regularly appear in the hobby, the third apparently being very rare, possibly even in its native habitat.

Since their description and introduction to the hobby they have been known as members of the genus *Rasbora* (Bleeker, 1859). The type species of this genus is *Rasbora rasbora* (Hamilton, 1822), but Kottelat & Witte (1990) have described a new genus called *Trigonostigma* (which translates to 'triangle brand', in allusion to the black triangular blotch on the side of the body), of which *Trigonostigma heteromorphum*, (Duncker, 1904), is the type species. Kottelat & Witte mainly use the differences in colour, pattern and spawning behaviour to warrant the new genus (using a phylogenetic approach).



Trigonostigma hengeli male showing some yellow pigment that is rarely visible in its normal aquarium.

Harlequin

Trigonostigma heteromorphum, (Duncker, 1904)
Type locality: Kuala Lumpur, Selangor, Malay Peninsula

This is the common Harlequin. It has been traced in the hobby as far back as 1906, although Innes (1966) states that prior to 1934, it was very rare in the USA. He does say that from then on it was arriving by the thousands. Up until recently I thought that this fish must have been mainly farm bred due to the huge numbers available. According to a Ng Heok Hee (personal communication) of the National University of Singapore, however, they are still caught in the wild in Indonesia, mainly from the island of Sumatra, and then shipped by the thousands to Singapore and other countries. Peter Ng (1998) also states that they are primarily caught from northern Sumatra and Peninsular Malaysia; he has seen in excess of 100,000 Harlequins collected and shipped

main picture left: A group of common Harlequins (*Trigonostigma heteromorphum*).



Trigonostigma hengeli upper fish and *Trigonostigma espei* lower fish.

within one week! Lim & Ng (1990) state that, in Singapore, it only survives in certain small streams.

Male *Theteromorphum* can usually be told apart from females by the body shape, and the shape of the dark wedge on the body. Females tend to have thicker and deeper bodies; the base body colours are not usually as intense; and the leading edge of the dark wedge is straight, whereas in males the bottom of the leading edge sometimes curls towards the head, forming a kind of hook shape.

Glowlight Harlequin

Trigonostigma espei, (Meinken, 1967)
Type locality: Thailand

Meinken originally described this species as a sub species of *Theteromorphum*. Brittan examined two

Trigonostigma somphongsi, (Meinken, 1958)

Type locality: Menam R., Thailand

Thengeli is superficially similar to *Tsomphongsi*, (Meinken, 1958). *Thengeli* differs from *Tsomphongsi* (using the naked eye) by having a more laterally compressed, flatter body, a proportionately larger eye; and the dark wedge on the body appears deeper. Kottelat & Witte state that *Tsomphongsi*, in comparison to all other *Trigonostigma* species, has the body not as deep, the hatchet shape not being present, and by not having the dark leading edges to the dorsal and anal fins; however these are also missing in *Thengeli*. It is expected this species will be moved to another genus in the future; it was mainly included due to the fact that it shares the same spawning behaviour as the other three species.

specimens from Thailand and noted morphological and colour/pattern differences; but he refrained from describing them as a subspecies of *Theteromorphum* because he only had two specimens. It was raised to full species level in 1987 by Rainboth & Kottelat.

Meinken's type specimens were aquarium fish so he did not know of the exact locality of his *espei*, but Brittan had two specimens from Kao Sabap, Thailand. Günther (undated) caught *Tespei* (misidentified as *Thengeli*) in Thailand. Rainboth (1996) shows *Tespei* from Thailand.

This is less common and is sometimes misidentified as *Thengeli*. It is a beautiful species; males differing from females by having thinner and less deep bodies, and the dark wedge has a more even shape on both sides. They are also more brightly coloured. This species can easily be told apart from *Theteromorphum*, as the wedge on the body is never as proportionately large, and *Tespei* has a much richer, and brighter red/orange body coloration. *T. espei* attains 3cm SL (standard length), *Theteromorphum* 4cm SL.

Günther stated that when he caught *Tespei* in Thailand (which he had misidentified as *Thengeli*), the water was very dark and cloudy, and thick with plants and tree roots. The pH was 6.5, water temperature 31°C, general hardness 2°dH.

Glass Harlequin

Trigonostigma hengeli, (Meinken, 1956)
Type locality: Tambesi River, Djambi, Sumatra, Indonesia

The type specimens of this species were reportedly from the Indonesian island of Sumatra, but because they were imported aquarium specimens, Kottelat et al (1993) stated that the locality needed verification. The single specimen shown here was purchased in an aquarium shop by me. It was imported from Singapore, mixed in with *Theteromorphum*. As stated earlier, Ng Heok Hee, and Dr Peter Ng know that *Theteromorphum* =>

→ shipped from Singapore are primarily caught from nearby Sumatra. This is where this single specimen probably came from, and somehow ended up being caught with a school of *Theteromorpha*. When I purchased it (for 90p!) it was being picked on and excluded from the shoal by the *Theteromorpha*.

