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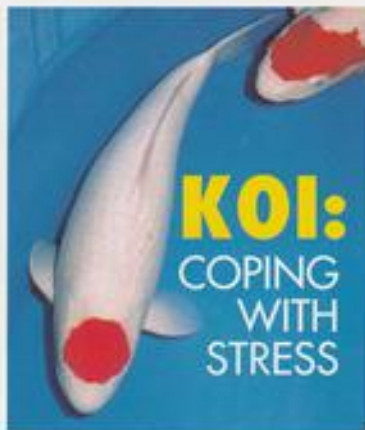
# AQUARIST & PONDKEEPER

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**TOP TEN PONDFISH**



**KOI:**  
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WITH  
STRESS

**MARINES:**  
INTRODUCING  
THE ZEBRA SNAIL



## EXPERIENCES WITH BLOOD RED PARROTS

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## editorial

### NEW THREATS TO IMPORTS

Remember last year's crisis that almost led to the banning of imports of Koi into the UK? Well, we've got another one, this time relating to imports of coldwater fish from China, Japan, the USA, Canada and Switzerland.

The threat, though, is not from SVC (Spring Viraemia of Carp), but from BHN (Infectious haematopoietic necrosis). This disease does not, itself, affect Goldfish or Koi, so the danger does not directly originate from imported infected fish. The fear is of 'passive transmission', e.g. through the presence of the organism responsible for BHN in the water in which coldwater fish are transported.

If proposals being circulated at the moment by MAFF are accepted, then — as from 1 July of this year — all imports of coldwater fish from the above-mentioned countries will only be licensed on a 'single consignment' basis — assuming that they meet stringent "health and geographical requirements". In other words, instead of the licence applying — as it normally does — for one year, it will need to be renewed for every shipment.

Even assuming that shipments from Japan, China, the US, etc., are allowed to continue, the increased administrative load and expense are bound to deal a heavy blow to these markets.

Both OR (and OR) (UK) are already 'on the case', so watch this space over the coming months for the latest news.

  
JOHN DAWES



## INTRODUCING:

# THE ZEBRA SNAIL



Algae-eating animals constitute a very important part of the coral reef. They play such a key role that their removal from a given, enclosed area leads, within a few days, to extensive overgrowth of algae. Corals and other sedentary animals may then start dying, partly because they are unable to keep their surface clean and partly from lack of light, but also because the symbiotic zooxanthellae (single-cell algae which are found within the tissues of many invertebrates) are ousted by the other algae. One can easily draw the conclusion that, as algae eaters are so important for the natural reef, they must also be indispensable for the coral reef aquarium.

### Exposed beach

During a recent visit to the Bahamas in the company of American aquarium consultant and author Julian Sprung, I had the opportunity to search for animals on an exposed, rocky beach.

While several of the coral reef areas we studied were practically teeming with life, this beach was a rather barren biotope, with only few animals to be seen. Among those few were a number of small gobiids, evidently mainly *Goryphopterus* spp., as well as small herbivorous hermit crabs and various snails. The beach substratum, consisting of calcareous rock, was more or less

Svein Fosså reports on a striped and spectacular algae-eater from the Bahamas that has some pretty special characteristics.

Photographs by the author

covered by microscopic algae which, no doubt, constituted most of the diet for both the hermit crabs and snails.

Among the snails were well known herbivores, such as periwinkles of the genus

**TOP LEFT** — Julian Sprung walking the shore line of the Bahamian rocky beach: a barren, exposed biotope with very limited life to be seen.

**ABOVE LEFT** — Collecting Zebra snails from a tide pool.

**TOP RIGHT** — *Meritina* sp. "Zebra" in the tide pool, intermingled with specimens of a smaller reddish brown *Littorina* sp. Note the thin layer of microscopic algae, which was actively grazed by the snails and which constituted the only available food source.

**ABOVE RIGHT** — A handful of the most magnificent algae-eating invertebrate I have ever seen, freshly collected from a Bahamian tide pool.

*Littorina*, and the primitive Chitons (Polyplacophora). The most common chiton, here, as in most parts of the Caribbean (Humann, 1992), was the up to 8cm (3.1in) long *Acanthopleura granulata*.

All the animals of this rocky beach were indeed fascinating, as well as extremely interesting to observe. However, they were definitely not spectacular, in the sense that many of the Bahamian coral reef animals are. They had no striking coloration, nor peculiar shapes. They were all much as one would expect from such a naked and exposed biotope.

### Magnificent find

My astonishment was proportionately greater when, in this desolate area, we found the most magnificent algae-eating invertebrate I had ever seen. In shallow tide pools several metres from the shore, there lived hundreds, or even thousands, of tiny snails, obviously of the family Neritidae, with an unsurpassed colour design. Would you believe it? Chalky white snails, with wavy stripes as black as coal!

Subsequent literature studies reveals that this Bahamian beauty must be a close relative of, or perhaps even identical to, the widespread *Neritina virginea*. This is a highly variable species, with different populations attaining from 4 to 12mm (c. 0.2-0.5in) in maximum size. The colours and



patterns vary: the background colour is olive, white, grey, red, yellow, purple or black, with black and/or white waves, stripes, dots, lines or mottlings (Andrews, 1994). In other words, this is a truly spectacular species. Its natural occurrence includes most of the Caribbean area, from Bermuda to southern Brazil.

There is, though, one factor which is not consistent with what we could observe in the Bahamian snail: the true *Neritina virgosa* lives preferentially in bay margins with sea grass beds (Andrews, 1994; and Sprung, pers. comm). Despite searching, we could not find the Bahamian *Neritina* outside of the tide pools, neither in the sea nor on dry land.

They did not appear to crawl out of the water, such as many other beach-dwelling snails commonly do. In the tide pools, all sizes were to be found, from evidently newly hatched individuals, up to presumably fully grown adults at approximately 5mm (0.2in) length. Apparently, this snail is adapted to living its full life cycle in the tide pool, where it feeds on the microscopic growth of algae.

There was also very little individual variation in the Bahamian populations, so there is every reason to suspect that it is genetically distinct. All of this taken into account, I suggested in Fossá (1995) that until we know more, this snail should be referred to as Zebra Snail, *Neritina* sp. "Zebra".

## Aquarium possibilities

There was every reason to believe that "Zebras" would be excellent animals for aquarium keeping. They have been tested in aquaria, where they live very well, and — in comparison to their small size — they do an excellent job as algae grazers. One should, however, consider at the very least two or three snails per 10 litres (c 2.2 gal) of aquarium volume in order to get any major effect from their grazing. A combination with other herbivorous snails is also possible.

Most importantly, despite its miniature size, *Neritina* sp. "Zebra" looks highly spectacular in the aquarium. The next move must be to find a way of making collecting

**TOP** — A group of the Zebra Snail *Neritina* sp. "Zebra" in an aquarium, sitting on the shell of a juvenile Giant Clam, *Tridacna maxima*, together with a single specimen of periwinkle *Littorina* sp. from the same biotope.

**CENTRE** — Many different algae-eating snails are common 'stowaways' on live rock. They perform a magnificent job. There is every reason to combine different snails in an aquarium, in order to get 'broad-spectrum' algae grazing.

**BELOW** — Indo-Pacific *Trochus* spp. are quite common in the aquarium trade. They represent an excellent group of algae-grazing snails, which (in particular) consume filamentous algae.



or captive breeding profitable enough for exporting the snail for the aquarium trade. Julian Sprung believes this will be achieved some time in the not too distant future.

## Snails & algae

A varied selection of herbivores are indispensable for a healthy aquarium. Some of the most interesting herbivores for the coral reef aquarium are to be found among the snails (Mollusca; Gastropoda). Despite their often modest size, many snails are also among the most effective algae grazers; particularly in terms of eating the smallest of algae; those that are too small for the fishes to bother with.

Filamentous green algae, various creeping and encrusting algae, as well as microscopic algae such as Diatoms, Dinoflagellates and Cyanobacteria, are all found on some or other snail's menus. The calcareous algae, which we normally want to keep, are normally left unharmed, but their surface will be painstakingly cleaned from growths of other, epiphytic algae. There is every reason to combine different snails in an aquarium, in order to get a 'broad spectrum' algae grazing.

In addition to the many herbivorous snails that are frequently imported with live rock, several species are commonly available in aquarium shops. These will frequently be more or less cone-shaped members of the families Turbinidae and Trochidae, such as *Astraea*, *Calliostoma*, *Tectus*, *Trochus* and *Thio* species. Imports of these excellent algae grazers for the aquarium are common, both from the Caribbean and the Indo-Pacific.

Additionally, one may find the *Nerita* spp. on offer. They are closely related to the above-mentioned genus *Neritina*. Normally, they are Indo-Pacific imports, but several species also occur in the Caribbean.

Many of the *Nerita* species are indeed good algae grazers, but most tend to be more sensitive during transport and acclimation than the previous-mentioned snails.

Besides, many are typical beach-dwelling species that tend to crawl out of the aquarium at the first opportunity. Considering that the looks of *Nerita* are also less striking than in many other snails, they will also normally not be the aquarist's first choice.

So it would be even better for the Bahamian *Neritina* sp. "Zebra" if it were to become established as an aquarium animal within the foreseeable future. **MP**

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## KEEPING:

# MAN-MADE PARROT

Dr Iggy Tavares attempts to unravel the mixed background of the popular Parrot Cichlid

Photographs — unless otherwise indicated — by Iggy Tavares/Pentax UK Ltd

Some time ago, at my local aquatic store, Fishworld, Elephant and Castle, London, I saw a couple of new 'designer' cichlids: a pair of Parrot Cichlids. They were trying to defend a corner of the aquarium behind an uplift tube. This was a crowded tank also containing slightly smaller Firemouths, Convicts and some other cichlids.

On enquiring, I was told that the Parrots had recently spawned. I put down a large deposit and picked up the fish the following week after I had prepared a suitable aquarium for them.

### Description

At first sight, Parrot Cichlids look very much like some sort of Goldfish. They have a disc-shaped body from which protrudes the parrot-shaped head and mouth. They also have large lips on a mouth that does not seem capable of closing. Another feature is the large gold-rimmed black eyes.

These cichlids were initially called "Blood Red Parrots", but the colours of the specimens that I have seen vary from red to pink and even yellow, with fin coloration to match. The fish that I purchased were by no means blood-red. The female was orangey-red, while the male was even paler in colour.

I recently saw some Parrots with some evidence of vertical bars on the body which could be due to the Severum parent being the green wild type, rather than the golden type. Males are usually at least an inch bigger than females, some of which I have seen being 6in (15cm) TL (total length). Another observation is that females seem to have their ovipositor always distended.

### What are Parrots?

What are Parrot Cichlids, one may well ask?

The first freshwater fish to be called Parrot Cichlid was *Hoplosternum* (*Cichlasoma*) *piticium*, an iridescent green fish with red eyes which hails from Brazil. On the other hand, the origin of the Blood-red Parrot was initially shrouded in mystery but it was, obviously, a man-made hybrid. It was reported to be a hybrid between *Cichlasoma severum* (the Severum) and *Cichlasoma citrinellum* (the Midas Cichlid) — (TFH, April 1992).

More recent thinking, however, leans towards saying that it is a hybrid between the Severum and *Cichlasoma labianum* (the Red Devil).

Apparently, these different species of cichlids do not get it together even when kept for long periods in the confines of an aquarium. But a lot of uniformly shaped Parrot Cichlids are coming out of Singapore and surrounding areas. So, how is it done?

A probable answer may lie in artificial fertilisation, much like the method used to produce some types of Fancy Goldfish. This would involve stripping a ripe female Severum of her eggs into a dish. A male Red Devil would then be stripped of his milt into the dish to fertilise the eggs. The same could be done with a male Severum and a female Red Devil. These fertilised eggs would then be artificially reared and grown to give the first generation (F1) 'designer' hybrid Parrot Cichlid. This would explain the ready availability of uniformly shaped and coloured hybrids.

Since these Parrots are F1's, crossing two specimens should produce a range of different fish. It is some time since I did a course in genetics and studied Mendel's ideas. However, if I remember correctly, providing the fish are fertile, 50% should turn out to be Parrots, with 25% being Severums and the remaining 25% being Red Devils. I was interested to see if this was the case, so I decided to try to get my parrot cichlid pair to spawn by feeding them a diet rich in earthworms and cichlid pellets.

### The aquarium

The newly acquired Parrot Cichlids initially shared a 36-inch (90-cm) aquarium with a female Convict (2.5in TL) and half a dozen young Golden Victorian Cichlids (*Astatotrochomis alluaudi* — 2in TL) which were being growing on. Later on, the companions were changed to a trio of Keyhole Cichlids and then, during another period, to a pair of Jewel Cichlids. All these other cichlids proved to be compatible fish for keeping with the much larger Parrot Cichlids.

Undergravel filtration supporting a three-inch bed of smooth gravel run by a powerhead was used to keep the tank in pristine condition. The aquarium was decorated with several large smooth pebbles of different colours to provide spawning sites. Other decoration consisted of plastic

Male Severum — one of the 'parental' species of the Parrot Cichlid.



Male Red Devil — the other possible 'parent'.

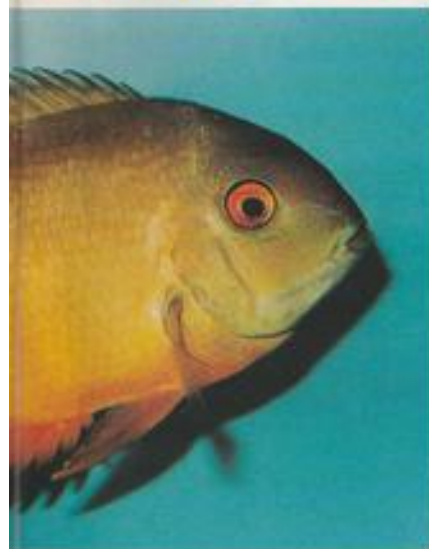


Male Parrot Cichlid





# PARROTS



## PARROT FACT FILE

**Scientific name:** None, man-made hybrid

**Common name:** Blood-red Parrot Cichlid

**Size:** Male 5in (14cm), female 4.5in (13cm) TL (Total Length).

### Aquarium Care

**Aquarium size:** 36 X 12 X 18in (90 X 30 X 45cm).

**Aquarium decoration:** Large smooth pebbles, plastic plants.

**Temperature:** 26-28°C (79-82°F).

**Water:** Medium hard (pH 7.5, 10°DH approximately).

**Diet:** Commercial pellets, some live or frozen food.

plants to provide cover and colour, since I was not expecting live plants to last long in a tank containing large cichlids.

Initially, untreated London tapwater which is hard (20° approximately) and has a pH of 7.8, was maintained at 27°C (81°F) with a 25% change every two weeks or so. Later on, the water was altered as described in order to try and get a successful hatching of eggs.

## Breeding

Two weeks of feeding with earthworms and *Daphnia*, supplemented by Doromin sticks, brought the Parrots into breeding condition. The male had started inspecting the various rocks and I was interested to discover whether they would be egg hiders or open spawners. From their body shape and size, I expected them to be open spawners so I wondered if they might select rocks which were horizontal or at an angle.

One afternoon, I noticed much greater activity in the aquarium, with both the male and the female actually exhibiting aggressive behaviour. They selected a flat horizontal stone as a spawning site. This stone was protected by plastic plants on the one side and large boulders on the other.

The female ovipositor was broad, while the male's papilla, which had descended, was fine. After some initial pecking at the stone to clean it, the female started a few dry runs over the stone. Soon, she was depositing her eggs in rows. This was done by pressing her ovipositor along the stone and attaching the eggs to the stone. She then turned through 60° and laid another row of eggs, followed by another 60° turn, followed by another row of eggs.

She then moved off the stone and the male swam above the eggs to deposit

sperm to fertilise them. The female then laid another two or three rows of eggs, followed by fertilisation by the male.

Although eggs were not laid in parallel rows, a patch about two inches square was covered within the hour and a half that the pair spent spawning. Not all the eggs got attached to the stone. The few that were not attached and were free-floating, were eaten by the female and, occasionally, by the male. The amber coloured eggs were tiny; I estimated them to be less than 1/16in (1mm).

Once the eggs had been laid the female took the prime role of fanning them. The male was usually nudged away gently by the female when he came over the eggs. A few eggs were white, rather than amber, when laid or soon after, and once the female started fanning them she tried to peck these away, both with little success.

Both parents protected their clutch from the other fish, but their behaviour was really mild. Whenever the female Convict, for example, swam within range, she was more nudged out of the way, rather than attacked. However, none of the other cichlids went near the clutch of eggs.

Over the next two days more and more eggs started turning white, but the female did not remove them, although she continued dutifully to fan them, only abandoning her task to feed. By day four the eggs were covered by a white fungus-like growth, and by day five, they and the fungus had gone.

Parrot Cichlids tend to dig somewhat, prior to, and also after, spawning. This activity was usually confined to the female, who tended to move gravel from round the stone holding the eggs, causing it to sink slowly over a few days.

## Further observations

On the rich diet that I was providing, the pair spawned regularly every two weeks, on a variety of large rocks in their tank, most of which were usually horizontal. They did not appear to have any rock colour preference, spawning equally frequently on brown and black rocks. On one occasion, they spawned inside a clay flowerpot when no rocks were present, and on another occasion, they dug a pit in the gravel and spawned there.

I made several attempts to aid in the egg hatching, but these did not hatch in hard London tapwater. Addition of various proprietary medications to the recommended dosage was also unsuccessful and the eggs still fungused. Softening the water over several days prior to a spawning, by addition of distilled water (1:1 ratio) followed by 20% weekly changes with distilled water, did not effect the fish, nor did it stop the eggs from fungusing.

The pair have now spawned well over ten times and I am beginning to think that, perhaps, one or both are infertile.

However, there have been reports of

The male fertilises the eggs which the (smaller) female has just laid.



Male fanning the eggs (note how few have turned white at this stage).





## MAN-MADE PARROTS

Parrot Cichlids producing a fertile spawn, followed by a mixed bag of youngsters

Perhaps, in a way, I have been fortunate not to get a fertile spawn, because the problem then arises as what to do with the youngsters. It would, of course, be wrong to put them on the market, since 50% of them would not be Parrots.

The only option would have been to feed these fry to other fish.

While I, personally, am not entirely happy about hybrid fish, particularly cichlid hybrids, several man-made fish which have involved fixing a strain, as well as hybrids, have been available for decades. These include the more than one hundred varieties of Goldfish, and on the tropical front, the Swordtails, Platies and Guppies, as well as the long-fin varieties of barbs and tetras and the colour varieties of gouramis, to but name a few. At

the cichlid end of the market, the man-made fixed strains of Oscars, Angels and Discus command a high price.

The hybrid Parrot Cichlids do have a certain charm, and I can see why some aquarists are attracted to them.

Together with their mild manners, even when breeding, these fish could well have a place in a community set-up of medium-sized friendly fish, where their presence could form the centrepiece of the aquarium, as well as a point of interesting conversation and debate. 227



ABOVE LEFT — The pair guarding their eggs, many of which are beginning to go off.



ABOVE RIGHT — By day 4 all the eggs have turned white (note the fungus in full cottony 'bloom').

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## Interpet Competition Results

The prizes up for grabs were 5 Interpet Mini-Filters. There was a pretty good entry for this and the lucky winners are:

**Nadia Springate** of Crowborough, East Sussex, who wishes to try the filter with Terrapins; **Anne Shadrack** of Holworthy, Devon, who intends to use it on a small community aquarium; **A G Hady** of Penryn, Cornwall, who wants to employ the filter on a Killifish breeding tank; **G Mathers** from Leeds, whose intentions are to compare it with his current sponge filter system; and **E Springer** of Bridgewater, Somerset, who will be using the filter on an isolation/ breeding aquarium.

Perhaps all of you will be kind enough to let us know how you get on with your Interpet Mini-Filters. Congratulations to you all, and sincere thanks to Interpet for sponsoring the competition.



## Big, beautiful and still growing

I received the following notes from **Mr Grimley** of Coventry, who asked me to pass this information on as a warning to other unsuspecting aquarists thinking of purchasing a Redtailed Catfish. I think it is a very valid point that he makes and one that can be applied to any potentially large fish, for example the Giant Gourami, not just catfish (see also **Recent Sightings**).

"About five years ago I, possibly like many other aquarists, purchased a Redtailed Catfish. They, at the time, seemed to be a popular fish at many aquatic stores. After doing hardly any research into their requirements, I purchased Ragley, a five-inch fish which I thought would be ideal for my five-foot tank. It soon dawned on me that this fish had an incredible rate of growth, and within just eight months, the tank was clearly too small. So, after



JOHN DAWES

## Redtailed Cats grow large . . . very large, as this photo taken at EkkWill Waterlife Resources in Florida shows.

some considerable expense, a 72 x 19 x 20in tank and stand were made.

"He lived very happily in this tank for one year before it, too, was too small and a new home needed finding. Luckily, I managed to obtain a disused 72 x 24 x 24in 'wave tank' from my local university for the bargain sum of £40. This cut the cost greatly and enabled a second Fluval 403 external canister filter to be purchased.

"Today, just one year on, Ragley has undergone his latest move after growing out of his tank. This time, however, there was a problem: there was no physical space in the house for a bigger tank. As he was now a member of the family, I did not want to sell him on, as it seems all too popular to do. So, it seemed there was only one solution, and after the demolition of the garage and six months work, his new 18 x 7ft fish house is complete. Ragley, now 30in in length, lives in a 600-gallon 'tropical' pond which has the possibility for extensions as he grows. Friends and neighbours think I'm insane spending large amounts of money on one fish, but seeing him happily swimming in his pool is all the proof that I need.

"I would like this letter, should it be used, to be a warning to your readers that Redtailed Cats do grow to huge proportions and cost a small fortune to maintain. They will, however, reward you with one of the most peaceful, friendly, good natured fish you could possibly wish to own. So, unless

# Tomorrow's

## So you want to breed egglayers?

- 1 Make sure you have a pair of fish! This might sound silly, but sometimes it is difficult to sex egglayers, in which case buy a small group of 6 or 8 in the hope that you get males and females.
- 2 Only use good quality healthy stock to breed from, i.e. ensure the potential parents do not have any deformities or colours or colour patterns that are undesirable.
- 3 Condition the prospective parents well. Use either live foods or frozen foods in addition to the standard flake, pelleted or green foods.
- 4 Check the strategy of egg-laying used. Are they egg-scatterers, mouthbrooders, bubble-nest builders, etc.
- 5 Provide the correct materials for the fish to spawn on, e.g. marbles can be used on the base of the tank for egg scatterers so the eggs fall between the marbles and the parents can not eat their eggs.
- 6 If you are using newly hatched brine shrimp to feed the fry and the eggs hatch in, say, 7 days, time your supplies of hatching brine shrimp to coincide with when the fry require it.
- 7 Be careful what type of filtration you employ in the breeding aquarium. The first time I bred Opaline Gouramis I lost the best part of the batch because of the undergravel filter — the fry were sucked down into the gravel and even though some survived, several had twisted spines. Try an air-operated sponge filter in a special breeding aquarium, it's safer.
- 8 Remember to remove uneaten food. A bacterial build-up can quickly result in the death of the fry.
- 9 Regular small feeds are often better than one or two large feeds; be sure to provide the right type and size of food for the fry.
- 10 Keep a note of what you have done and what the fish have done. If everything fails, you'll know what to avoid next time. If it all works, you can pass on the information to someone else.

you are prepared to keep them in conditions they deserve, don't buy one."

I can only echo Mr Grimley's words. If you want an animal of any description, find out all about it first and ensure that you can maintain it properly.

## Sperm drinking Corys

Our editor recently sent me a copy of a paper that had been sent to him by A&P reader **Dr Peter Miller** of Bristol University. It was written by **Masanori Kohda, Masayo Tanimura, Miyako Kikue-Nankamura and Satoshi Yamagishi** of the Osaka City University, Japan. The title, **Sperm drinking by female catfishes: a novel mode of insemination**, was enough to make this compulsory bedtime reading.

The catfish in question is the ever-popular aquarium species, the Bronze Corydoras. They state that when the fish are breeding and take up the T-position, the

Two male Bronze Corydoras courting a female and just about to enter the T-position. But how does the female fertilise her eggs? By swallowing the sperm?





# Aquarist

BY GINA SANDFORD



female drinks the sperm directly from the male's vent. Eggs and sperm are then passed out together through her vent into the anal fin pouch and, because the eggs and sperm have been 'mixed' in the close confines of her body, the insemination rate should be very high.

This paper set me thinking because it sounded familiar. A little research revealed why. A few years ago, a Swedish aquarist, **Vidar Fjeld**, had sent in an article on breeding for the Catfish Association of Great Britain magazine, issue 68, 4/90, and in it he stated, 'My theory is that the female has a small tunnel from the mouth to the egg opening. This theory arose when dissecting a female *Corydoras aeneus* (Bronze Corydoras). I found a canal from the mouth to the vent through which the sperm could pass during the T-position to fertilise the eggs.'

At the time I remember thinking it a little strange, but that maybe he had fallen upon something.

Now I have a whole host of questions. If the sperm passes through the gut, why isn't it digested? If there is a canal, why hasn't someone found it before when dissecting specimens? Do all *Corydoras* that practise the T-position when spawning have the

canal or gut method of passing the sperm? If the canal evolved in some *Corydoras*, why not in all? Does the presence of a canal mean a common ancestry?

## Conservation at Bolton

On Saturday 20 May, there will be a series of lectures on fish conservation entitled **In Our Hands** held at Bolton Museum Aquarium. That is precisely what we have each day, our fishes' lives in our hands. Just to keep them is a remarkable feat in the case of some species but, with others, we can help conserve stocks by captive breeding and, of equal importance, by passing that knowledge on so that others can do likewise, we are placing less of a strain on wild stocks.

As countries realise that their native flora and fauna are of economic importance, either as an export or as a tourist attraction, it should be possible for them to develop their own captive breeding programmes to supply the trade so that they do not destroy their natural resources.

Who knows, maybe the report you did on breeding a characin helped a fish breeder in Peru to set up a commercially viable breeding programme to supply you with fish and, at the same time, make enough money to feed his family and not rely on aid handouts.

But maybe this is too simplistic a view; maybe the commercial view outweighs the altruistic approach. Maybe you should come along and listen to the lectures by **Dr Gordon Reid** (Zoo quest in the Gashaka Gumti, Fish, forests and conservation), **Derek Lambert** ('Aquarian' Endangered Species Survey) and **S Mickleburgh** (Freshwater Fish — Global Action Plan) and see what you think.

Before you put up your hands in horror and say that it will all be too scientific and above our heads, nothing could be further from the truth, because the aim of the day is to inform as many people as possible about the plight of freshwater fish globally — that means, you, me, your friends and anyone else who wants to turn up.



MAK O PHELSON

## Tetra TA COMPETITION

### TetraMin celebrates its 40th Anniversary

**TetraMin** — the world's leading flaked food for tropical fish — celebrates its 40th anniversary this year. When Tetra started producing its famous food back in the 1950s, it consisted of just four ingredients. Today, **TetraMin** has a unique combination of 40 high-quality ingredients which have all been carefully chosen to reproduce the complex diet that tropical fish would normally enjoy in their natural habitat.

Removed from their natural environment and maintained under aquarium conditions, fish become dependent upon aquarists to provide them with a balanced diet and this is why Tetra has a continuous research and development programme aimed at providing fish with a mix of proteins, fats, carbohydrates, vitamins and minerals — all in correct amounts.

The overall benefits of feeding a nutritionally balanced diet will be seen in the health, vitality, coloration and resistance to disease of your fish.

To commemorate **TetraMin's** 40th anniversary Tetra has produced a limited edition, die-cast model of a **Morris Z Van** from the 1950s. Only 4,000 vans will be pro-

duced and anyone wanting one of these exclusive models should collect two special gold 40th anniversary seals off any **TetraMin** food pack and send them to Tetra with a cheque or postal order for £1.99.

But we have 10 vans to give away (each worth £5.95) to readers of *Tomorrow's Aquarist*. So, to earn the chance of winning one of these super **Morris Z Vans**, simply answer the three questions below, put them on a postcard (or the back of a sealed envelope) with your own name and address and send it to Dept 40, Tetra Competition, PO Box 2162, Bournemouth BH2 5ZA to arrive no later than 31 May 1995. The first ten correct entries to be drawn will each receive a special **TetraMin Morris Z Van**.

**Q1** How many ingredients are used in the manufacture of **TetraMin** today?

**Q2** How many special edition **Morris A Vans** will be produced by Tetra?

**Q3** Name one of the benefits of feeding your fish a nutritional balanced diet?



The fun starts at 10 am with tea and coffee and, if you wish, a chance to view the back of the aquarium before the first lecture at 11 am. There is an admission charge of £3 and there are only 200 places available, so book early: **Bolton Metro, Le Mans Crescent, Bolton BL1 1SE**.

### Bug of the month

Sorry, there wasn't enough space for it this month, but our bug will be back in June, just in time for you to go dabbling in those nice warm streams and ponds!



# Making the most of your pond FILTRATION & TOPPING UP

PART  
TWO

David Fletcher embarks on the second stage of his pond creating project.

Illustrations by the author.

There are many ways in which a biological filter can be designed and built at home; there are also many excellent commercial units available as well, of course. The individual pondkeeper must decide which is the most suitable for the planned installation, taking into account the size of the pond, the stocking density and whether the filter will be hidden or easily visible.

In this article, I am not going to attempt to describe anything resembling the complex, effective systems that some readers use with their large Koi ponds. My aim is to keep the unit compact, inexpensive and good looking, so that it can be put on show as a landscape feature of the watergarden.

## My filter

The purpose of a biological filter is to convert harmful waste products, such as ammonia, which are excreted by fish, into relatively harmless compounds, such as nitrates. These later will be taken up by water plants and removed from the system.

The process is performed by bacteria which occur naturally in ponds, but need a solid surface to settle on. Therefore all that is required for a simple filter is a container filled with suitable filter material and a means of circulating the water through it. Filter materials are always designed to have as large a surface area per volume as possible.

Here I present the method I used to make a filter. It could be regarded as a



My filter *in situ* by my larger (top) pond.

starting point for other designs, or simply used in this form if it is suitable for your personal situation.

The container I used is a stone-coloured concrete trough. These are sold by garden centres, with bolt holes in one end for mounting ornamental pumps. I sealed the bolt holes with cement, but if it takes your fancy, there is absolutely no reason why the filter should not be decorated with a pump.

This type of filter is bottom-fed, with a spill way on the front edge. It fills almost to the brim with water, and so doubles up as a drinking fountain for the birds that visit my garden.

It is necessary to cut a channel in the rim of the trough where the water is to flow out. The material from which these troughs are made is very strong, though, and so the channel has to be cut in two stages as shown in Diagram 1. First, drill plenty of shallow holes into the rim with a hammer drill and a small masonry bit to weaken the material which is to be removed. Then, very carefully, chip out the shape with a hammer and cold chisel.

The dimensions of the channel work well with my pump, which is a type P450. If the channel is not made deep enough, the water will flow over the sides of the filter trough.

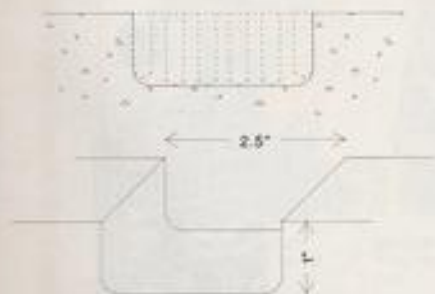


Diagram 1. Two steps in the creation of the filter channel.

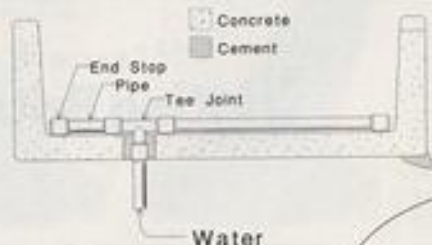


Diagram 3. Cross-section through the filter showing the various main components, including the lip (bottom right).



Diagram 2. The 'lip'.

Lip





**LEFT** - An anti-siphon valve is highly recommended.

**RIGHT** - My UV steriliser is located between the pump and the filter.



Also, the water tends to flow underneath the trough and dribble onto the soil, rather than make a pleasing cascade off the bottom edge. To create the desired effect, build a lip of cement under the curved front edge, as shown in Diagram 2. This throws the water off into the pond and makes the pleasing sound of a small waterfall.

To pump the water evenly into the bottom of the filter, use a spreader made from 22mm plastic plumbing pipe, with a T-connector cemented into one of the holes in the bottom of the trough. Drill several holes along the length of the spreader. They should be about 5mm diameter. If the holes are too small, they block very easily. Cement the T-piece in place first, then fit the other parts. Remember not to push the pipes all the way into the rubber seals, as they are then very difficult to dismantle for cleaning. (Diagram 3)

Finally, prepare a firm, level foundation and place the filter on the four stands provided with the trough. Fill it with a suitable filter material. I have found that Lytag works well for me, although other



My drip watering nozzle for keeping plants damp.

products, such as Canterbury Spar, might also be used. For a decorative appearance, cover the top of the filter with a layer of cobble stones.

## Maintenance

When it becomes necessary to clean out the filter, use only pondwater to rinse the filter material. Raw tapwater contains chlorine, which may damage the essential bacteria culture.

To move water around your system, always use 3/4inch PVC hose. The reason for choosing this diameter is that pipes tend to become clogged by algae and lime scale, especially when exposed to sunlight.

To clean them, simply push a 1/2inch garden hose pipe, which is a fairly close fit, up the inside of the 3/4inch pipe, and turn on the tap. The end of the hose scrapes away the obstruction and the water pressure flushes everything out of the other end. The PVC hose can be connected to the filter using 3/4inch hose tail and a BSP to 22mm compression joint adaptor. A UV steriliser can be inserted into the pipe run anywhere between the pump and the filter.

Run the pump and UV steriliser continuously while the fish are active and feeding. With a few part-water changes throughout the season, you should be assured of good quality, crystal clear water throughout the summer.

## Topping up

I like to make as many things as possible work automatically. This includes topping up the garden pond. Leaving home for a few days or weeks during hot weather is a worry if you need to rely on someone else to do the job. Also, it is a nuisance having to get the hosepipe out every day or two, and a part-filled pond is always unsightly. For the small amount of extra trouble and expense involved, auto-

mated topping up is very well worthwhile.