For the last six months it has been living in my friend Dave Peake's tank, with a shoal of male and female *Tespei*, and was not being bothered by them at all. It fed on bloodworm, and was kept at approx. 78°F, with a pH of 6.5 (although it has been known to rise to 7.8, and the fish still appear healthy and active). Unfortunately it has recently died, but had grown well in the time Dave had it.

This species seems rare and its name is usually given in error to specimens of *Tespei*. I recently saw an image of one on an Asian hobbyist website; they did not know what it was but said they purchased it from a fish shop in Singapore. Thomas' (1971) identification may be correct. The only other photographs of live, correctly identified specimens that I have seen, appear in black and white, in Meinken (1956) and Sterba (1973), although the first edition of Sterba's book may have them in colour. Günther went to Thailand looking for and reputedly found *T. hengeli*, but the specimen shown is obviously an *Tespei*.

This specimen seems to match the original description of *Thengeli* in all aspects, except possibly the yellow coloration that the body and fins sometimes exhibit, although when viewed in the tank this yellow pigment doesn't normally show, and the fish appears a grey blue colour. The colour of the body is greyish light blue, although the body/scales are actually translucent, not transparent. You can see the silver, metallic tissue that surrounds some of the internal organs. The dorsolateral scales sometimes show a very light, inconspicuous tinge of yellow. The wedge on the body is dark, and has a kind of darker, matt finish when compared to the wedge of *Theteromorpha* and *Tespei*.

Above the wedge is an orange-yellow thin band, which runs from the base of the tail (but not extending on to/from the caudal fin), and bends over and down in front of the wedge. Along the bottom of the body is a faint indistinct black line, which runs from the anus to the posterior edge of the anal fin. This line is more prominent in *Tespei* and

Theteromorpha. The rays of the caudal fin are coloured yellow, the middle few appear colourless. The dorsal fin is also faintly coloured yellow; although some of the rays have faint black pigment on them. The anal fin has some yellow pigment; the pectoral and ventral fins appear clear and colourless.

As the other two species sexes can be distinguished by the shape and size of the dark wedge, it appears that this is also the case with *Thengeli*. The fish shown here is (in my opinion) a male; this is because if one looks at the photographs in Meinken and Sterba, it is obvious that there are members of this species where the wedge is even smaller than the one on this specimen. I think the specimens of

Thengeli with the deeper, more square shaped wedge, are the males, as is the case in *T. espei*. Sterba says the females are usually paler and are more robust.

The largest type specimens of *Thengeli* is 2cm SL, and the fish here is about the same size. Meinken stated that where the types were caught, the water was full of plants, and not much sun penetrated the water. The water was "very soft", 4°dH. If one looks at the photograph of the biotope of *Tespei* in Günther, the water is very murky. This may explain the glowing, metallic line which runs across the top of the wedge in *Tespei* and *Thengeli*; it may be some way of communicating for spawning or shoaling purposes. ■

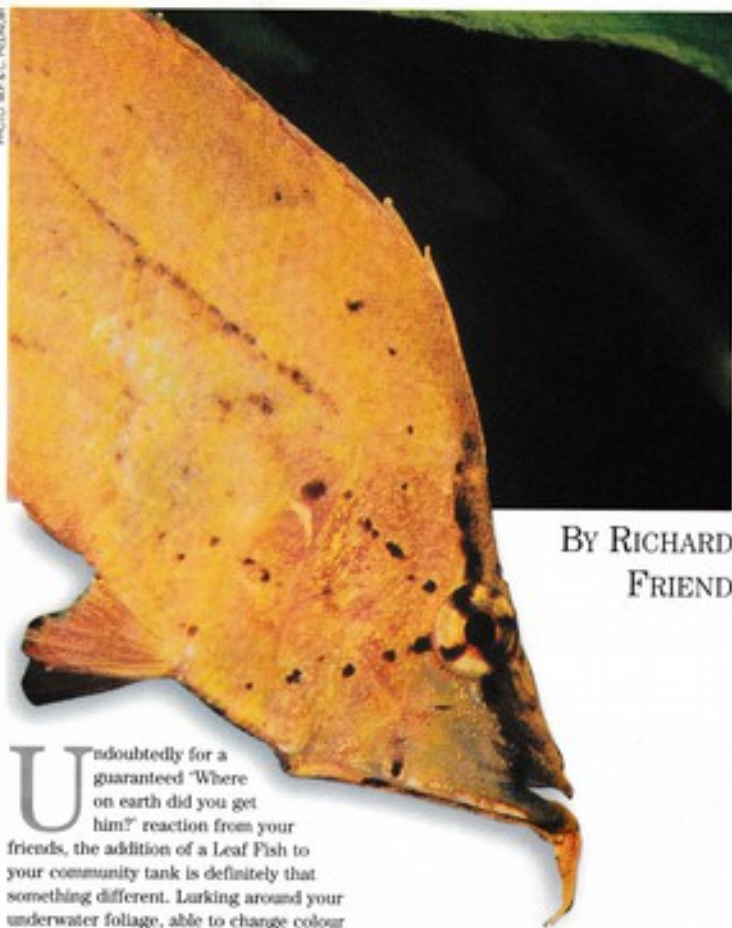


right: Glass Harlequin, *Trigonostigma hengeli*.