If you decide to have automatic top-up, use a 15mm plastic water pipe to lay on a permanent supply to the pond. This has numerous advantages over copper pipe for this application. If a double skinned wall is built around the pond, the pipe can be concealed in the bottom, and easily flexes to follow curves (but not sharp corners).

During wet weather, water might sit in the supply pipe for a considerable time. This could lead to metal contamination with copper pipe, but is, obviously, not a problem with plastic. Plumbing is dead easy. Using the proper plastic fittings, watertight joints are simply pushed together.

A Torbeck valve is probably the best device to use for regulating the level. It does exactly the same job as the old fashioned ball valve, but is very compact and much quieter. It must be located in the lowest pond in the system. The water level in the higher pond(s) will always be correct, because the pump lifts water from the bottom to the top of the system. The levels are then set by the height of the waterfall spillways as the water descends again.

Insert anti-siphon valves into the pond supply and any pipes which supply outside taps or hoses. This will keep the water authority happy, and protect your fish from chemicals, such as car wash detergents, if there happens to be a mains water pressure drop.

My final part of this series will suggest some suitable plants to grow around the new pond and discuss the wildlife which will, hopefully, make use of it.

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# MALAYSIA

# The Harlequin



**ABOVE**—Hand collecting (note also the small plastic bowl) for scooping out fish results in a perfectly sustainable industry.



**RIGHT**—A sampang in expert hands.

Finnish aquarist and writer **Tor Kreuzman** tracks down one of the most popular all community tank species in the heart of the Malaysian jungle.

Photographs by the author

**O**n my previous trips to the rivers of Malaysia I had been disappointed by the number of fish that could be found. I knew, however, that the Harlequin Rasboras exported were wild-caught fish and therefore, somewhere, there had to be places rich in fish. When I was offered the opportunity to go to Kuala Lumpur, together with Mr Laakso of Turun Akvaario, Finland, and see for myself how Harlequins were caught, I was ready at once!

Keith Jones of Aquatics International in Kuala Lumpur, had excellent contact with the people living by the river and we were to be guided by Chow, one of Keith's employees. From the beginning, we thought it would be a short trip in the morning, with some fishing on the river. It turned out to be a true adventure with a full day of exciting fishing.

## Surprising Bahau

The arrangements had started a few days before, when Chow went out to arrange for people and boats to meet us. We, ourselves, started out in the early afternoon to drive to Bahau, where we were to stay overnight.

I was reading the map and became totally confused by the road markings. I am not sure if we would ever have arrived in Bahau if Keith and Janice, one of the

directors of Aquatics International, had not found the way.

In Bahau, we were in for a surprise. Even though the town was hard to locate on the map, it was big, with lots of busy people and many hotels. We had all been prepared to stay overnight in some small Chinese hotel, but had no problems finding a comfortable hotel with air conditioned rooms and TV.

The next morning we rose at seven o'clock and started looking for a restaurant serving breakfast. I was hoping for coffee and some bread and had no appetite for noodles in the morning. It took us some time to locate a suitable restaurant, but soon we had a nice cup of very strong, local coffee and some sandwiches each.

## 'Uncharted' Iskandar

After breakfast we met Chow and started along dusty roads towards Fort Iskandar. Fort Iskandar was established by the British forces fighting the guerillas in the early '50s. At that time, there were no roads and everything had to be transported out there either by air or through the jungle.

I had the pleasure of meeting Keith's father, Richard, who had arrived in Fort Iskandar in 1951 as fort commander. He had some very exciting stories to tell about the places we were to visit. They



On the river.

were the first Europeans to visit the Aslis village by the river, and now we were told that we were the first foreigners in forty years to come out there. But to be frank, this was not a place where you could arrive by accident. You certainly needed to have a guide if you were to find the village at all!

Fort Iskandar was not to be found on any road map and even though there were road signs showing us the right way, it would have been impossible to find the village without help. The drive seemed to last for hours with the red dust covering everything. It was, in fact, less than two hours and soon we arrived at the small Aslis village by the river.

## Sampang sortie

We had to wait some time for the boats to arrive. They came from Chow's home village just across the river.



# is of Jewalat

Newly collected Malaysian Halfbeaks.



*Cryptocoryne cordata* biotope. The mull coloured leaves are clearly visible.



Substantial *C. cordata* specimen from the Jewalat.



The boats were sampangs, the sort of canoes used by the people of the river. They are made out of one log and seem to lie very low in the water. To us, they seemed small and dangerous, and I think I saw a hint of hesitation in Keith's eyes, too, when the sampangs arrived. But off we went.

We were to travel upstream, stopping everywhere where there was a chance to do some fishing, from Fort Iskandar up to Kampong Jewalat. The stretch of river was called the Jewalat by the locals. Four sampangs were soon hidden in the lush green of the river.

Chow tried to scare us by telling us stories about the wild elephants and tigers to be found out here. Actually, this was not a river, but at this time, when the water was low, it was a swamp crossed by waterways. In high water we would find a lake here.

The sampang proved to be an excellent boat to travel in. The fishermen handled them with great skill and they could be taken close to the shores when we found fish. They could be 'driven' over roots and driftwood without any risk. A boat made of glass fibre would probably not stand this kind of handling.

## Easily caught

By this river we thought we should be able to find Harlequin Rasboras among the plants and roots by the banks. The sampangs were quietly paddled close to the shore and the fish were caught with a hand net. It seemed easy enough. All Harlequins that were not big enough

were returned into the river.

It seemed that the size varied from place to place. In some places we found only bigger fish, in others only smaller ones.

The collecting was mostly done sitting in the sampangs but, sometimes, it was easier to get out of the boat. The technique was always the same, though. The Harlequins were easy to see, swimming among the roots and plants in the shallow water, quite frequently over a dense mat of *Cryptocorynes*. Chow took an oilpalm fruit and crushed it into the water. The smell attracted the curious fish and, with a swift movement of the net, they were caught.

From the hand net, the fish were scooped up with a small rice bowl and poured into a plastic bag. The wrong species and the small Harlequins were always returned to the river. The water in the plastic bag was changed regularly during the trip.

## Sustainable collecting

The fishermen who caught Harlequins regularly on the river did it only two or three times a week. And, because all the small specimens were rejected and only hand nets were used, this fishing was true nature conservation. If they continue working like this (and why shouldn't they?) Harlequins will not become extinct because of overfishing.

Even though Harlequins are exported from these rivers by the thousands, this is possible using these small-scale methods. I was very pleased to note that people on

the river could earn some income from this type of fishing and without any danger of destroying habitats or populations of fish. Buying these Harlequins would ensure the people some extra income and make their lives on the river both easier and happier.

In Fort Iskandar, they had got their electricity supply just a few months previously, and it was only for some hours each day. On the opposite bank, they were not yet even promised electricity in the near future.

The pH of the water in this district varied between 5.5 and 6.5. The temperature was about 25°C (77°F) but it can probably vary quite a lot. I could not measure any degrees of general hardness in the water, that is to say the water was very soft.

We also caught some other fish. Halfbeaks were often seen on the surface, but they were very fast and hard to catch. Different species of rasboras and barbids could be found, but in such small quantities that they were returned.

The prices for many barbids are so low that they are not worth collecting. They are easy to breed and very prolific and therefore they are bought from breeders.

## Beautiful Cryptos

Along the riverbanks I found lots of beautiful *Cryptocorynes*. They were often growing in the same places where we found the Harlequins. I collected these beautiful plants from many different locations and ended up with a big plastic bag full of specimens.



Harlequins photographed straight after capture.



This snail was found by the river — species unknown.



Jewalat Harlequins photographed in one of my tanks in Finland.



The Harlequins are scooped out from the net with a small plastic bowl.



They were of, at least, three different species. The biggest and most common is, most likely, *Cryptocoryne cordata*, or the one that was called *C. Miami* earlier. It can be up to 40cm (c 16in) high, with beautiful heart-shaped leaves.

The upper side is dark green and the underside of the leaves is red. These *C. cordata* made the trip back to Finland in good condition.

The other two species were smaller and I am not yet sure of their correct names. One is probably *C. nana*, but the specimens I collected dropped all their leaves during transport, so I do not know for certain. I hope to get the plants growing in my tanks and maybe later be able to identify the species. *Cryptocoryne nana* is reported not to do well in aquarium conditions, so there is a possibility that I won't see any of these growing in my tanks.

All the *Cryptocoryne* species collected were growing close to the surface, sometimes partly above. Those plants growing out of the water were not doing well, though. They were dried up and probably dying. This surprised me because I thought that all *Cryptocorynes* could easily survive a dry period.

The bottom of the waterways was fine river sand or a light loamy bed in most places, over which the plant roots formed a dense mat of rhizomes. There was a lot of mulm in the water and, almost everywhere, the plants were covered by a thick

layer of brown sediment.

Sometimes it was hard to find the plants because of the compact brown layer covering the dense carpet. On closer examination, however, you realised that some places were completely covered by these *Cryptocorynes*. The water was very clear but had a brown or reddish colour. This was certainly due to the humic acids in the water.

The current was very apparent, but I believe it was much stronger in high water. Still, I would say that both *Cryptocorynes* and *Rasboras* could probably do with a much stronger current being provided in our tanks than is probably the case in most instances.

There were also other plants in the River Jewalat. I found some nice *Vallisneria*-looking *Byssa* species, one species of *Limnophila* and some water lilies with beautiful flowers.

We had travelled along the river for a full day, fishing in all promising spots. The catch consisted of some hundred Harlequins. These were finally counted and packed in freshwater with oxygen. The oxygen was brought with us in plastic bags. Carrying oxygen this way was much easier than taking the heavy pressure bottles along.

On our way back we stopped at Chow's village. You had to know the exact spot where to turn off the river if you were to find his house. This very narrow 'harbour' was completely covered by

*Cryptocorynes*, growing in the mulm by the thousands.

Here I had the opportunity to test my skills on the blowpipe. I am lucky that my living is not dependent on hunting with this highly efficient weapon! My poisoned arrows, looking more like darts than arrows, had to be sought far away in the vegetation behind the target.

## Future hope

Most of the Harlequins from the Jewalat river are shipped to Singapore and are exported all over the world from there. The excellent *Cryptocorynes* have, so far, been left in peace, but some day they will also be harvested for sure. Let's hope that if that happens, the plants will be collected with as much sense as the fish currently are.

If all the plants were taken, the river would probably not host the Harlequins any longer; they would have to move to other rivers to find suitable habitats. Harvesting *Cryptocorynes* in small amounts and leaving the rest to recover would guarantee that these plants could be exported regularly from their native habitats.

The whole trip was an absolute success and we all agreed that the day had been worth all struggles when we drove back to Bahau in the evening to get something to eat.





DAVID TWIGG'S

# KOI CALENDAR

## Jobs for the month

May is the month when it all really begins to happen in the Koi world. Water temperature should now be well on the way up and our Koi very active.

During the last week of April and first week of May, depending upon the weather, is the time when I am looking to take my pool winter cover down. The lagoon in the garden improves tremendously and my Koi get their first look at daylight for six or seven months.

It is amazing how the hobby really takes off at this time of year; clubs around the country start putting on shows, arranging trips to look at fellow Koi keepers' ponds and members generally tidy up pond and filter installations.

Finally, do keep an eye on water quality, with the aid of test kits, because this is the time of year when feeding is on the increase and filters are not likely to be fully up and running.

Happy Koi keeping.

## Open v Closed Shows

In the accompanying **Show Calendar** will be found references to Open Shows and Closed Shows. This refers to the persons who can enter their Koi into the show.

An Open Show is one where an entry will be accepted from any Koi keeper, regardless of membership of any club or society. A Closed show, on the other hand, is one that restricts entry to a certain group of people, generally those belonging to the organisation putting on the show.

Both types of show are open to the public to view and, from my experience, they provide for an enjoyable day out for all the family, as there is almost always something laid on for the children while Mum and Dad concentrate on Koi.

## Other show features

Many shows — and it seems to be becoming the norm these days — include some form of Craft

Faire and a wide selection of allied hobbies, such as Bonsai, as well as garden ornaments and plant stalls.

The main attractions for the Koi keeper (second to the show ring) are the Koi Dealer stands, where a large variety of Koi and Koi-related items can be purchased. Often, dealers will have special offers on various pieces of equipment or food to tempt the visitors to their stands.

The first show of the season is being held indoors over the weekend **29/30 April** at the Telford International Exhibition Centre. So here is your chance, if you have never attended a show before, to go along and see some magnificent Koi in competition and over 30 dealers' stands to browse round. Maybe I will meet you there.

Such is the spread of the hobby into Europe now that it may well be possible to attend a Koi show on the European mainland while on holiday. As can be seen from the **Show Calendar** a number of Koi societies are springing up in Belgium, Holland and Germany, and they are holding their own Koi shows. Maybe I will meet you there too!



With so many shows lined up for this season, there will be lots of top-quality fish like these to admire.



It's not just Koi that make the leading shows such great events to visit.

### WHAT'S ON IN MAY

3 — Leicestershire Koi Society. AGM, B.S.C. Social Club, Scudantor Road, Leicester. Contact Pip Ostell, 01533 809707 or Kevin Luckman, 01455 250413.

— Yorkshire Section BKKS. Monthly meeting. Contact Phil Swallow, 01422 343674.

4 — Suffolk & North Essex Section BKKS. Monthly meeting. Stanway Rovers Football Club. Contact Alan Carter, 01206 866011.

— Middlesex and Surrey Borders Section BKKS. Speaker is Ann Telford of AllClear Water Purifiers.

8 pm. Norbiton C.I.U. Club, Kingston. Contact Peter Saul, 0181 979 9117.

8 — Northampton Section BKKS. Monthly meeting. Contact Brian Calcutt, 01604 764954.

9 — Nottingham & District BKKS. Monthly meeting. The Western Club, Nottingham. 8 pm. Contact Shirley Hind, 0115 981 0923.

10 — South Hants Section BKKS. Meet at 8 pm. in Denmead Church Hall. Guest speaker this month is Frank Prince-Isles of the Koi Health Group. Contact George Rooney, 01420 473169.

11 — East Pennine Section BKKS. Speaker is Anne Telford of AllClear Water Purifiers. Contact John Timmis, 01226 269507.

12 — Merseyside Section BKKS. AGM and Show meeting. Knowsley Village Hall. Contact Robbie, 0151 549 2001.

14 — Lea Valley & Harlow Section BKKS. Visit by South Hants BKKS members. Contact Mick Fahy, 0181 508 5155 or Alan Burnall, 01273 814638.

— Middlesex and Surrey Borders Section BKKS. A look at members'

ponds. Contact Peter Saul, 0181 979 9117.

— Mid-Somerset Section BKKS. Members' pond visit. Contact Alan Furnell, 01458 272132.

— Peterborough & Cambridgeshire Section BKKS. Visit from North Lincoln Section members. Contact Gary Foulds, 01733 573176 or Alan Peppercorn, 01733 349472.

— Northampton Section BKKS. Visit Birmingham & West Midlands ponds. Contact me, 01526 495213.

17 — Peterborough & Cambridgeshire Section BKKS.



## SHOW CALENDAR

### APRIL

29/30 — **International Koi Show**, Telford Exhibition Centre.

### MAY

6/7 — **Belgian Open Koi Show**, Huyzingen (20km from Brussels).

28/29 — **Merseyside Section BKKS Open Show**. Contact Robbie, 0151 49 2001.

**South Hants Section BKKS Open Show**. South Downs College. Contact George Rooney, 01420 473169.

29 — **Avon Section BKKS Closed Show**. Part of The North Somerset Show, Ashton Court, Bristol. Contact Dave Knowles, 01454 774576.

### JUNE

3/4 — **Yorkshire Section BKKS Open Show**. Contact Phil Swallow, 01422 343674.

4 — **Middlesex and Surrey Borders Section BKKS**. Contact Peter Saul, 0181 979 9117.

17/18 — **INTER 'KLAN' 95**. International European Championships for Nishikigoi with Tetra-Koi-Cup at Rhein-Ruhr-Halle, Duisburg, Germany. Contact Willy Quellmann, Tel/Fax +49 2152 2149.

18 — **Crouch Valley BKKS Open Show**. Contact Ron Parfou, 01277 840883.

24/25 — **East Pennine Section BKKS Open Show**, Wensworth, South Yorkshire. Contact John Timmis, 01226 289507.

25 — **Suffolk & North Essex Section BKKS Closed Show**. Langham Corn

munity Centre. Contact Alan Carter, 01206 866011.

### JULY

9 — **Lower Thames-Side Section BKKS Open Show**. Contact Barry Hales, 01258 565700.

15/16 — **East Riding Section BKKS open show**. Exhibition Centre, Freightliner Road, Hull. Contact Tim Goodyear, 01954 542752.

16 — **South Wales Section BKKS Closed Show**. Pughs Garden Centre, Morganstown, Nr Car diff. Contact Keith Horwood, 01222 540775.

23 — **Essex Section BKKS Open Show**. Aveley Sports Ground.

### AUGUST

12/13 — **BKKS Koi '95**. Billing Aquadrome, Northampton.