Leaf Fish

(*Monocirrhus polyacanthus*)

PHOTO: M.F. & C. PEDONOR



BY RICHARD FRIEND

Undoubtedly for a guaranteed "Where on earth did you get him?" reaction from your friends, the addition of a Leaf Fish to your community tank is definitely that something different. Lurking around your underwater foliage, able to change colour to suit the background, the Leaf Fish is certainly a source of fascination and a good talking point.

There are, however, problems with introducing this master of disguise to the community tank. You will, without doubt, notice the disappearance of your small fish. The Leaf Fish sits among the plant life with patient tenacity until a small fish comes within reach, about an inch will do, and then the protruding jaw of this previously 'dead leaf' shoots out and back in a split second. A miss is a rare event!

A better environment is the species tank. This native of the slow-moving

Amazonian waters, *Monocirrhus polyacanthus* is born to the creeks and tributaries of the rain forest. They, therefore, prefer temperatures of 80-85°F and soft acidic water with a pH in the range of 6.6-6.9 although they can tolerate more alkaline conditions.

The predominant colouring is dead leafy brown, the fins being a similar colour, except for the pectoral fins and rear tips of the dorsal and anal fins which are transparent. These are generally held close to the body to aid the camouflage effect. Unfortunately, they will not go

CV

Family:	Nandidae
Species:	<i>Monocirrhus polyacanthus</i>
Origins:	Rain forest tributaries of the Amazon.
Aquarium type:	Community but species tank better
Feeding position:	Mid water - predatory
Temperature:	80-85°F
Size:	8cm
Diet:	Live foods, frozen Lancefish

looking for food, preferring to maintain their ambush predator nature and wait for food to swim to them. Live adult Brine Shrimp is an ideal food, although they can be tempted with frozen Lancefish.

Breeding in captivity is quite possible. However your Guppy and Molly fry will come in handy to bring the pair into condition. Sexing is difficult - one dead leaf looks much like another. The female does tend, however, towards a more swollen abdomen and is slightly larger than the male.

The spawning method is similar to Cichlids. A flat object is chosen as the site which could, in the case of the Leaf Fish, be the underside of a leaf or the inside of a flowerpot. The female moves in and lays several batches of eggs in-between; the male passes over them fertilising.

The laying job complete, the female plays no further role in the process - who says a woman's work is never done? The female is best removed as the male will chase her off incessantly. The male now guards the nest for the next six days. Once the young have hatched it is best to remove the male as well as he will now only see his own young as his next meal.

These 'leaflets' look like small fragments of leaf and fed on newly-hatched Brine Shrimp they will progress quickly. ■



ASK &P

HAVING PROBLEMS?
THEN LET OUR PANEL OF EXPERTS
COME UP WITH THE ANSWERS...

Every query receives a personal answer and in addition, we will publish a selection of the most interesting questions and responses each month. Please indicate clearly on the top left hand corner of your envelope which department you wish your query to go to. All letters must be accompanied by an S.A.E. and addressed to: Ask A&P, Aquarist & Pondkeeper, TRMG Ltd, Winchester Court, 1 Forum Place, Hatfield, Herts AL10 0RN.

A&P's EXPERTS

Barbs, Characins,
Rasboras and
any oddballs



Pete Liptrot works at Bolton Museum and Public Aquarium. He has been a keen aquarist since childhood and is passionately interested in all aquarium fish. Working with fish all day he has developed a wealth of knowledge on a wide spectrum of species, although for our expert panel he will be concentrating on those fish that do not fit into anyone else's area of expertise.

Anabantoids



David Armitage is a MAFF biologist based near York. He's been keeping fish for over 35 years and specialises in labyrinth fishes, particularly the African species. For the last 20 years he has edited AAGB's *Labyrinth* newsletter, and has visited the habitats of many of his labyrinth fish in Asia and Africa. In his small village he is known simply as 'Fish'!

Cichlids



Sonia Guisane & Dave Tourle have been keeping Cichlid fishes for nearly 12 years and have successfully bred many species, including some very rare varieties. They are members of the British Cichlid Association and Sonia recently served two years as Cichlidae Editor on the Association Committee. They are also members of the Yorkshire Cichlid Group, the French Cichlid Association and the American Cichlid Association. Their great interest in Cichlids has taken them overseas on several occasions and they have taken part in two of Ad Koning's Malawi Safaris.

Livebearers,
Rainbows and
Breeding fish



Derek Lambert is chairman of Viviparous – the Livebearer Information Service and the British Rainbowfish and Goby Society. He has been a keen aquarist for 31 years and has bred a wide range of aquarium fish. While specialising in Livebearers, he has also worked with most available Rainbowfish species and currently has 80 tanks of tropical fish.

Equipment &
Technical advice



Ben Helm is an experienced and qualified marine biologist and has kept fish since his early teens. Currently Ben is head of Aquatics and Fish Farming at Brooksbury College in Leicestershire and is Head of the Nishikoi Information Centre.

Our other experts

Andrew Calne
Bernice Brewster
Lance Jepson
Andy Gabbutt
Kathy Jinkings
Stephen Smith

Marines
Koi & Ponds
Health
Killifish
Catfish
Goldfish





above: Congo tetras make excellent additions to a community aquarium and are readily available.

Tropical

Congo tetras

Q I have a 36"x12"x15" tank that I would like set up as a species tank for keeping and, hopefully, breeding Congo Tetras. Could you advise me as to plants, conditioning food, water conditions and temperature. I intend to use an internal power filter and Gro-Lux lighting.

P. Proudfoot, Exeter.

A The Congo Tetra, *Phenacogrammus interruptus*, originated from the Congo river, the second longest river in Africa. It is fed from tropical rain forests and includes many rapids (such as Livingston Falls), hence fish adapted to fast flowing waters live there.

The water is mainly soft and slightly acidic, so use soft acidic water for the breeding tank. In the wild the fish feed off insects at the surface, therefore feed plenty of live foods are needed to bring them into spawning condition.

As they are shoal spawners, several fish (not brothers and sisters) should be housed together. The males show longer filaments in the tail and are larger fish. Eggs are sprayed in morning spawnings (so site the tank where rising sun strikes the water to trigger breeding rituals). Use Java Moss to catch the eggs and remove the parents.

Feed the fry (it takes five to six days to hatching) on newly hatched brine shrimp and

finely ground fry food. To keep the fish in a community tank, no special conditions are necessary. The fish is active and hardy and a firm favourite of the Far East breeding farms, so mass produced cheap specimens are freely available.

Pete Liptrot

Coldwater

Goldfish turning black

Q I have a goldfish that is turning black. Is this a disease and if so what is the cure?

Simon Hoskins, Norwich.

A If the fish is going black all over it is probably due to a colour pigment change and it is likely that it will not turn white again. If however the black is in patches then it could be due to the fact that it has received some damage, either by careless handling or netting. If a fish has received

any damage the new growth will be black at first but will soon disappear and the gold colour will return. When young goldfish start to change from the original bronze, the upper parts turn quite black and also the dorsal and caudal fins. This black gradually clears away. I do not think that there is anything you can do to alter the colour of the fish, but wait and see what happens.

Stephen Smith

Marine

Starting up...

Q I have two aquaria. One is 60"x15"x18" and the other measures 72"x18"x24". Allowing for a 3" layer of cockleshell and coral-sand, how many gallons will each tank hold?

Second, how many fishes would you suggest each tank can hold? I shall buy only adult fishes and no specimen will exceed 5" in overall length.

Finally, I live near the coast. When examining rock pools I often find shrimps and sand hoppers under rocks. Can I use these for feeding my marines?

S. Jones, Wigan.

A The 60"x15"x18" will have a gross capacity of 58 gallons. The coral-sand layer, freeboard at the water surface and rocks/corals and the like, would reduce this to a net capacity in the order of 47-48 gallons of sea water.

The 72"x18"x24" tank would have a gross capacity of 112 gallons. Similarly, after displacement of sea water by

the filter-bed and other items, you could expect to have about 92-94 gallons of sea water net.

During the first six months I would not exceed 1" of fish to each six gallons of sea water. Please remember that during the first six months period, feed the fishes in an exceptionally miserly fashion. Feed only once per day, and even then each fish on average must receive no more flake food than would cover a one penny piece one flake deep. You will never meet a failed marine aquarist who starved his fishes to death - but you will meet thousands who killed their fishes due to the direct or indirect results of overfeeding.

It is not safe to place any live foods or decor objects from our own coastline into a tropical marine aquarium. Tropical marine fishes have evolved no natural defence mechanisms against pathogens and parasites from North Atlantic system waters.

Andrew Caine

Tropical

Not so peaceful

Q I've read that Gouramis make peaceful, colourful and hardy tank inmates. Which species do you recommend I start with?

J. Bunn, Lancashire.

A Sometimes I wonder if people who write books keep fish at all! Gouramis can be peaceful but they are by nature territorial fish and can wreak havoc in a community



above: Colour pigment changes in Goldfish are common but may be caused by injuries.



above: Dwarf gouramis (*Colisa lalia*) make good community tank members.

aquarium, or alternatively be unbearably shy – depending on the set-up.

Choose the tank-mates carefully. Rasboras and fish that co-habit naturally with Gouramis are suitable, most Cichlids are not. If you try to keep several pairs of Gouramis together, the males will cause a lot of disruption chasing each other as they try to establish territories, so one pair is best unless you have a tank longer than 1m. Ensure there is at least one thicket of dense cover and maybe a plant pot or two to allow females to hide from amorous males.

As for species, the big Collisas, Thick-lips, Striped and the large Trichogasters; Blue, Snakeskin, Moonlight, even Pearl Gouramis will tend to dominate a moderately sized tank, so think about smaller species, Dwarf or Honey Gouramis. A really nice alternative, if you can find it, is the Spike-tailed Paradise, *Pseudosphromenus dayi* or maybe the Sparkling Gourami, *Trichopsis pumilus*. Bear in mind that even these diminutive species will do a lot of chasing if they decide to set up home!