19/20 — **Lea Valley & Harlow Section BKKS**. Closed Show. Harlow Garden Centre. Contact Mick Fahy, 0181 508 5155 or Alan Bunnell, 01279 814638.

28 — **Peterborough & Cambridgeshire Section BKKS Closed Show**. Barn Garden Centre, Gunthorpe. Contact Gary Found, 01733 573178 or Alan Peppercorn, 01733 349472.

### SEPTEMBER

9/10 — **Mid Somerset Section BKKS Koi Show** as part of the 'Countryside Cavalcade', Royal Bath & West Showground. Contact Alan Purnell, 01458 272132.

24 — **Northern Koi Club Show**. Cascade Water Gardens. Contact Tony McCann, 0181 794 1958.

Club night. Beaks Showlar Club, Peterborough. Contact Gary Found, 01733 573178 or Alan Peppercorn, 01733 349472.

20/21 — **Suffolk & North Essex Section BKKS**. Weekend visit to Hales & Southern Koi Society. Contact Alan Carter, 01206 866011.

21 — **Northern Koi Club**. Dr David Peat of Tetra speaks on Koi Nutrition. Meet at Dilton Park Hotel, Winchester Road, Dilton. Contact Tony McCann, 0181 794 1958.

— **South Hants Section BKKS**. Trip to visit Lee Valley & Harlow

ponds. Contact George Rooney, 01420 473169.

— **Middlesex and Surrey Borders Section BKKS**. Visit Chobem Section ponds. Contact Peter Saul, 0181 979 9117.

24 — **London Section BKKS**. Speakers are Kevin & Lloyd from M.S.B. Section, Rusdon House, Croydon. Contact Keith Nind, 0181 673 3574.

— **Middlesex and Surrey Borders Section BKKS**. Beginners' Class 4, N.U.U. Club, Kingston. Contact Peter Saul, 0181 979 9117.

# THE WATER GARDENER

## MARCH/APRIL ISSUE ON SALE NOW

THE MAGAZINE FOR GARDENERS WHO LIKE IT WITH WATER AND THE BEST GUIDE FOR BEGINNERS AND EXPERTS ALIKE

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- DEALING WITH THE POND IN SPRING

## ON SALE AT LEADING MAGAZINE OUTLETS



Although it was almost 3 am, my teenage daughter and I hardly noticed as we walked across the runway and into the small airport building to collect our luggage. The four-hour charter flight aboard a 757 from Miami had been crowded with fellow travellers, but now that we had arrived in Iquitos (Peru), the discomfort was behind us. The smell of the forest, the warm, humid surroundings and the incessant sound of the insects told us that we had arrived — in Amazonia.

I was to act as a lecturer-guide on a cruise down the Amazon from Iquitos to Manaus (Brazil), and my daughter had been given a special leave of absence from her high school in Baltimore. Fortunately, the school had agreed that a trip of this kind would be pertinent to her studies in journalism and photography.

This was not, however, a rustic, back-to-nature type of eco-tour, as we were soon to board the very modern *Columbus Caravelle*, a 400-foot long, luxurious ocean-going liner that was to be our home for the next ten days. Two hundred and fifty seasoned and worldly European and North American travellers would be cared for by a European crew of 125, on a vessel that boasted marvellous food, several bars, in-cabin television, a small swimming pool, a university-style lecture theatre, and even its own waste and water treatment systems. The ship may have been named with a fifteenth century European explorer in mind, but there was nothing middle-aged about it — unless you included most of the guests!

On a trip of this scale, there is an obvious danger that the participants might experience very little of the area that they are visiting, and literally stare at the rain forest as they sail by, dining in one of the well appointed lounges. Not so on this cruise, however, thanks to the provision of ten *Zodiac* inflatable boats that would whisk everyone (or, at least, anyone who wanted to go) into the flooded forest several times a day, and permit some really quite 'up close and dirty' exploration of many areas.

It was this type of experience that most of the guests seemed to want, along with as much information as they could glean from the other three lecturers and myself. This, we gladly provided in daily lectures, during the frequent *Zodiac* excursions, and even across the dinner table.

## Trinkets & tourists

On our first morning in Iquitos, my daughter and I explored the somewhat unkempt tropical city of some 250,000 people. Iquitos is literally surrounded by the Amazonian rain forest, and the only way in or out is via boat or plane. All the roads seemed to end at the city limits.

We had risen too late to explore the fish market, although the locals (aware that a plane-full of tourists had landed at the airport the night before) were very active around the hotels and main streets, selling a range of tourists trinkets. Many of these

# AMAZONIAN REFLECTIONS

PART ONE

## IQUITOS → LETICIA

Dr Chris Andrews of the National Aquarium in Baltimore leads a tour of adventurers down the Amazon and ponders the present and future state of this wildlife wonderland.

Photographs by the author

**BELOW LEFT** — 'Home' during the trip was the impressive ocean-going *Columbus Caravelle*.

**BELOW RIGHT** — Tourists and trinkets in Iquitos, Peru.

**BOTTOM** — The Upper Amazon.

**RIGHT** — Black Caiman — one of the residents at Leticia zoo.





**RIGHT ABOVE** — Piranha fishing on the Amazon.

**RIGHT BELOW** — The Giant Arapaima or Pirarucu — widely available in Amazonian restaurants.



a range of tourists trinkets. Many of these were made from the parts of endangered species, but this did not stop the industrious locals from trying to sell me necklaces of Arapaima scales or Anaconda bones for one or two US dollars, and complete Ocelot or Anaconda skins for \$10 to \$20. I suspect that they could have been bartered down to half this price, though.

Live baby Boa Constrictors were especially cheap — only a dollar each! Live birds, pinned insects, caiman skulls, and dried piranha hanging from necklaces (I really liked these!) were other items that were offered, as were a range of more tasteful handicrafts, such as necklaces of fruit seeds, blow guns, woven bags, etc.

All of this, obviously, made me wonder what impact this type of trade was having on the local animal populations, and how might eco-tour trips such as ours help conserve wild habitats and improve — in a sustainable fashion — the way of life of local people.

Later that afternoon, we pulled anchor and, as the sun set through a distant thunderstorm, I saw my first Pink River Dolphin off the stern of the ship. Pink River Dolphin (*Inia*) turned out to be quite common in this part of the upper Amazon, and we saw small groups of these animals on most days. The characteristic 'chuffing' noise that they make as they exhale would often give their presence away, and some would come to within 20 or 30 feet of our Zodiacs when we were on the river.

An interesting local legend states that the male Pink River Dolphin can assume human form and then sneak into native villages at night for secret 'liaisons' with the women-folk; this has been used to explain otherwise unexplained pregnancies!

The numbers of Pink River Dolphins that we saw was, obviously, encouraging, although these unusual animals are generally in serious decline elsewhere in the



world, particularly the closely related species that occur in (for example) India and China.

A second species of dolphin occurs in the Amazon, the Grey River Dolphin, or *Sotala*. This species is somewhat more acrobatic and social than *Inia*, and usually occurs in larger groups. We only saw this species on a small number of occasions, although we were told that they are more numerous further downstream.

*Sotala* is a more 'typical' dolphin shape, and it is much smaller than *Inia*, measuring less than four feet in length. Both are fish-eaters, relying on their echo-location abilities to find food and navigate in the murky river waters.

## Native dances

The next morning, we had dropped anchor near to the native village of Pevas (still in Peru). Braving a torrential down-pour, we set off to explore in the *Zodiacs*. We were treated to a revival of several native Amerindian dances in the tiny village, where the locals were keen to barter necklaces, woven bags, paintings, and so on for baseball hats, T-shirts and ball-point pens. They took hard (American) cash too!

Soaked to the skin and covered in mud, everyone was glad to return to the ship, where a hot shower and afternoon tea were waiting. I must confess this was not the kind of field trip that I was used to, and I was worried that my daughter might assume that field-work was always like this!

By the next morning, we had arrived in Leticia (Colombia), where the airport, the proximity of the borders with Peru and Brazil (and the reported local drug trade) may have explained the obvious military presence. Leticia is a typical 'westernised' tropical town, quite busy and with everyone wearing jeans, T-shirts and athletic shoes. Cars were very numerous on the paved streets, with the adjacent shops selling electrical goods, garden equipment, etc. There were even several small department stores!

I explored the riverside fish market, and saw a range of large characoids like *Colossoma*, some other (smaller) species of 'pacu', as well as some small Doradid Catfish, along with some slightly less attractive red 'meat' of uncertain origin. Unlike the market in Iquitos, chicken feet with chicken liver did not seem to be such a popular delicacy here!

## Zoos and conservation

The main reason for stopping at Leticia was to visit the small zoo, which was half an hour's walk across town from the market. We wanted to visit the zoo to see a range of animals and birds that we otherwise might not see when on the river. What we did not know, however, was just how close we would be able to get to the animals at the zoo!

The zoo staff greeted the sudden influx of visitors with some excitement, and



The fish market at Leticia — the largest fish are Pacus (*Colossoma*).

insisted on giving us a guided tour. First stop was the Anaconda enclosure, where we were invited into the large fenced area, to feel, touch and even hold the enormous 15-foot long snake. The lethargic constrictor was more or less ambivalent to the attention it received and was (presumably) a seasoned veteran at this type of event.

From here we proceeded past wire mesh cages containing Coati mundis, macaws, Capybara, Peccaries, a Giant River Otter, a jaguar, several Margay, and even a muddy pool containing a female Manatee and her calf. Next to this was a small lake containing some very large Black Caiman. Fish were represented at the zoo by a solitary, five-foot long Arapaima (or Pirarucu, as it is known locally) in a tiny tiled tank which could only be viewed from above.

The two high spots of the visit for most people were (a) allowing a Giant Anteater (that was roaming the zoo grounds) to use its long — very long — tongue to drink cola straight out of the bottle, and (b) the free-ranging Squirrel Monkeys. The latter animals seemed to take great delight from leaping onto us in threes or fours, and then clambered over (or more usually underneath) our clothes, before they scampered back into the trees. As an interactive zoo 'exhibit', this was exceptional, but, obviously, zoo managers in Peru do not worry about the law suits that might follow a

monkey biting a guest or wrecking a camera!

Despite the wood and chicken wire approach to caging, the animals were obviously well cared for, and their enclosures very clean. Zoos such as this have a very important role to play in educating local people about the need for wildlife conservation, since preaching rain forest conservation in (for example) North America or Europe, can only have so much effect — and time is running out in the areas that need most help.

Of some interest in this context are the programmes whereby zoos and aquariums in North America can join forces with a 'sister zoo' in the tropics, so that they can work together on exhibitory and relevant education programmes. The National Aquarium in Baltimore has, for example, the San Jose Zoo in Costa Rica as its sister institution, and we have worked with their staff on some small exhibits for reptiles and amphibians, and in developing husbandry protocols to care for their animals, as well as on educational programmes for Costa Rican schools. This work was supported, in part, by a \$50,000 grant from the Pew Charitable Trust.

(TO BE CONTINUED)

In the next instalment: forays into the flooded forest



# NEWSDESK

## Petworld Superstores support for young offenders



Aquatics suppliers and manufacturers to Petworld Superstores responded to appeals for assistance from Feltham Young Offenders Institution in Middlesex, when they recently embarked upon a fish breeding and pond project.

Donations from Rolf C Hagen, Ultrastone, TFH Publications, Aquarist & Pondkeeper, Pedigree Petfoods, Neil Hardy Aquatics, Clearseal and Tetra, all assisted with the fish breeding programme, while Neil Hardy Aquatics, Interpet, Cyprio and Lotus all made contributions towards a pond building project. Both projects were undertaken by four boys at Feltham — under the guidance of officers David Stevens and Paul Hopkins — who were able to set up a fish breeding room incorporating Mollies, Swordtails, Platies, Red-eyed Tetras, Corydoras virginiae, Head and Tail Lights, Opaline and Gold Gouramis and Plecos.

The plastic-lined pond was built entirely from scratch and accommodates Goldfish, Golden Orfe and Koi. Heather Grey, for Petworld Superstores remarked: "The project was a great success. There is a large amount of group work carried out at the institution, and the emphasis is on 'hands-on' learning. The fish breeding and pond project was an ideal way to introduce the young inmates to the world of fishkeeping and to enhance the well-known therapeutic value of watching live fish in an aquarium or pond setting".



TOP — The pond project nears completion.

ABOVE — The newly filled pond . . . complete with proud pond builder.

### Search for a star

Glasgow Film and Video Workshop is seeking stories from A&P readers, which could be used in a documentary film about fishing and the fishing industries in Scotland, to be

screened at festivals in Britain and internationally.

Kevin Cameron, who is making the documentary, explained: "This will be a wide-ranging work, with many voices, so I am eager to hear from as many people as possible who have a story to tell."

Whatever story or opinion readers may have on any aspect of the subject, will be of interest".

Readers should contact Kevin Cameron, c/o Glasgow Film and Video Workshop, Maryhill Community Education Centre, 35 Avenuepark Street, Glasgow G20 8TS.

### Don't forget your greens!

A natural wildlife pond forms the centrepiece of attractions at Spring Greens '95, the Organic and Wildlife Show at Priory Country Park, Bedford (Saturday and Sunday 3-4 June).

The aim of the event is to encourage wildlife gardening. Plants — including those for the pond — will also be on sale. Gardening personality Geoff Hamilton will be special guest on the Saturday, and the Gardening Roadshow will be in attendance on the Sunday. In addition, displays of composting, model garden, garden products, craft sales and demonstrations form just some of the highlights of the event.

Opening times are from 10.30 am to 5 pm both days and admission is free. For details, contact Vicky Sowler, Environmental Development, Bedford Borough Council. Tel: 01234 221661.

### Hozelock success

Water gardening specialists Hozelock have achieved enormous success with their range of treatments for pond and fish, with sales far exceeding expectations since their launch only last year.

"We have been greatly impressed with the reception which hobbyists have given to the range," explained Mike Pugh, manager of the company's Aquatic Division, which has gained an increasing foothold in the market in less than two years since it was formed. The pond treatments provide a perfect complement to Hozelock's comprehensive selection of water garden equipment and accessories.

"The start of the pondkeeping season is traditionally a time when stress-related problems with fish arise, following a long, cold winter. Our range will help to ensure a healthy pond and a thriving collection of fish. We therefore advise that all pondkeepers have the selection at hand throughout the season."

For information, contact Hozelock, Haddenham, Aylesbury, Bucks HP17 8JD. Tel: 01844 291881; Fax: 01844 290344.



## NEWSDESK

### New seahorse haven

Seahorses, like these dried specimens, are put to all sorts of uses, not all of them advantageous to the seahorses themselves!



SMART VIDUET

On Good Friday a purpose-built seahorse centre opened near Exeter's Maritime Museum. One of the first in Europe, the centre is called the **Seahorse Nature Aquarium**, following a local competition to decide its name. An Arts and Crafts shop called 'Something Fishy' forms the entrance, and sells anything and everything with a fishy theme or motif.

In the wild, seahorses are under threat. Their bodies are used in Chinese medicines and aphrodisiacs, tourists buy their dried bodies as souvenirs, and stocks regularly find their way into the pet trade. Seahorses are not easy to keep in peak condition,

though, since they require a constant supply of live food in order to survive, something that few aquarists are able to provide.

The Seahorse Nature Aquarium offers an enjoyable afternoon out, while at the same time providing information on both the seahorse's plight, and what can, and is, being done to help. Behind the scenes, a research room will seek answers to many questions raised when breeding and will attempt to raise to maturity, both seahorses and other species of fish.

The owner of the Aquarium, Neil Garrick-Maldment was recently appointed Seahorse Captive Breeding Co-ordinator.

This entails getting in touch with seahorse owners across the world in order to collect and collate as much information as possible. In that way, progress should be made faster. His ultimate aim is to release seahorses back into the wild.

Other species of fish will also be on view, with the emphasis being on those involved in captive breeding programmes.

Once the aquarium has been open for some time and is well on the way to breeding seahorses, we will be publishing an **Out & About** feature with fuller details, so watch this space.

Details: **Seahorse Nature Aquarium**, Unit 3, Kings Wharf, The Quay, Exeter, Devon. Tel: 01392 438538.

### The tropics in Spalding

A half-acre glasshouse incorporating tropical water and plant features has been opened at Spalding, Lincolnshire, to provide visitors with an all-year round attraction.

Over 450 tonnes of stone has been used to create a display at **Spalding Tropical Forest**, part of **Rose Cottage Water Garden Centre** at Pinchbeck, near Spalding, Centrepiece

of the attraction is a 7,000-gallon Koi pond, while tropical ponds with fallen trees, orchids and other plant life are all housed at the centre, which is kept at a constant 70°F all year.

Details from: **Rose Cottage Water Garden Centre and Spalding Tropical Rain Forest**, Glenside North, Pinchbeck, Spalding, Lincs PE11 3SD. Tel: Fax: 01775 710862.

### Pen a pet poem

Poetry publishing company **Arrival Press** is seeking your fishy verse, humorous and or serious, for a book which is due for publication later this year. Whether you have a fish called Wanda, A Koi called Kath, or a Guppy called George, you are invited to submit up to two poems, each up to 30 words in length.

But you'll need to get scribbling — entries close on **31 May 1995**. "We are currently gathering verse for a new anthology that waxes lyrical about pets. All those who have their work published will be offered royalties," explained project co-ordinator **Trudi Ramm**.

For information, contact **Trudi Ramm**, Project Co-ordinator, **Arrival Press**, **Our Pets**, 1-2 Wainman Road, Woodston, Peterborough PE2 7BU.



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# WILD ABOUT PLATIES

PART  
THREE

## The Northern Connection



ANDRÉS YUTERBAG

Derek Lambert winds up his three-part review with a look at three 'remnant' species.

Photographs – unless otherwise indicated – by the author.

Rio Santa Catarina – ex-biotope of the Monterrey Platy.

included several habitats in and around the city of Monterrey, particularly in the headwater streams (but see below), but it is now in severe danger of becoming extinct due to pollution, habitat destruction and hybridisation with introduced *Xiphophorus*. A few pure populations can still be found in the wild, but whether or not they will survive in the long term is doubtful.

In nature, this species is usually found in spring pools and, rarely, in sluggish flowing streams and ditches. The substrate is most often mud and clay, but rarely rocky. There is dense, submerged, aquatic plant growth and some emergent plants towards the banks.

The Monterrey Platy is a short stubby fish which has rather drab coloration. The upper part of the body is dark brown, while the lower half is off-white. The dorsal and anal fins have several dark crescents in them, otherwise all the fins are colourless.

Donn E. Rosen, in his 1960 paper,

The final group of Platies to be dealt with are the three Northern Platies. These three species represent remnant populations of a Platy which was widespread in the northern part of Mexico when the climate was warmer and wetter than today.

The climate changed and many of the rivers dried up. It became so cold during the winter, that many of the native species died out and this ancestral Northern Platy species was reduced to a few warm-water springs, where both the temperature and water flow were maintained all year round.

Such isolated populations of fish soon start to evolve slight differences and, over thousands of years, become separate species in their own right. Today, we recognise three species of Northern Platy, with a fourth possibly in the pipeline.

All three species are from very limited habitats which have been reduced in recent times. They are currently listed as 'Endangered' in the *Red Data Book* and, therefore, stocks need to be maintained in captivity.

### 1 Monterrey Platy

Scientific name: *Xiphophorus cochianus* (Girard, 1859).

Synonym: *Limia cochiana* Girard, 1859.

This species was first described by C. Girard (1859) in "Ichthyological notices,

41-59." *Proc. Acad. Nat. Sci. Philadelphia*, No. 11: pp. 113-122. It was named for Lieutenant D.N. Couch, who Girard described as "a lover and cultivator of natural sciences" in April 1859.

The Type Locality (see Part 1 – February '95 for definition of this and other technical terms) is the Rio San Juan at Cadarecta and Monterrey, in the state of Nuevo León, Mexico. The holotype is a female 4.1cm (1.6in) long. In captivity males achieve a size of 2.5cm (1in) while females reach 4 cm (c1.6in).

The range of the Monterrey Platy



A young Monterrey Platy male.



details a variable number of deep-lying black spots on the caudal peduncle. These were not present on all individuals, but were present in all populations of this species known at that time. This black spotting seems to have been lost in the generations that have been bred in captivity.

A population of *Xiphophorus couchianus* found around Apodaca, is under investigation at this time. Its coloration is similar to the Monterrey Platy, but the background tends to be darker, with a few black speckles along the ventral surface of the body. This population may turn out to be a separate species. However, in all aspects of its aquarium care and reproduction, it is similar to the Monterrey Platy.

### Aquarium care

The Monterrey Platy is a rather temperamental fish which requires careful maintenance if it is to do well in the aquarium. It is a rather shy and retiring species which likes plenty of plant cover and hiding places. A wide range of water conditions seem to be tolerated, providing the change-over is slow. A sudden change in the pH will kill this delicate fish, though. Ideally, the temperature should be maintained at approximately 24°C (75°F).

It is unlikely that this species could survive such low temperatures in the wild, if it were not for the warmer spring waters which feed their habitats. In those places where the springs have stopped flowing, during even part of the year, the Monterrey Platy has died out.

This is a short-lived species, living only 12 months on average. Old females often produce weak fry which have a high mortality rate. Brood sizes can be as large as 40, but 20 is average for a young adult female.

## 2 Cuatro Ciénegas Platy

**Scientific name:** *Xiphophorus gordoni*. Miller & Minckley, 1963.

**Synonyms:** None.

The Cuatro Ciénegas Platy was first described by Robert Rush Miller and W.L. Minckley (1963) in "*Xiphophorus gordoni*, a New Species of Platyfish from Coahuila, Mexico." *Copeia*, No. 3: pp. 538-546. This species was named for Dr Myron Gordon who did so much work on this genus and greatly extended our understanding of Platies and Swords.

The Type Locality is Laguna Santa Tecla, 20 miles by air, south-southeast of the town of Cuatro Ciénegas, in the state of Coahuila, Mexico. The types were collected by R.R. Miller, C.L. Hubbs, W.L. Minckley, D.R. Tindall and José Lugo Jr. on 9 April 1961. The holotype is a 24mm (c0.9in) S.L. (Standard Length) male and the allotype is a 24.6mm (c1in) female. In captivity, males reach 3cm (1.2in) and females 4cm (c1.6in).

This species is limited to spring-fed pools and streams heated by volcanic activity in the area around Santa Tecla in the Cuatro Ciénegas Basin. Specimens are most commonly found in a spring-fed ditch entering the laguna and in vegetation-choked, silt-bottomed, marshy areas adjacent to the outlet of the laguna. It could also (possibly) be in the original stream, which has been modified into a canal called La Polilla. The original stream drained the eastern side of the basin.

In common with the other Northern Platies, the Cuatro Ciénegas Platy has a strongly bicoloured body, being brown on the back and off-white on the belly. The two colour regions are separated by a dark, zig-zag, mid-lateral stripe running from just behind the eye, to the caudal peduncle. Both sexes have a gravid spot when mature.

All the fins are brownish, with the dorsal having two darker crescents in it. The bottom ray of the male's caudal fin is black and the body has a very attractive bluish sheen when in good condition.

### Aquarium Care

This Platy is a shy, retiring species which does best in a well planted aquarium with plenty of hiding places. In nature, it comes from warm-water springs and streams which have an average temperature of 34°C (93°F). However, aquarium stocks have now adjusted to cooler temperatures of approximately 26°C (79°F).

Broods are born on a monthly cycle and normally number about 20. The females tend to be short-lived and usually only give birth to three or four broods before becoming too old to breed. Since the new-born fry are often attacked by large adults if they are not heavily fed with live food, it is best to isolate the female to give birth.

## 3 Muzquiz Platy

**Scientific Name:** *Xiphophorus mucronifer* Scharf & Schroeder, 1988.

**Synonyms:** *Xiphophorus marmoratus* Obregon & Contreras 1988.

This Platy was first described by Scharf & Schroeder (1988) in "A new species of the genus *Xiphophorus*." *Senckenbergiana biol.*, 68: pp 311-321, and was named for Herr Manfred K. Meyer.

The Type Locality is Muzquiz, in the state of Coahuila, Mexico. The type specimen was collected by E. Hnilicka on 22 September 1982 and is a male measuring 27mm (1.1in) S.L. In captivity, males reach 3cm (1.2in) and females 4cm (c1.6in). The Muzquiz Platy is only known from the Type Locality and closely allied headwater springs and ponds.

This is one of the most recently described species of *Xiphophorus* and is an extremely close relative of the Monterrey Platy (*Xiphophorus couchianus*). In body form, it is similar to the Monterrey Platy



### Acknowledgments

I am indebted to 'Aquarian' for their sponsorship of the Aquarian Endangered Species Survey 1993, which allowed me to study the wild habitats of these highly endangered species of fish. My thanks also to James Langhammer and Jim Chambers for their help with obtaining scientific papers, and also Andres Tveteraas and Daniel Falgerho for allowing me to use their photographs.





1

and has the same strong bicolouration, with the back and upper sides dark brown, and the belly and lower ventral regions whitish. The male has two dark crescents in the dorsal fin. The female has the same coloration, although it is much reduced. Both sexes can have heavy black speckling along the flanks, but unspotted individuals occur in the wild.

### Aquarium care

This species has many of the attributes of its close relatives, being somewhat touchy about its tank conditions and is difficult to establish in a new set-up. It is a somewhat more nervous species than the Monterey Platy and, in general, will not be seen swimming about the aquarium very much at all.

They prefer to hide in the corners or among the plant cover, which seems to be an absolute must for them to do well. This nervousness will, in all probability, abate as the fish is taken through several generations in the aquarium.

They eat all foods, but will do best if fed on a diet with a very large percentage of live foods, as opposed to flake food.

The fry are born on a monthly cycle, but this can be a little erratic, with females having a resting period during the winter months. Average brood sizes have, so far, been about 15, but up to 40 have been known. The fry grow fairly quickly and start to sex out from about the fourth month onwards. Females become reproductively at between four and six months old.

### Last words

As a group, Platies have been studied much more closely than many other fish. This is because it was discovered quite early on that cancer tumours would be produced by certain hybrids at a given age. This meant that the mechanisms which cause cancer could be studied in fish before, during and after the cancer tumour had developed, virtually a unique situation which allowed some very important research to be undertaken.

Apart from the information gleaned about cancer, some fascinating material about colour morphs, age of maturation and eventual adult size has also been uncovered.

I hope this series of articles has whetted your appetite for more information on Platies and Swordtails, because, in the autumn, a new book on this subject is to be published by Cassell's.

### Further Reading

In addition to the various reference cited in my three articles I would strongly recommend the following:

Rosen, D.E. (1980) Middle-American poeciliid fishes of the genus *Xiphophorus*. *Bull. Florida State Mus., Biol. Sci.*, Vol. 5, No. 4: pp. 57-242.



2



3

1. A female Monterey Platy from Australia Canyon.

2. Mature Crenes Platy male.

3. A nicely patterned male Mucquiz Platy.

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# KOI: Stress

## The Invisible Killer

**T**he effects of stress are, by far, the biggest killers of our Koi, but how many of us really appreciate what stress is, how it is caused and – more importantly – how it is avoided? The *Concise Oxford Dictionary* defines stress as: "Effort, demand upon physical or mental energy." While this is an obvious explanation of its effects on a busy office executive, it conveys little to us when we talk about it in connection with Koi.

The best explanation of stress that I have come across, as far as fish are concerned, was described by Roberts in his book *Fish Pathology*. It took the form of a quote (Brett 1958), and defined stress as follows: "a stage produced by an environmental or other factor which extends the adaptive responses of an animal beyond the normal range, or which disturbs the normal functioning to such an extent that the chances of survival are significantly reduced."

Bearing this in mind, let us take a look at the situations under which we can unwittingly subject our charges to stress.

### Stress creation

One of the worst situations we can create is when we purchase Koi at a show i.e. at a time when they have already experienced a certain amount of trauma to get there. They have been caught, bagged, transported and released into water which is, almost certainly, of a different pH and chemical composition of that which they are accustomed.

If you add temperature difference to this, possible exposure to chlorine, and then high ammonia levels in the vats and bags, you have a very stressed Koi indeed in an extremely hostile environment.

The effect can vary from fish to fish. Some will cope with it better than others, so next time you are at a show, look more closely at some of the fish. The ones with clamped fins huddled together or breathing rapidly are the most stressed. This state can also be displayed as Koi flashing themselves around the vats, and 'porpoising' at the surface of the water. These last symptoms are, almost certainly, due to a pH change or ammonia pollution of the vat water.

You then purchase your fish, which outwardly seems OK, but could be disguising the signs of stress very well. It is then subjected to a further journey, during which its water temperature will be altered, and another environmental change as it is

introduced to your quarantine/acclimatisation quarters. Small wonder that one or two fish never survive!

### Other factors

There are numerous other factors that will induce stress, including ammonia or nitrite, high chlorine content, temperature change and lack of dissolved oxygen. Also included here is mechanical noise from faulty pumps, spluttering and noisy 'venturis' (aeration devices) and a host of other things which we generally accept as Koi keepers. Granted, a Koi will get used to some noise, but for a new fish in a strange environment, such can only increase the total stress level.

The use of too many chemicals in the pond, such as those employed for the control of algae, for medication etc., coupled with too much netting and bowling of Koi, are also stressful factors and should be avoided where possible.

In addition, it is worth considering that certain ponds and holding vats create stressful environments owing to their design. Koi in natural surroundings appear to fare better than others in totally artificial environments.

### Mortality

We can look now at the debilitating physical effects of stress which can lead to the death of our Koi.

It is not open to challenge that certain non-specific physiological and biochemical changes occur within a Koi in response to environmental stress.

This process is termed the **General Adaptation Syndrome**, shortened to **GAS**, and takes place in three phases as follows.

**Phase 1:** The alarm reaction.

**Phase 2:** The stage of resistance, during which the physiological processes endeavour to adjust themselves to the new environment.

**Phase 3:** The stage of exhaustion when a stable adaptation cannot be achieved.

Stressors initiating **phase 1** of GAS

Barry Goodwin evaluates the causes and effects of stress and offers some excellent tips for avoiding it.



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### An absolutely gorgeous stress-free Tancho Kohaku.

include fright, excess exercise, infection, low dissolved oxygen, anaesthesia, pollutants, etc. The effect that these have, obviously, depends upon the frequency of occurrence, or their duration.

The so-called 'stress hormones' cortisol and ACTH (adrenocorticotrophic hormone) are released, causing changes in the blood, including its ion balance, glucose level and nitrogen metabolism. Stimulation of the thyroid occurs and over-reaction of the nervous system results in increased respiration and blood pressure. Other subtle tissue changes also take place in the kidney and spleen.

During **phase 2**, the immune response is suppressed, resulting in an increased susceptibility to infection.



Should **phase 3**, the stage of exhaustion, be reached, then existing micro-organisms in the gut and environment that are normally innocuous, are able to invade the host. From observations, some Koi reach the point of no return a very short period after **phase 2**.

## Temperature

The most significant stress factor is environmental temperature and its rate of change. Rapid change is a stressor which affects Koi in many ways. Such changes can occur if a Koi is heated in your car due to sunlight, or the car's heater system, during driving. If the temperature rises 10°F (5.5°C) during transit, a half-hour period of temperature equalisation is too short to reduce it again when the fish is introduced to your quarantine system or pond.

Such changes can also occur within a pond during early spring when a couple of warm days may send the temperature up only for the next day to be suddenly winter again, with its accompanying temperature plunges.

Not only will such temperature fluctuation cause stress, but it will also affect the filtration system, lowering its efficiency. The possible ammonia flash that will result will further stress the Koi, just at the time when they least need it... coming into spring.

We can do a lot here to help by covering our ponds during this period especially, if they are small (2,000 gallons - 9,000 litres - or so).

## Precautionary measures

**1** Wherever you buy your fish, enquire as to the pH of its normal environment. This should not be the pH of the vat water, if at a show; the Koi may already be experiencing **phase 1 GAS** due to that. If the pH differs significantly to your own, then think very hard before you go ahead with your purchase.

**2** If you are moving house to an area of differing pH, it may be necessary to adjust the pH of your water slowly over several weeks before your move to prevent a large shock. Make sure that this is done slowly.

The alternative is that you may have to put your fish into a vat at the new address while a pond is being built. You should, firstly, adjust the pH of this vat to that of your old pond, and then slowly adjust it to the new value over a few weeks after the introduction of your fish.

**3** Find out the temperature of the water your intended purchase is in. If at a show, it could be a lot warmer than your own pond, due to sunlight on the vat or marquee. If it is more than five degrees up, then think again. Koi will take a slow five-degree rise or more without stress,



It would seem from this photograph that the cause of death was obvious - gill disease. This was, however, initiated by poor water quality, which caused environmental stress. This was the real cause of the downward slide and eventual demise of this Koi. What we are looking at are resultant secondary problems which were not recoverable.

such as while being floated in the bag in your quarantine tank in their stride, but five degrees down may be another story.

**4** Try to attend a show, if you intend purchasing, on the first day. Vat water will not have had a chance to deteriorate greatly, and you will have the pick of the best fish anyway.

**5** Leave your purchase with the dealer until your departure for home; that way it won't get overheated on the back seat of your car.

**6** Take a polystyrene fish box and lid with you. Place the Koi in its bag in this box and tape on the lid. This will keep the fish in darkness for the duration

## AVOIDING STRESS

STRESSOR	PRECAUTION
pH difference	1. Avoid purchase. or 2. Adjust slowly during quarantine.
Temperature difference	If temperature is significantly different to your own: 1. Avoid purchase. 2. Use polystyrene fish box during transit. 3. Avoid excess heat in car during transit. 4. Use cover for pond during springtime while temperatures are fluctuating. 5. Make sure you float your Koi for an adequate period before release.
Visual stimuli	Keep Koi covered during transit and early quarantine/acclimatisation.
Exercise	Avoid frequent netting and bagging.
Infection	Look after water quality, ensuring low pathogen count.
Low dissolved oxygen	Provide adequate aeration, via a waterfall, venturi or airstones.
Water pollutants	1. Use a water purifier for topping up and water changes. 2. Avoid over-treatment of your pond with medication, algicides etc.





◀ An Ai Goromo that died from septicaemia. Note the areas of ulceration, reddened fins, and bleeding from scale pockets. Once again, this is a direct result of environmental stress.