Dave Armitage

right: Pilea is a terrestrial plant that will die underwater.

Plants

Pilea

Q How do I grow Pilea in my aquarium?

F. Windthrop, Peterborough.

A I feel I should point out that the Pilea (*Pilea cadaveri*) is, in fact, essentially a terrestrial plant, and while it may survive in submersed conditions for a few weeks, it will eventually perish as its cell structure breaks down in an underwater environment. You could, as an alternative, grow it as a pretty houseplant, in a pot or trough. This would be much kinder to the plant as



it would be closer to its natural conditions.

Derek Lambert

Tropical

Trouble with Oscars

Q I have never kept tropical fish, only cold water varieties, but recently a friend has offered me some small Oscar cichlids. He had purchased six of these fish to put in his 30" tropical tank, as he thought they looked nice, but now is rather concerned that many of his other fish, like Neon tetras and Zebra danios are all disappearing. He has also noticed that the Oscars are growing very quickly, although the assistant at the shop told him they should only get to about 3-4" in length. As one of his is already more than this, does he have a mutant? I would like to help and take two or three of his Oscars, so would a 3' tank be big enough? Is there anything else I should know about these fish?

Andy McPherson (age 13), Blackpool.

A Unfortunately, that sales assistant has given some bad advice to your friend. Oscars (*Astronotus ocellatus*) are native to South America

and can reach up to 30-36cm (12-14"), and so are completely unsuitable for a community tank. As he has found out, this species will happily eat any smaller tank-mates, which is probably another reason why his Oscars are growing so well! Probably the sensible thing to do is to return all the Oscars to the shop concerned.

However, if you are serious about taking on one or two of these appealing fish, make sure you get permission from your parents first. It would just be possible to keep one Oscar in a 3' tank, but a 4' or even larger tank would be much better and would enable you to maintain more than one. It is necessary to have adequate filtration as these fish are very messy feeders and prone to lateral line erosion, if regular partial water changes are not carried out.

Oscars are notorious for rearranging their tank décor, which should be kept to a minimum of just a few rocks and pieces of bogwood. The water temperature should be about 25°C (77°F) and it is advisable to place the heater out of sight. Oscars will eat pellet, frozen and live food and should be offered a varied diet or they may become 'addicted' to just one food.

These fish have great personalities, are long lived and can form quite a bond with their owner. They are a challenge but very rewarding. Please tell your friend not to be put off buying new and attractive fish for his tank but always try and read up in advance before taking on any new species.

Sonia & Dave

Tropical

Breeding Emperor Tetras

Q Out of the fish in my community tank one of my favourites are the Emperor Tetras. Could you recommend a simple method for breeding them? I am not looking to make money, I would just like to raise enough to have a →



above: Emperor Tetras are one of the most beautiful species in this group.

=> decent shoal. I have a spare 24"x12"x12" tank which I would hope to use, plus a heater and an air pump. What other equipment might I need, and what would be the best food for conditioning?

Also will I need Brine shrimp eggs, as the local shop has told me they are now very expensive, or what other foods could I use for the youngsters?

P. Simmonds, Derby.

A The Emperor Tetra (*Nematobrycon palmeri*) is one of the best looking of the Tetra family, and fortunately is also fairly easy to breed. If you are not looking to raise large numbers, then all that is needed is an aquarium which can be anywhere from 5 gallons upwards, a mature sponge filter such as a Biofoam connected to an air pump, and soft water heated to about 78°F. The pH should be around 6.

As a spawning medium possibly the best to use is a large clump of Java moss, but wool mops or other fibre substrate would also work. If the moss half fills the tank this will provide the babies with ample cover from the adults. Java moss can also provide a useful food source for young fish in the form of micro-organisms that can aid survival in the absence of supplied foods.

The fish you hope to be bred from should be young. This species is very easy to sex from an early age even before the characteristic fin extensions of the male develop. Males have blue eyes whereas females have green eyes.

Assuming the fish are fed well in the community aquarium they can be placed in the breeding tank and feeding continued carefully to avoid fouling the aquarium. The ideal foods would be live foods such as Whiteworm, Wingless fruit flies, Daphnia and so on, but they will breed quite happily when fed mainly good quality dry food. Two or three pairs would be ideal.

Every few days the moss should be lifted slightly and the bottom of the tank watched for any tiny fry, which will look like slivers of glass darting around. Once these are seen it would be better to carefully remove the adults if possible but if this is difficult then some young will quite probably survive anyway.

If you have any Brine shrimp eggs then this is the time to start hatching them, but fine powdered foods can be fed in moderation instead and micro-worms if you have them.

Once the young reach a length of about 0.5" they can be carefully introduced to the community tank, but follow the same procedures as if you had obtained them from a shop and be aware that they will grow and increase the bioload on your community tank. If you

have surplus you should find that most shops will gladly exchange them for food or equipment as they are a popular species.