Raised scales caused by parasite invasion, but due, once again, to poor water quality. Environmental stress played a major role in the demise of this Koi.

▼ what you might find when your filter is waking up and your Koi are starting to feed.



of its trip and keep temperature fluctuation to a minimum.

**7** When you get your Koi home and introduce it to its new environment, keep the quarantine/acclimatisation tank covered for 48 hours and don't be tempted to feed the fish for this period.

### Wider implications

Looking at the wider implication of GAS, you can now perhaps see a connection with the so-called New Pond Syndrome.

You can, hopefully, also see that it pays to keep a careful check on your water quality to avoid the possibility of environmental stress. You may be surprised at

Water quality should be assured, if necessary, by percentage water changing during springtime, as often as is necessary. To do this properly, a vital piece of equipment on your inventory should be some form of water purifier. Problems, however, should lead you to look at your filter, especially its size. Knowing that the main causes of stress for Koi are those discussed above, you can, hopefully, now employ adequate precautionary measures in your pond-keeping practices.

It is relatively clear, as I hope to have shown, that, with a little commonsense, the health of your existing Koi and that of your next purchases... wherever they may be from... can be maintained in tip top condition.



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# **TOP TEN POND FISH**



**an Aquarist & Pondkeeper supplement by Dr David Pool**



**P**ond-keeping has dramatically increased in popularity in the last decade, with almost 8% of households now having a water feature of some description in their garden. The reasons for having a water feature vary considerably. For some, it is an extension of the garden, with the plants being important and few, if any, fish added. For others, the fish are essential, and no plants are added.

The types of fish kept in these ponds also varies considerably and, not surprisingly, the choice has expanded from the days of the 'Goldfish' pond. In this article, I will look at ten of the most popular species of pond fish, giving details of their care and suitability for different types of ponds.

## 1 Goldfish

**Scientific name:** *Carassius auratus*

**Origin:** China, now bred around the world, with specimens available from the UK, Israel, USA, Italy and other countries.

**Varieties available:**

The top ten pond fish could arguably be the ten most popular varieties of Goldfish. These range from the Common Goldfish and Comets, to multi-coloured Shubunkins and fancy-finned varieties such as the Fantails and Veiltails.

More 'fancy' varieties with missing dorsal fins (e.g. Ranchu), altered eyes (Moors, Bubbles and Celestials) and those with very rounded bodies (e.g. Pearlscales) have been highly inbred and are not generally hardy enough to survive in a pond throughout the year.

**Identification:**

Goldfish can occasionally be confused with Koi or Golden Orfe, particularly when fry appear in a pond containing all three species. Goldfish have a long dorsal fin which differentiates them from Orfe (and Tench and Rudd) and do not have any barbels around the mouth — unlike Koi — which have four. As indicated in the section

**Dr David Pool** of the Tetra Information Centre selects the best coldwater fish for garden and patio ponds.



SHUBUNKIN

shape are not good identification guides.

**Size:**

Goldfish are generally bought at a length of 2-3 inches (5-7.5cm), when they are usually 6 months-2 years old. Given a good environment, they can live for 40 years and reach a length of 14 inches (c 35cm).

**Numbers to keep:**

Young Goldfish are shoaling fish and are best kept in groups of 6-plus. As they grow, they become less sociable, and 2-3 older fish will usually stay together.

**Suitability for pond:**

Goldfish in their many varieties are ideal inhabitants for any pond. The more basic varieties are very hardy and are ideal for small ponds where the water quality can vary. Very fancy goldfish are not ideal for year-round life in the pond, but will do well during the summer months.

**Feeding:**

A good quality flake or stick food is ideal for all pond Goldfish. One which contains

**BOTTOM LEFT — Common Goldfish and Shubunkins are ideal varieties for ponds.**

**BELOW — Comets are also good for ponds.**

added colour enhancers is ideal for the summer, as it will ensure they remain as colourful as possible. In common with all pond fish, Goldfish are less inclined to feed during the winter, but giving them a wheat germ stick whenever they are active during milder spells will keep them healthy.

**Breeding:**

Goldfish breed in a typical carp fashion. That is, the males in the pond chase the females, or one gravid female, until she releases her eggs among vegetation. This behaviour usually occurs in late spring and summer. The males can be recognised by the presence of pale raised breeding tubercles on the head — and by the fact that they do the chasing.

The females tend to have fatter abdomens due to the presence of eggs, though this is not a reliable guide. Some fancy varieties are very rounded, even the males, and this can lead to problems in the pond, with other males chasing them by mistake.

## 2 Orfe

**Scientific name:** *Leuciscus ides*

**Origin:** Originally from mid and southern Europe, but now bred throughout the world.

**Varieties available:**

The original Orfe is a silver fish, very similar to the Dace which occurs in British rivers. The Golden Orfe is by far the most popular variety, with its golden yellow colour and occasional black patches. Blue Orfe, with a silvery blue colour, are also popular.

**Identification:**

A long slim fish, that can be differentiated from most pond fish by the short dorsal and anal fins, and lack of barbels around the mouth.

**Size:**

Orfe are large fish, given a suitable pond. They can reach a length of almost 24 inches (60cm), but are more likely to attain







TETRA



GORDON WIGGINS

**TOP** — Orfe are fast-swimming surface shoalers.

**ABOVE** — Orfe will often shoal with Koi.

a length of 12 inches (30cm) in most garden ponds.

**Numbers to keep:**

A shoaling fish which should be kept in groups of at least four. When young, they will stay together as a shoal just under the water surface.

**Suitability for the pond:**

The potentially large size and shoaling behaviour makes Orfe suitable for ponds over 50 square feet. They are ideal in larger ponds, where their tendency to remain near the surface ensures that they are seen. Orfe will not harm plants, also making them a good choice in carefully planted ponds. They are very sensitive to certain treatments, though, so if disease occurs, use an Orfe-friendly remedy.

**Feeding:**

Orfe feed at the water surface. They are very active and will often be seen splashing at flies at the surface. Feed them on good quality flaked and stick foods.

**Breeding:**

Identifying the sexes is more difficult

than with Goldfish, although the rough feel of the breeding tubercles in males during the spawning season will help. Orfe breed in the same way as Goldfish.

**3 Koi**

**Scientific name:** *Cyprinus carpio*

**Origin:** The carp originated from Middle Eastern countries; however, Koi were first bred by the Japanese. Many Koi on the market now originate from Israel and Florida.

**Varieties:**

There are numerous varieties of Koi which have been selectively bred over the last 100 years. The coloration and pattern of a fish has to conform to strict rules for it to be a named variety (e.g. Kohaku — a red and white Koi). Many of the specimens available for garden ponds are of no particular variety and are therefore considerably less expensive. Long-finned, or Butterfly Koi have recently become available.

**Identification:**

Koi can easily be differentiated from the other pond fish by their bright coloration, long dorsal and anal fins and the presence of four barbels around the mouth. The identification of the different varieties mentioned above can be more difficult,



**Koi will do well in ponds, as long as their conditions are adequately catered for.**

and you would be wise to consult one of the specialist Koi texts for assistance.

**Size:**

Lengths of 30 inches (75cm) or slightly larger are possible in sparsely stocked, large ponds. More usually, Koi will reach a length of 12-20 inches (30-50cm).

**Numbers to keep:**

This depends largely on the size of the pond. Koi will stay together in groups of 3-4 fish, but will also mix with other fish.

**Suitability for the pond:**

Koi are very popular because of their bright coloration, large size and friendly nature. However, they are not ideal inhabitants of planted ponds, as they will uproot and eat many plants. They are messy feeders, and should be kept in ponds with a suitable filter. Larger fish, and high quality specimens are best kept in purpose-built and designed Koi ponds.

**Feeding:**

Floating stick foods are ideal for Koi. They will eat anything, but a good quality food is important if it is to be fully digested, minimising waste and ensuring the fish remain in peak condition. During the summer months of the year, colour-enhancing diets such as Spirulina Sticks will result in improved coloration.

Growth foods are also important to promote streamlined growth. During the winter, a wheatgerm stick should be given during milder spells of weather.

**Breeding:**

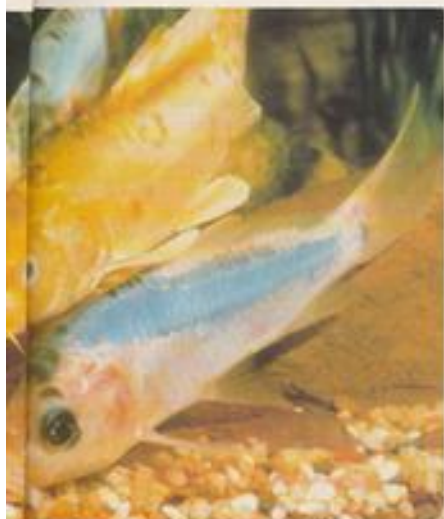
Koi breed in a similar fashion to Goldfish. Being larger fish, the chasing behaviour can be more vigorous and can result in the fish being damaged. It is therefore worth checking the fish after spawning and treating if necessary.

**4 Common Carp**

**Scientific name:** *Cyprinus carpio*

**Origin:** Middle East — now bred for food,





sport and stocking into ponds throughout the world. Most of the Common Carp sold for ornamental ponds in the UK originate from this country.

**Varieties available:**

Three varieties of 'Common' Carp are widely available. The fully scaled variety is the original one. However, breeding for human consumption resulted in the Mirror Carp (with one or two lines of large scales on the body) and Leather Carp (with no

scales). The reduction in scales made processing for food more easy. Koi are a variety of carp and have been covered in the previous section.

**Identification:**

A deep, heavy fish with a long dorsal and anal fin and four barbels.

**Size:**

Common Carp grow much bigger than Koi. In a garden pond, they may reach a length of 20 inches (50cm), but, being very

**Common Carp (these are Mirror Carp) can grow up to 4.5kg in weight in a reasonably sized pond.**

deep and wide fish, they can weigh 7-10lb (up to 4.5kg).

**Numbers to keep:**

Because of their large size, it is advisable to add only 2-3 into most ponds.

**Suitability for the pond:**

Carp can be disruptive in a planted

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pond, uprooting and eating many plants. Their dark coloration makes them difficult to see, and their messy feeding habits can lead to the water becoming cloudy. Despite this, they are popular, particularly with pondkeepers who are also anglers.

They are very hardy and will tolerate conditions that would be fatal to other pond fish. Despite this, a good filter is advisable to provide good water conditions and maintain clear water so they can be seen.

#### Feeding:

Carp will eat anything and can be trained to feed from your hand. However, a good quality diet is essential if the pond is to remain healthy. Such diets are fully digested, leading to less waste, which would otherwise encourage unsightly algae.

#### Breeding:

Carp will breed in larger ponds in a similar fashion to Goldfish and Koi.

## 5 Golden Rudd

**Scientific name:** *Scardinius erythrophthalmus*

**Origin:** Central and southern Europe. Golden Rudd are not kept in any numbers outside Europe.

**BELOW —** The Rudd in its wild-type form is only kept by some pondkeepers. Most prefer the golden variety.

**BOTTOM —** Golden Rudd are unlikely to spawn in average-sized ponds.

#### Varieties:

The natural colour form of the Rudd, with its silvery sides and bright red fins, is kept by some pondkeepers, particularly those who also enjoy angling. The Golden Rudd is a more popular colour variety, though.

#### Identification:

Rudd can be differentiated from most pond fish by means of their deep bodies and short dorsal and anal fins. They can easily be confused with the Roach, although the upturned mouth allows them to be identified.

#### Size:

In the wild, Rudd can grow to lengths of 18 inches (45cm) and weigh more than 4lb (approximately 2 kg). However, in the confines of a garden pond, the Golden Rudd is unlikely to reach lengths of more than 10 inches (25cm).

#### Numbers to keep:

A shoaling fish, so ensure they are kept in groups of four-plus to enjoy their natural active behaviour.

#### Suitability for the pond:

Rudd are ideal inhabitants of most ponds. Although they eat vegetation, they do not uproot or damage pond plants. They can be kept in smaller ponds, though the lack of space will lead to them becoming stunted.

The only disadvantage with Rudd is the difficulty in seeing them, even though they tend to be surface feeders. The Golden Rudd is considerably better in this respect, in comparison with the natural-coloured form.

#### Feeding:

In common with Orfe, the Golden Rudd is a surface feeder which will eagerly accept flaked and stick foods. They tend to be timid feeders, and often dash up to the surface for a foodstick before dashing away.

#### Breeding:

Rudd breed in a similar way to the Goldfish, although they are unlikely to breed in smaller ponds.

## 6 Bitterling

**Scientific name:** *Rhodani sericeus*

**Origin:** Europe, though they have now become established in a number of canals and rivers in the north west of England.

#### Size and Identification:

A small fish, seldom reaching more than 3 inches (7.5cm) in length. They are deep fish, with big dorsal and anal fins. At first sight, they can be confused with Roach and Rudd, although the black mark running along the posterior part of the lateral line helps identification.

#### Numbers to keep:

Bitterling are shoaling fish and are best kept in groups of six-plus.

#### Suitability for the pond:

An interesting fish, largely because of its unique breeding behaviour (see below). The Bitterling can be 'lost' in larger ponds and will seldom be seen. It is a good resident of smaller ponds and wildlife ponds.

**Bitterling (there are several species currently doing the rounds) have a unique breeding strategy.**



M. P. & C. FREDMON

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#### Feeding:

Bitterling will feed on good quality flaked foods, together with any live foods in the pond. It is advisable to feed them on a regular basis so that they learn to rise to the surface when you visit the pond.

#### Breeding:

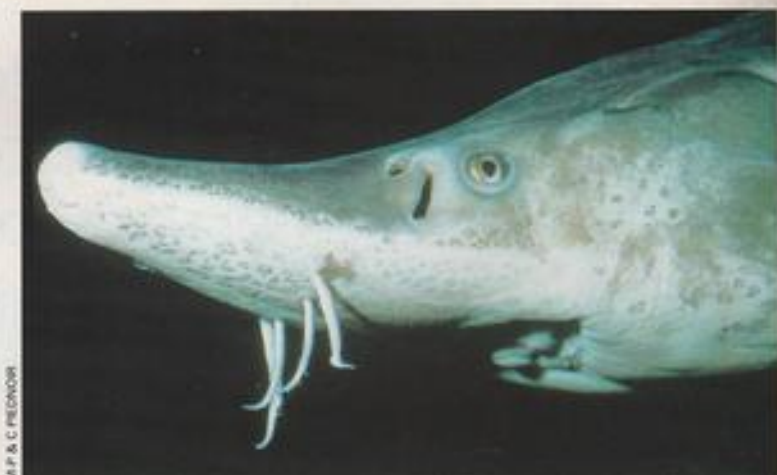
The Bitterling has a unique method of breeding, which revolves around the freshwater mussel. In late spring, the males become more brightly coloured and start displaying to the females.

The female develops a long brown ovipositor, which she uses to place her eggs into the inhalant siphon of a mussel and it is drawn into the mussel's gill cavity where it is fertilised. The eggs are protected inside the mussel and remain there for 7-10 days, until the fry are free-swimming when they pass out of the exhalant siphon into the open water of the pond.

#### **Sterlet**

Scientific name: *Acipenser sp*

Origin: The Sterlet originates from Eastern Europe and the countries surrounding the Baltic Sea.



**ABOVE** — This view of a Sterlet is not likely to be fully appreciated in a pond.

**BELOW** — Sterlets are becoming quite popular.



#### Varieties:

There are a number of different species of Sturgeon and Sterlet, some growing to almost 12 feet (4m) in length. Most are better known for their eggs, which form the famous caviar. Only one species of Sterlet is commonly kept in ponds (*A. ruthenus*).

#### Identification:

The Sterlet cannot easily be confused with any other pond fish. Its long thin body covered in large bony plates, together with its elongated snout, underslung mouth and 'whiskers', all enable easy identification.

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**Size:**

In the confines of a garden pond, the Sterlet will rarely grow to more than 18 inches (45cm).

**Suitability for the pond:**

Sterlets are a new addition to the list of fish widely stocked for keeping in ponds. They are very interesting and are relatively hardy and peaceful and do not consume plants. However, they will uproot plants and knock over planting baskets as they probe their snouts into any debris and under rocks in search of food.

Their dull colour and bottom-living habits means that they will seldom be seen if the pond water is cloudy. However, with care they can be trained to feed at the surface, even though they have to swim vertically or even on their backs to do so. Best suited to medium sized or large ponds.

**Numbers to keep:**

Usually kept in small numbers in the pond, say 1-2 in a medium sized pond.

**Feeding:**

In the wild, Sterlet consume filamentous algae, insect larvae, snails and mussels. This food will also be consumed in the pond. While they will consume all of the snails in the pond, they unfortunately do not control filamentous algae in the same way.

Supplement their food with floating pond sticks and occasional earthworms. Don't use sinking foods, as although they will be eaten, you cannot monitor if all of the food has been consumed . . . and you may never see the Sterlets.

**Breeding:**

Spawning occurs in flowing water. Therefore, there is little chance of success in a garden pond.

**Grass Carp**

**Scientific name:** *Ctenopharyngodon idella*

**Origin:** Originally from China, now bred in small numbers around the world — often for weed control in natural waters.