Pete Liptrout

Coldwater

Goldfish blister problem

Q Over the past few months, one of my fantail goldfish has developed an orange coloured blister on her back, just below the dorsal. It has gradually grown larger and I have now isolated the fish, for fear of contamination of the others in the tank - an 80 gallon plastic water tank.

The only information I have from my books suggests that it might be Microsporidian, but there is no information on treatment. She is still eating well, and is active, almost as though it is no problem to her, but I would be grateful for any help you may be able to provide.

C. H. W. Edmonds, Broadstairs.

A From the description you give, I feel that the most likely explanation of this orange coloured blister is that it is a skin tumour called a fibroma. These are common tumours in older goldfish and are usually benign. They can appear as a discrete mass or swelling that can occur on any part of the body. The fish are usually fine in themselves unless the tumour is growing in a delicate place, for instance over the eye. Occasionally a more malignant form, a fibrosarcoma, is encountered. In both cases surgical removal is the only hope of solving the

problem. Talk to your local vet about the possibility. Certainly with fibromas, once the tumour is removed the resulting wound can be treated like an ulcer.

Microsporidia are occasionally encountered in goldfish but in my experience are rare. These are protozoal parasites that are usually found deep in various body tissues (depending upon the species of microsporidian) where they multiply and form spores. Eventually these spores rupture, releasing protozoa into the surrounding medium. If the spores are in the muscles or beneath the skin, ulcers may be seen. Treatment of microsporidian infections is notoriously difficult and although the prescription only drug fumigillin is recommended, its effects are unpredictable. Should this blister start to ulcerate then I would consider euthanasia of the fish for the sake of your others.

Lance Jepson

Tropical

What's out there?

Q If I was going on a trip to Brazil and fishing in the Rio Negro and Rio Branco, what species of killifish would I be likely to catch in these areas?

C Moxon, Leeds.

A You are likely to catch *Rivulus* species and probably species that are still unidentified. There will be nothing in the main rivers; you would need to find smaller streams and tributaries. The *Rivulus* will be hidden in the vegetation at the sides of the streams.

Andy Gabbutt



above: *Rivulus* will only be found in small tributaries and flooded areas. They never venture into the main channels.

Schuberti Barb

(*Barbus semifasciatus*) SIZE 3.5"

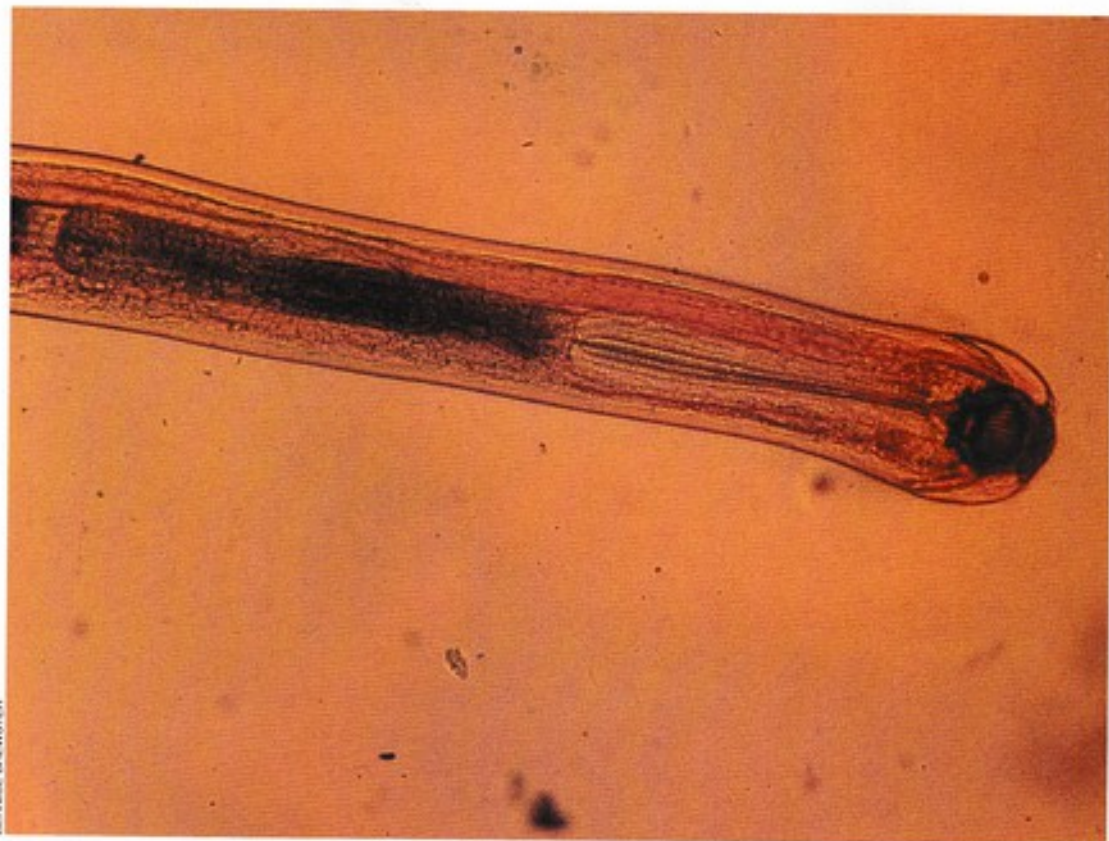
AQUARIST
AND PONDKEEPER
GALLERY

PHOTO: M.F. & C. PEEDOR



Let's get fisical!

THIS MONTH, LANCE JEPSON EXPLAINS HOW TO DEAL WITH CAMALLANUS.



BERNICE BREWSTER

Camallanus sp. are small red coloured, parasitic thread-like round worms (or nematodes).

The adult worms are found in the intestine, colon and rectum, and can reach up to 1cm long. In ornamental marines the species most likely encountered are *Cucullianus*, *Camallanus* and *Spirocamallanus*.

Camallanus has two means of completing its lifecycle. The female worm, which can often be seen protruding from the anus of infested fish, lays its eggs into the general aquarium environment. An embryo develops inside each of these eggs, and there it rests until the egg is

eaten accidentally either by another fish or by a crustacean. In the first case, once the egg is eaten, the shell is digested away and the now larval worm is released.

It grows by moulting several times before becoming a sexually mature adult. This is a *direct* life cycle. In the second case, the egg hatches after being eaten by a crustacean (referred to as an *intermediate* host). This is often a copepod. The larval worm will then undergo several changes before being able to infect a fish (the *final* host), which it does when the parasitised crustacean is eaten. This is an *indirect* lifecycle. The marine species all require intermediate hosts.

Predisposing factors

Camallanus is usually introduced into a collection following the feeding of infested live foods such as copepods, or by mixing with infested fish.

Diagnosis

Species susceptibility A wide range of species can be infested, but the commonest freshwater hosts are livebearers such as guppies, mollies and swordtails. Killifish seem to be particularly affected in the presence of a *Camallanus* outbreak, possibly because

of their small size or because they are more likely to eat copepods.

Recognisable signs of disease

A classic sign is a cluster of worms protruding from the anus of an infested fish. In smaller fish there may appear to

It is also worth noting that species of the marine Spirocamallanus have been recorded in sixteen species of ten genera of marine fish found in Hawaiian waters.

be extensive damage and erosion around this area. Other signs include weight loss, failure to thrive and a susceptibility to secondary infections including tail and fin rot. The worms cause damage and ulceration of the lining of the gut, causing an enteritis. This is shown as the passing of stringy or slimy faeces.

Microscopy On post-mortem examination, microscopy of the gut (x40) will reveal worms of various sizes to be present with the intestinal cavity.

Treatment

Various anthelmintic drugs can be used. These include:

- Levamisole at 10mg/L as a single dose added to the water. This is particularly good for killing larval worms. Suspend carbon filtration.

- Piperazine at 2.5mg/g of feed, added to the food! This may only kill adult worms.
- Fenbendazole at 50mg/kg bodyweight added to feed, or by stomach tube if the fish is large enough. Fish are quick to refuse medicated food, so it is best to

starve for 24-48 hours prior to offering such feed.

The above medications will be available from your veterinary surgeon, or in some cases a pharmacist. None of these medications are licensed for use in fish, and with the potential for their use in hundreds of different species of

Personal opinion

At the risk of being controversial, I have my doubts about frozen foods that are not gamma irradiated. I am unsure if freezing alone will kill the larval stages present in intermediate hosts, as I am suspicious that I once introduced Camallanus into one of my aquaria by feeding commercially available frozen copepods.

ornamental fish, their safety cannot be guaranteed in all species at all times.

Disease lookalikes

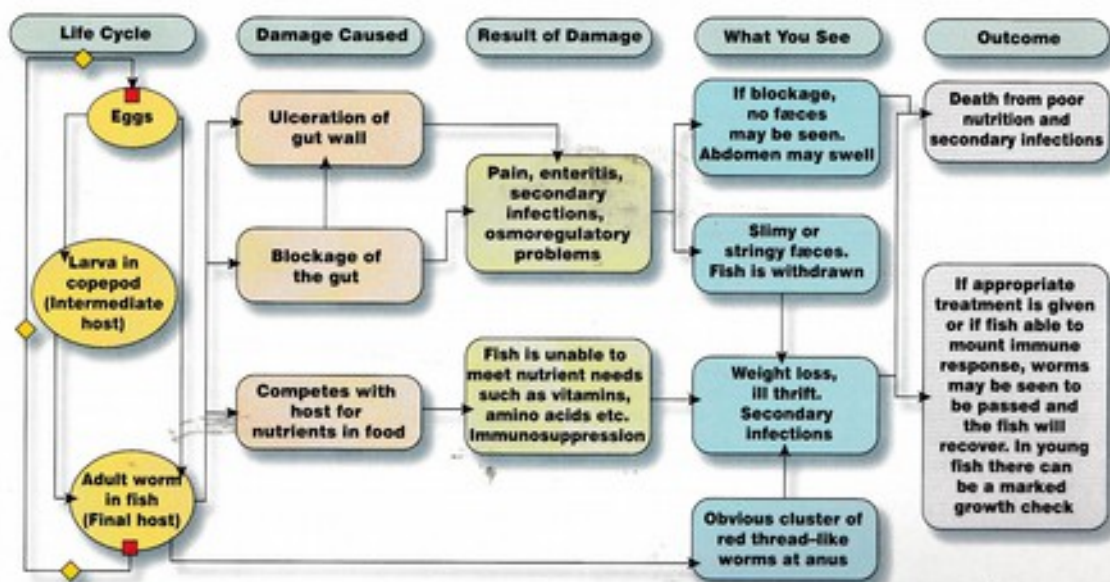
The obvious sign of a cluster of worms at the anus is fairly characteristic. However other intestinal worms can cause the signs of weight loss, ill thrift and enteritis. These would include *Capillaria* (another nematode worm) as well as tapeworms. Intestinal protozoan parasites can occasionally be encountered – the coccidian *Eimeria carpelli* for instance can cause severe enteritis in young carp. Deep seated bacterial infections such as mycobacteria (fish tuberculosis) or fungal infections like *Ichthyophonus* could also cause a marked loss of condition.