TOP: TEN POND FISH

**Varieties available:**

Your choice is between the natural silver form and an albino variety.

**Identification:**

A long slim fish which, in its natural colour form, can easily be confused with the native Chubb. Counts of the fin rays and the smaller mouth of the Grass Carp allow it to be identified. The rounded head differentiates it from the Orfe.

**Size:**

The Grass Carp is a big fish, which can reach lengths of 40 inches (100cm) or more. In a garden pond, it is unlikely to exceed 18 inches (45cm).

**Numbers to keep:**

This depends largely on your reason for keeping the Grass Carp. If it is for controlling algae or plants, you may need as many as one fish per 10 square feet of water surface; if you simply like the fish, two or three in a pond will suffice.

**Suitability for the pond:**

As already mentioned, Grass Carp are plant eaters, and so are not suitable for most planted ponds. They prefer soft plants, such as the oxygenators, blanket weed and floating plants, and will tend to consume these first. Many Koi keepers, who have a plant-free pond keep a small number of Grass Carp in their ponds to control blanket weed growth. In most cases too few are added to be effective.

Because of their size they are only suited to medium or large ponds. Grass Carp are intolerant of many treatments, so only use those described as being safe for Orfe.

**Feeding:**

Although they consume plant material in the pond, the diet of the Grass Carp should be supplemented by a good quality stick food. They will eagerly accept this from the pond surface, and will learn to feed from your hands.

**The albino form of the Grass Carp is often kept in Koi pools where its plant-eating activities help control blanketweed.**

**Breeding:**

Grass Carp require warm, flowing water to spawn and so will not breed in the pond.

**Tench**

**Scientific name:** *Tinca tinca*

**Origin:** Europe, including the UK



**The Green Tench — popular but not highly visible.**

**Varieties available:**

The Tench is available in its natural green form, which is difficult to see even in a clear pond, as well as Golden, Red and White varieties. Red and White Tench are particularly striking, but have only recently become available — and are not common.

**Identification:**

A sturdy fish with squared tail and short dorsal and anal fins. It is covered in very small scales, which, in turn, are covered in a thick coating of mucus, giving it a scaleless appearance.

**Size:**

The Tench can reach lengths in excess of 24 inches (60cm). However, in a pond, it is unlikely to grow over 18 inches (45cm).

**Numbers to keep:**

Small numbers of Tench will live happily in any pond. Keep at least two individuals.

**Suitability for the pond:**

The Tench is a hardy, disease-resistant and peaceful fish which does not uproot or consume the plants. It is therefore ideal for any pond, even relatively small ones. The main disadvantage is that they live at the bottom and so are not regularly seen — particularly if the Green Tench is selected.

**Feeding:**

Tench feed on a wide range of insect larvae and algae in the wild. Try to get them to come to the water surface by using floating flakes and stick foods. If you do not see them at the surface, they will feed on bits of food that sink.





TEJIMA

**Golden Tench are much more popular than their wild-type counterparts.**

**Breeding:**

Tench are unusual among pond fish in that the males and females are easily distinguishable. The males have large paddle-like pelvic fins, even when young. They breed in a similar fashion to Goldfish, but are only likely to spawn in large ponds during the occasional hot years.

**10 Minnow**

**Scientific name:** *Phoxinus phoxinus*

**Origin:** Found throughout Europe, including UK. They are not bred commercially, but are available from commercial fisheries.

**Size and Identification:**

Minnows are small fish seldom exceeding 4 inches (10cm) in length. They are

**RIGHT — The now-famous Red and White Tench is still difficult to obtain.**

**BELOW — Minnows are delightful shoalers whose beauty cannot be fully appreciated in most ponds.**

sleek, with a brown back and forked tail.

**Numbers to keep:**

Add a shoal of 10-20 Minnows to the pond to enable them to behave in their normal way. If only one or two are kept,

they will remain hidden among vegetation for most of the year.

**Suitability for the pond:**

Minnows are ideal for any sized pond, including the smallest patio tubs. They are particularly popular if your pond has a stream in which they will live for most of the year — even jumping small waterfalls to get there. They are also good fish for wildlife ponds, where only native animals and plants are kept.

Due to their small size, they pose no threat to other life in the pond — e.g. beetles, frog and toad spawn or dragonfly larvae. Their main disadvantage is their dull colouring, which makes them difficult to see.

**Feeding:**

Minnows will eagerly accept a good quality pond flake food. They are splashy feeders and can often be seen feeding on insects.

**Breeding:**

The male Minnow develops very prominent white breeding tubercles in the spring and early summer, together with a red hue over his abdomen. Minnows breed among vegetation, in a Goldfish-like fashion, though — unlike the Goldfish — they will often select areas of flowing water. **MAP**



MARK COOPER — THE GULPERISH BOWL, GORCHOW



LAWRENCE E. PERKINS



NEW  
SERIES

# MYTHTERIES and MYHTAKES

For centuries salamanders must have cursed their absent-minded ancestor who dozed off in a hollow log only to be woken when the log was burnt on the fire. Choking, it staggered through the flames gasping for breath, watched by a group of astounded humans who assumed it enjoyed living in fire.

So, for hundreds of years, salamanders were tossed onto bonfires with gay abandon by people who thought they were doing the poor creatures a favour. Nowadays we know better . . . or do we?

## Mythical toads

In this country, even today, some people maintain that if you handle a toad you will develop ugly warts. Toads and frogs have always been surrounded with myths and legends. Centuries ago, it was believed that all toads were venomous creatures which spat poison.

People thought that toads kept a magic stone inside their heads, and that the stone would act as an antidote to their poison. If the toad was placed on a scarlet cloth, it would be so pleased by the colour that it would cast the stone from its body. The stone would change hue if placed near poisoned food or drink.

At that period in history, people seemed to enjoy poisoning their enemy's victuals, and so the stone would be set in a ring to notify the wearer of danger.

It was considered that toads polluted the soil, but if rue was planted, then the toad would be driven away.

In mediaeval times a young man bit on some sage and promptly died. His lady companion was accused of murder. When she re-enacted the scene at the same spot for the benefit of the judge, the woman died too. The judge ordered the sage to be dug up — underneath was a toad.

## Mystic bones

The bones of a toad were thought to have power over horses — but not just any old bones. The 'toad-bone' was obtained by pegging a live toad over an ant-hill until the flesh was eaten away, then throwing the bones into a stream and watching which one broke away from the others. That loner was the mystic bone, and anyone owning one could calm the most spirited of horses.

Susan Brewer delves into the darkest recesses of a world overflowing with mysteries and legends about toads, frogs, fishes and lizards . . . and discovers some pretty weird goings on.

Cartoon by the author



Toads were reputed to have the ability to live for years inside solid rock, surviving with neither food nor water. No doubt this supposition came about when the creatures crept inside a chunk in the rock and leapt out when it was broken up, thus convincing miners that they had been there for centuries.

In fact, over a hundred years ago a scientist experimented by walling toads up, and found that the creatures managed to survive for a year without nourishment, so long as water reached them through the porous rock. However, it isn't recom-

mended that herpetologists keep their toads this way in captivity!

All those powerful attributes probably explain why witches were so fond of flinging toads, or bits of toads, into their cauldrons, along with newts' eyes, frogs' toes, lizards' legs, adders' forks and blind-worms' stings. It also goes some way to explaining why toads are rather timid creatures, tending to hide under rocks; it's so that witches can't find them and chop them up.


If you ever feel like an out-of-doors nap in Ireland, for goodness sake keep your mouth closed, because there, newts and lizards are believed to enjoy crawling into open mouths. They are then supposed to crawl down the throat and into the stomach, but it is hard to imagine they would get this far without waking the sleeper, unless of course he was in a whiskey-induced stupor.

## Shekels and John Dory

In the Bible we read that in Lake Galilee, St Peter caught a fish with a half-shekel coin in its mouth, and used the coin as tribute money. The species of fish is claimed to be the curious John Dory, which has a large round mark resembling a thumbprint just behind its head. (*The story is even stranger when you realise that the Sea of Galilee is a freshwater lake . . . and that the John Dory is a marine fish!* Ed.)

About fifty years ago, out of interest, a traveller tested the legend, using a florin which was the same size as the ancient half-shekel, and he discovered that the fish's mouth was exactly the right size to hold the coin. The mark by the head, of course, is said to be where St Peter placed his hand.

While on the subject of fish, trout used to be considered extremely lucky, and many wells in England would be stocked with a trout or two, which would be fed by the villagers. A pagan belief was that trout lived in pools under hazel trees and when they ate the sacred nuts, they developed great wisdom.

No doubt, even today, some people believe that if you kiss a male frog, he will turn into a prince. This probably explains why so many frogs wear enormous grins — they enjoy being kissed by young ladies. What about female frogs? Do they turn into beautiful princesses? And, if you kiss a prince, does he turn into a frog — or does he croak, "It's all a mythtake"? 





# CAYMAN ISLANDS

If you are interested in tropical marines and you want to see fish and corals in their natural environment, then the Cayman Islands are an ideal place to go. Here, you will be awestruck by the variety and profusion of marine life, and you don't have to be an expert diver or swimmer to see it all.

The Cayman Islands lie five hundred miles south of Miami in the Caribbean Sea. The largest of the islands, Grand Cayman, is only twenty-two miles long and four to eight miles wide. Little Cayman and Cayman Brac are even smaller and lie eighty miles to the north-east of Grand Cayman.

## Potted history

The islands were first discovered by Christopher Columbus in 1503, on his fourth voyage to the New World. They were first named Las Tortugas, after the turtles which Columbus saw there. Later, a map showed them as Lagartos, meaning large lizards. This may have alluded to the iguanas which may still be found there. Later still, the islands were shown as Caymanas, derived from the Caribbean Indian name for the marine crocodile. Such creatures existed in Little Cayman until as recently as this century.

Today, the Cayman Islands are a flourishing British Colony and the stable government has played a major part in helping them become one of the most popular offshore financial centres in the world. The other major industry is tourism, and people mainly go there to see the spectacular coral reefs and marine life.

## Popular pastimes

Snorkelling and scuba diving are the most popular pastimes on the islands which are surrounded by deep underwater walls on all sides. However, you do not have to venture very far into the water to see damselfish, parrotfish, tangs and angelfish. In fact, one of the most splendid sights was viewed from the land. It was about four or five Spotted Trumpetfish (*Aulostomus maculatus*) gliding serenely along the surface of the water in Georgetown harbour, Grand Cayman. These fish are related to seahorses and pipefish, as they belong to the order of Gasterosteiformes (as do the Sticklebacks). However, the trumpetfish were several feet long!

One can also see the marine life by taking a trip on the *Alauni* submarine which operates an hour-long marine safari along the famous Cayman Wall to a depth of about a hundred feet. Yellowtail Snappers (*Ocyurus chrysurus*) swim alongside the two-foot diameter viewport; shoals of Tarpon (*Megalops atlanticus*) can be seen gliding along in the distances; Spotlight Parrotfish (*Sparisoma viride*) can be seen nibbling away at the algae-covered bases of the living corals and dead coral rock.

The guide delights in relating how a single parrotfish can create three tons of coral sand in one year! With their teeth



1



2



4



5

# Awestruck in

Penelope Millson recalls a holiday of a lifetime

Photographs by the author

- 1 Underwater tours can be enjoyed from inside the *Atlantis*.
- 2 Typical coral beach in Grand Cayman.
- 3 Friendly French Angel.
- 4 Hand feeding French Angels and Blue Tangs.
- 5 Close-up of Bermuda Chubs and Sergeant Majors.
- 6 Stingrays photographed at the aptly named Stingray City.
- 7 The turtle farm does its bit for conservation.
- 8 Close encounters with Stingrays.



7

fused together into parrot-like beaks and heavy molar grinding bones in their throats, parrotfish make very efficient recycling machines. They turn rocks and coral into fine sand as they graze on algae and polyps.

The corals and sponges are also wonderful to see, but it is more difficult to identify individual species amid the veritable forest of marine life. The huge Barrel Sponges stick in one's mind the most, simply because their enormous size sets them apart from everything else.

A greater variety of sponges can be seen at depths of about four hundred feet down the Cayman Wall, but to see these it is necessary to take a trip on a tiny

three-man submersible. This will dive eight hundred feet down the wall to get a look at the wreck of the *Kirk Pride* which is stuck on a ledge surrounded by huge carbonate blocks called haystacks.

The submarine dives are exciting but not cheap. A less expensive alternative is the *Seaworld Explorer*, a boat which has viewports in its hull. From this you can visit the wreck of the *Balboa*, a small freighter which sank at the entrance to Georgetown harbour in 1932. Instead of being accompanied by Yellowtail Snappers, however, shoals of Bermuda Chub (*Kyphosus sectatrix*) and Sergeant Majors (*Abudefduf saxatilis*) gather round the viewports to get a look in at you.





# the Caribbean



Sergeant Majors are often the first fish snorkellers will notice as they are always on the lookout for a free feed!

## Friendly stingrays

An occasional Green Turtle (*Chelonia mydas*) and Stingray (*Dasyatis americana*) may also be seen. However, a better way to get a look at the Stingrays is by taking a trip to Stingray City, or visit the sandbar which lies at the entrance to Rum Point channel on the north side of Grand Cayman.

Stingray City is a unique tourist attraction, for where else in the world can you stand chest high on a sandbar in the mid-



dle of the ocean while Stingrays swim around your legs nudging you to give them tidbits of food? It can be an unnerving experience, for although these creatures are obviously very tame, they can give you a nasty bite with their powerful jaws in their over-enthusiasm to get at food. They will also push up against your legs, and with some of them reaching up to five feet across, this can sometimes be a very powerful push! Normally, Stingrays are very shy creatures spending a lot of their time buried in the sand.

Other fish also come along for the handouts at Stingray City. Large numbers of Caribbean Blue Tang (*Acanthurus coeruleus*) and the odd pair of French Angelfish (*Pomacanthus paru*) are tame enough to take tidbits from the hand. So is the occasional large Pufferfish (*Diodon hystrix*). The Queen Angelfish (*Holocentrus ciliaris*) and the striking Grey Angelfish (*Pomacanthus arcuatus*) were

much more aloof, but pairs of them could be seen at greater depths from the submarine.

Included on every trip to Stingray City is a short stop over — to dive for conch. The Queen Conch (*Strombus gigas*) is much sought after for its decorative shell, which can be anything up to a foot long. It is also very edible, and conch chowder is readily available at restaurants on Grand Cayman. To the lover of live marine invertebrates, the conch is a fascinating creature to watch. Pulled out of the water and placed upside down, the eyestalks will first pop out from a deep notch at the anterior end of the outer lip, then the huge muscular foot will appear and the animal will flip its whole body over so that it is right side up again.

The Cayman Islands marine conservation laws dictate that there is a catch limit of 15 conchs per person per day, or 20 per boat per day. I saw no evidence of any attempts being made to enforce these rules, but our own boat took only about five or six conch. It is to be hoped that the islanders appreciate the importance of conservation. There is certainly no poverty or deprivation on Grand Cayman, as there is on some of the other Caribbean islands, so there is no real excuse for flouting the law.

## Turtle conservation

The Green Turtle is not so often seen in the wild today but the Cayman Turtle Farm has literally thousands on show at every stage of their development, from small hatchlings to huge 600-pound giants! The farm breeds the turtles, both for commercial and ecological purposes. It releases a large proportion of its turtles into the wild to help repopulate local waters and also ensures that local restaurants are supplied with turtle meat. In fact, turtle burgers can be obtained from the cafe at the turtle farm!

At the turtle farm, you are also supposed to be able to see the endangered giant Blue Iguana (*Cyclura nubila lewisi*). It is found nowhere else in the world but the east side of Grand Cayman, and can grow up to five feet long. Its unique blue colouring is due to the weather; the hotter the weather, the bluer it gets. However, I only saw the more common Ground Iguana (*Cyclura nubila caymanae*) when I visited the turtle farm. These creatures are still common on Little Cayman and Cayman Brac.

In addition to the delights on offer to the lover of marine life, the Cayman Islands can boast 45 resident species of bird with 100 or so migrant ones visiting the islands in winter. They also have about 30 species of butterfly.

However, the islands themselves are not especially beautiful, being completely flat and excessively hot. Undoubtedly, the main attraction is the fish. As well as the ones already mentioned, I also saw filefish, boxfish, triggerfish and many, many more. Not surprising when there may be up to 500 different species on a single reef! **AM**



# TRADE "TALK"

## World Experts at Aquarama '95 Conference

More than 20 experts in the fields of aquaculture, conservation, the aquatic industry and biology will be presenting papers at the **Aquarama '95 Conference** in conjunction with the Aquarama '95 exhibition (World Trade Centre, Singapore, 25-28 May 1995).

Titled **The Ornamental Aquatic Industry — Keeping Pace With Change**, the conference will focus on the latest advances in fish breeding, fish health and genetic engineering, as well as providing a forum for industry representatives to discuss current issues on fish conservation, current legislation and regulations.

"Aquarama is the only international event of its kind in the world, and has become a magnet for the ornamental fish industry," explained **John Neo**, senior project manager of organiser **Expoconsult Pte Ltd**. "We are proud that this year's conference has drawn so many speakers, who are not only world experts in their respective fields, but who have chosen Aquarama as the platform to share their views on all aspects of the industry."