Prevention

Quarantine and scrutinise all new fish for the characteristic red worms visible from the anus. Do not feed live copepods from unknown sources to fish. ■

Lance Jepson MA VetMB CBiol MIBiol MRCVS is a lecturer at the Small Animal Veterinary Teaching Hospital, The University of Liverpool.

CAMALLANUS WORMS





Koi ahoy!

BRIAN BEGG HAS
A STRANGE FISHY
STORY TO TELL...

This fishy little story is set among the mountains rolling down to the coast at Santa Barbara, not many miles from Los Angeles down the dramatic Route 1. It came to me first hand from the young couple involved – let's give them the fictional names Jack and Jill – but beyond that it is entirely true.

Growing weary of life and work in the concrete jungles of cities all over

America, they opted to sink their joint savings into a 600-acre farm high up in the mountains. Here they planned to grow avocados, for which there appeared to be quite a demand well outside the confines of Santa Barbara.

Their farm was carefully planned, each avocado tree being individually watered from a network of irrigation pipes stemming out from a large natural pond that dominated the highest point on the

farm. The pond itself received supplies of fresh water direct from a never-ending, underground spring. To lend a small measure of beauty to the water, a number of golden carp and their brightly coloured cousins Koi were introduced.

In no time at all, the intricate irrigation system combined with the coastal sunshine of Santa Barbara paid off, and the healthiest crop of avocados was produced. Then the troubles started.



Unexpected guests

First to sample the crop, entirely uninvited, were a number of local wild brown bears, but an elaborate and hastily erected pattern of trip wires and low voltage electric fences soon dissuaded them from such easy pickings. Far more serious was the unforeseen economic threat arising from just over the Californian border. Mexico was producing and marketing bigger avocados at a cheaper price which my friends could not possibly match. At the end of the first real farming year, they were left with more than a few pears which, in the course of time, started to 'go off', if not become downright rotten.

They dumped a load of rotting fruit into the pond in desperation one day, and, lo and behold, the Koi fell upon them like manna from heaven. Koi are omnivorous fish, consuming both animal and plant materials, and the avocado diet evidently suited them. Not only can they reach a length of over three feet and a weight in excess of 25 pounds, they are also long-lived fish, with

individuals known to have survived well over 40 years.

Because of this longevity, combined with strikingly beautiful colour variations and great intelligence, they have become eagerly sought after by owners across the world. Perhaps nowhere more so than in Japan, where Koi have long been regarded as symbols of strength and masculinity, good luck and prosperity.

Each year during May, beautiful streamers ('Koinobori') in the shape of Koi are flown from poles at the Boy's Day Festival, symbolising the Japanese parents' hope that their sons will grow up to demonstrate courage and strength like that of the Koi. In short, they are held in the highest esteem in Japan, the sort of esteem that is akin to worship. Skilled Koi breeders in that country are able to command prices as high as \$15,000 to \$20,000 for each pedigree, top-quality fish.

Success in the end

Most readers will probably be able to guess how the story ended for my Jack and Jill friends with this pond on top of the hill. A

main picture left: Koi like these were added to lend a small measure of beauty to the pond.

above left: Golden carp were also included in the pond.

above right: Koi are omnivores and will eat both plant and animal matter. Here we can see them chasing after a lettuce.

chance visit to the farm by two Japanese tourists led to a clutch of stories back home about brown bears, avocados and magnificent nutritionally cared-for specimen Koi. On the basis of this word-of-mouth publicity, Jack and Jill were subsequently able to set up a secondary business selling ornamental fish to a steady stream of Japanese visitors at \$10,000 a Koi. Not a bad way to end a venture that had got off to a questionable start.

Better still, after the Mexican Government devalued the peso in December, 1994, the competition in avocado prices across the border vanished overnight, enabling the fruit farming side of the business to flourish as well. Some people, particularly those who have fish thrust upon them, are born lucky it seems... ■

FISHTALES BY TOKES & SCHOFIELD