Opening the conference, **Dr Herbert Axelrod** will present the keynote address with a study on the future growth of the aquarium industry in the light of global conservation efforts and current restrictions on the import and export of 'exotic' species. In recognition of **Dr Axelrod's** prestige and popularity as a speaker, admission to the keynote address is free to all exhibitors, conference delegates and visitors to Aquarama '95.

Among the speakers, there are several UK representatives:

**Keith Davenport**, Chief Executive of Ornamental Fish Industry (UK) — European controls and their effect upon third countries.

**Dr Peter Burgess**, University of Plymouth — Painted fish.

**David Morgan**, Joint Nature Conservation Committee — CITES regulations and the aquatic trade.

**Dr Krishen Rana**, Institute of Aquaculture, University of Sterling — Hormone-induced spawning and other aids to production.

Also participating in the conference will be **ASP** editor **John Dawes** who has been consultant to the organisers of Aquarama. John will be chairing the first session of the conference and will also be presenting a paper on Dragon Fish during one of the public seminars.

The four conference sessions are:

1. Current and emerging aquatic resources: commercial approaches
2. Aquatic ornamentals: trade legislation/market opportunities
3. Fish production: current trends
4. Aquatic industry: health management

The three-day conference is expected to draw over 200 delegates from around the world. Entry to all four sessions is \$650 for the three days, while entrance to individual sessions is \$180.

Over 100 exhibitors from 23 countries will be exhibiting at Aquarama '95. The event will also feature an international fish competition and technical visits to Singapore's leading fish and

aquaculture farms, export centres and laboratories.

For details contact: **Expoconsult Pte Ltd**, 100 Beach Road, #27-08 Shaw Towers, Singapore 0718. Tel: +65 2999 273; Fax: +65 2999 782.

## One million up for Pisces

Over a million Koi and Goldfish have been spawned at an environmentally-sound fish farm on the site of a chemicals company in Derbyshire.

**Pisces Aquaculture** was launched in June last year at the site of Courtaulds Chemicals in Spondon, Derbyshire, to make use of a supply of clean, heated river water used to cool the chemicals production plant. "The process is environmentally friendly as it takes advantage of ready-heated water which would otherwise be returned to the river," explained **Adrian Barnes**, managing director of **Pisces Aquaculture**. "This ready supply of warm water ensures that the fish flourish even in the middle of winter."

Adrian explained that the benefits of farming fish in the UK are enormous and produce lower transportation costs. "In addition, fish do not have to be deprived of food prior to travel and are not so tightly packaged for transit. Further, they do not have the problems of oxygen starvation, which can be the case with fish air-freighted from distant countries."

The Koi at Pisces were originally bred from Japanese stock, and the company is now developing its own broodstock. Adrian is particularly proud of his Ghost Koi, which are in their fifth generation and which, he says, "sparkle with a metallic-looking, luminescent quality."

Adrian Barnes has established fish farms throughout the world, including projects involving a prawn aquaculture business in the Philippines and edible fish in Israel. **Pisces Aquaculture** was established to farm ornamental fish and food fish — notably St Peter's Fish (*Tilapia*). The company is also supplying supermar-



**Adrian Barnes** (right) MD of **Pisces Aquaculture Ltd** and members of his team net some of their 'Derbyshire' Koi.

kets with additional species, including sea bass and trout; they also supply pot-grown water lilies and water hyacinths.

For information, contact: **Adrian Barnes**, **Pisces Aquaculture**, Courtaulds, PO Box 5, Spondon, Derby DE21 7BP. Tel: 01332 681399; Fax: 01332 681806.

## Hozelock goes Dutch

Water garden products manufacturer **Hozelock** received a further accolade from the trade when the company's Ultra-Violet Pond Water Purifier won the coveted 'Silveren Tuinpluim' (Silver Fern Award) at the recent VTB Fair — Vakbeurs voor de Tuinbranche (Garden Trades Fair) in Utrecht, Holland.

The award was won by the Hozelock 7000 U/V Purifier in the 'Garden Equipment Category' and was selected by a jury of five gardening professionals. Hozelock's U/V Pond Water Purifier is effective in controlling water-borne algae and bacteria to keep pondwater clear. The judges particularly noted the product's innovative design, shape, security, user-friendliness and price.

**Richard Bradley**, marketing manager of Hozelock's Aquatics Division, was delighted with the award, remarking: "It was quite a surprise to receive the honour so long after the launch of the product at the beginning of last year's pondkeeping season. This again underlines the high standards the company has set in design and manufacture of pond equipment."

He explained that this is the lat- ▶



Painted Glassfish still remain a controversial subject. **Dr Peter Burgess** will be talking about them at this year's conference.



## TRADE "TALK"

est in a series of awards received by the company for its range of pond accessories and equipment, designed and manufactured in-house. In 1989 Hazelock won the **GLEE Gold Award** for its range of 'Cascade' pond pumps, followed in 1993 by a **Retailers' Choice Gold Award** at the same show for the company's range of pond lighting.

### Interpet makes sure

Interpet has launched a new range of point-of-sale material for its Therasure range of electronically-controlled aquarium heaters. Eye-catching and easy-to-read POS display cards incorporate the slogans 'Be sure with Therasure' and 'Your fish can always depend on our chips', and highlight key features of the range, such as automatic shut-off, reliability, ease of use and a three-year guarantee.

Adrian Exell, brand manager at Interpet, said: "Therasure's advantages are proving to be attractive options for a large number of aquarists. The heaters are controlled by solid state fail-safe electronics, which are more suitable for aquarium use than traditional thermostat technology as used in domestic kettles."

### Innovation success

Such was the success of **O3 Systems' Aquarium Ozonator** at the recent Great British Innovations and Inventions Fair at the National Exhibition Centre, Birmingham, that the company is developing a version for treating ponds.



O3 Systems managing director **Bob Pearcey** told **A&P** that the system is the "next generation" of aquatic equipment, being effective in breaking down ammonia and organic waste and for killing bacteria. The system is easy to adapt for any application. We have even heard of ozonisation being successfully used by the medical industry in treating certain human viruses! For the freshwater tropical fishkeeper, the system is at a price which allows access to the kind of technology which had previously been the preserve of marine enthusiasts.

The Ozonator is said to produce ozone at relatively low levels so that it is harmless to humans and will not damage aquarium fish. The ozone generated does, however, destroy bacteria and viruses and aids the breakdown of nitrates and ammonia in the tank.

"Tank water will remain clear for long periods, making partial changes less frequent, and odours will be substantially reduced," added Bob Pearcey.

The company is seeking UK distributors for the Aquarium Ozonator, for which they have acquired the manufacture and maintenance rights. O3 Systems is also planning a major promotional and advertising campaign, including point-of-sale material, to be made available to distributors and retailers.

For information, contact: **Bob Pearcey, O3 Systems, Ozone Service Ltd, Marine House, 35-39 Myton Street, Hull, North Humberside HU1 2PS. Tel: 01482 224646; Fax: 01482 580404.**

### Retailers' bonus from KB

Retailers can benefit from a 'bonus box' which provides an additional six bottles in every 36-bottle pack of **King British** water treatments.

"Each pack contains ten different water treatments, and provides retailers with the opportunity to stock the full range of King British water treatments without taking excess stock," explained a spokesman for the company. "In addition, they receive six free treatments with a retail value of over £25."

The promotion is also supported by informative posters and treatment guides.

For information, contact: **King British Aquatics Ltd., Haycliffe Lane, Bradford, West Yorkshire BD5 9ET. Tel: 01274 573551; Fax: 01274 521245.**

### Open Day at Sparsholt

**Sparsholt Colleges' Annual Open Day** takes place on **Saturday 13 May (10 am)**. The **National Aquatic Centre** will be the main attraction, where stu-

dents and staff will be available to explain the exhibits and provide information. Additional events include tractor rides, sheep shearing, flower arranging, fly-fishing, touch tables for children and a nature walk, as well as cream teas.

Potential students of the ornamental aquatic industry are reminded that it is important to apply early for interview at Sparsholt College in order to be able to qualify for a discretionary grant in the event of being awarded a place at the college.



**Craig Baldwin** has been appointed as lecturer in aquatics at Sparsholt College, Hampshire. Craig was fisheries manager at **Lee Valley Country Park** and succeeds **Roger Foggitt**, who has left Sparsholt to join Tetra.

The college runs several courses about the industry including the **BTEC National Diploma (two years)** and **NEB National Certificate (one year)** in Aquatics and Ornamental Fish Management.

For further details, contact **Sparsholt College Hampshire, Winchester, Hants SO21 2NF. Tel: 01962 776441.**



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# SEAVIEW

BY GORDON KAY



## Slow tide changes

I've stumbled across a couple of interesting things over the past week or so, which I thought you ought to know about.

For instance, in the first issue of '95 of the *Biologist*, there was a conversational piece by Dan Laffolev called *Tides of Change?* Now, this four-page article was obviously too long for me to talk about in full, but it did have a couple of very interesting points.

Basically, it brought into question the commitment of the government to marine conservation. This is nothing new, of course. We have seen many articles asking the same type of question over the last decade or so, but I still think that this one is worth talking about.

Dan Laffolev talked in his piece about recent advances in marine conservation: initiatives like Coastal Zone Management and legislation such as the Sea Fisheries (Wildlife Conservation) Act 1992, were all acknowledged as being welcome measures.

However, rightly or wrongly, the author also considers these to be "just political gestures". One of the reasons he cites is the fact that marine conservation has been hampered during its relatively short life by a number of factors, one of these being that, although knowledge has increased significantly, we still do not know as much about marine ecosystems as we did about their land counterparts back in 1967. He further states that information is based on single visits to any one site, when what is really needed are data gathered at a single site over a period of time. Dare I say that I think he has a point?

The author goes on to discuss Statutory Marine Nature Reserves, which came into being as a result of the Wildlife and Countryside Act of 1981. He makes the point that even now, in '95, there are still only two such reserves around the coast of Britain, namely, Lundy Island in the Bristol Channel and Skomer, off south west Wales. However, there is a third one in the offing, this time at Menai Strait, the stretch of water between North Wales and the island of Anglesey.

It is felt that the main reason why progress has been slow lies in the legislation itself. The law says, basically, that the Nature

Conservancy Council (as was) was not able to work alone, but had to get other bodies on its side. This had the result of inevitable delays and the chance to make less of original requirements than actually existed. Vested interest and selfishness also played a part, says the author. The main point he makes, however, is that to maintain and support the marine environment will take support from everyone if it is to succeed.

Dan Laffolev also has a lot to say on the role of Voluntary Reserves, their advantages and disadvantages, about other initiatives such as Coastal Zone Management and the soon-to-be-introduced EC Habitats and Species Directive (which, hopefully, I'll be able to discuss in *Seaview*).

All of it actually says a lot of stuff I've been preaching about for ages, presented in a very good article.

I just wish that it had appeared in a more mainstream publication, but if you can get your hands on a copy of *Biologist* (1995) 42 (1), then it will be well worth your while.

## Nootka & Keiko

I know that my views on captive cetaceans don't meet with everyone's approval but, as I've said before, I just report things I don't like when I think that you

**1** The open sea, like the open plains of Africa, offers nowhere to hide. Like the gazelles on those open plains, small fishes that are preyed upon by sharks, barracuda and tuna, etc, seek safety in numbers. For instance, herring congregate in huge shoals, some half a mile across and containing many million individuals.



TREVOR McDONALD

Herring, Mackerel and other open-ocean species gather in vast numbers. This picture shows an enormous feeding shoal of Mackerel in the North Sea.

## SNIPPETS

**2** Living in groups offers many advantages, apart from protection. Pilot Whales, for example, hunt in deep water for their favourite prey, squid. At other times, they swim together in a very orderly fashion at a very relaxed speed of around 4 mph, or they simply rest in groups at the surface. They just lie on their backs with their flippers in the air, as though they didn't have a care in the world.

**3** The lights underneath the eyes of the Flashlight Fish are the brightest produced by any living creature.

**4** The North Sea Haddock sings a mating song to the female which sounds like a motorbike engine!

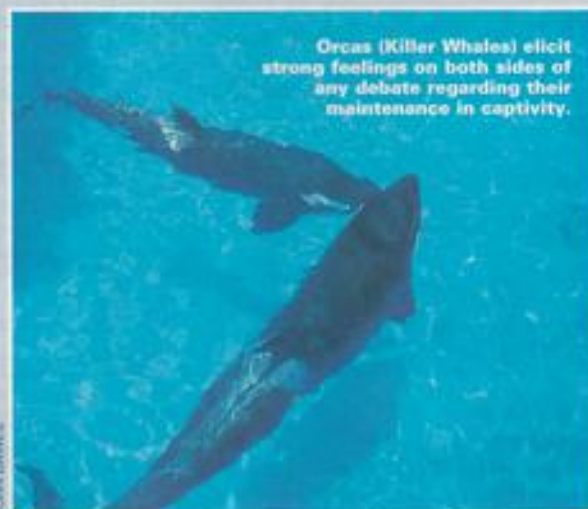
should hear of them. For instance, were you aware of the death of Nootka — an Orca at Sea World in Orlando —

after giving birth to a dead calf? Nootka was thirteen years old. She would have lived to about fifty in the wild — and had lots of calves along the way!

Something else you may not know — is that the Orca you saw and loved in the film *Free Willy*, Keiko, is still in captivity at Reino Aventura Marine Park in Mexico City. He is still suffering from the skin disorder which has been plaguing him for ages and the captivity industry in the States still won't let him be set free, even though his owners are fully prepared to release him back into Icelandic waters!

If you don't like me writing this ... TOUGH. Nobody will ever convince me that keeping whales and dolphins in captivity is right.

Don't you think it's a touch ironic that an animal which starred in a film which made loads of dosh, while making people both angry and then later exhilarated as it jumped to freedom, should be languishing in a concrete pool himself? Ironic and hypocritical!



Orcas (Killer Whales) elicit strong feelings on both sides of any debate regarding their maintenance in captivity.

JOHN DAWIES



What is the intrepid rockpooter wearing this year? Not the latest fashion; old clothes are the order of the day. Sharp jagged rocks and knife-sharp barnacles can rip material, while salt can corrode zips.

By now, the weather will be getting a little bit warmer, and we can dispense with the thick woolens underneath the anorak.

An anorak with lots of pockets is indispensable to carry nets, and other paraphernalia. On many rocky shores, it helps to have both hands free when crossing difficult and slippery terrain. However, one hand usually grips a large bucket for the rock-pool fish and crabs. Anemones and smaller invertebrates are often kept in smaller plastic containers or polythene bags.

## Variable fauna

Forecasting what fauna will appear on the shore in May is difficult, because of various factors that have an influence.

Topography, or physical characteristics, of a shore can be important as these can affect what seaweeds are able to grow.

Temperature of the pools on the shore is variable according to the prevailing weather. If the pools are too warm, many of the larger rockpool fish will be absent. The pool temperature will also be affected by the time of the day that the low tide occurs.

From year to year, there are great fluctuations in the breeding success of many marine creatures. For example, the Common Starfish and the Squat Lobster can be present on the shore in millions, or only in scattered populations, or even absent altogether.

However, it is possible tentatively to identify some trends:

① **Seaweed growth is extensive on the shore and in the shallow seas.**

This, in turn, supports a rich

# SHORE WATCH

BY ANDY HORTON

life of the  $\frac{1}{2}$  - marine invertebrates that provide food for the larger fish.

This algal explosion will be more evident on sheltered shores, where the delicate red and green seaweeds will flourish. In the sculptured rockpools of Kimmeridge Bay in Dorset, the rockpooter can walk right up to the edge of the pools without getting his or her feet wet and view the attractive seaweed varieties as easily as peering into a garden pond.

Exposed wave-beaten coasts are dominated by brown seaweeds known as wracks and the seaweed growth is not evident.

② **A seasonal explosion in young fish and other marine animal life in the shallow seas and in-shore pools also tends to occur at this time of year.**

A myriad invertebrates that have bred in earlier months have hatched out, and young of the rockpool fish and crabs that have survived their life in the plankton, have now moved into the intertidal zone.

Juvenile fish of all shore species will now be found under rocks, among the fronds of seaweeds and darting across rock pools.

The pea-sized Lump-sucker fry can be found in pools at mid-tide

level during May. In captivity, they require aquaria on their own, cooled to 50° (59°F).

③ **Shore breeding and guarding of eggs by rockpool fish will have ceased, or diminished.**

The Lump-sucker will have moved off to deeper water. Butterfish, the Bullhead (or Sea Scorpion) and the Blenny will still be present offshore, but are less likely to be numerous between the tides. Gobies will still be breeding.

④ **The hot rays of the sun will heat up the pools.**

Arctic fish like the Butterfish are intolerant of water temperatures in excess of 21°C (70°F). At higher temperatures, the pools will contain less dissolved oxygen, especially high up on the shore. Rocking will avoid anoxic (oxygen-deficient) pools.

⑤ **Large fish will move inshore to feed on the abundance of small life.**

Some fish may become trapped in the large pools. Bead-let Anemones will grow larger with the increased food intake.

## Cracks and crannies

Soft chalk is broken off the cliffs and bedrock and distributed over the foreshore. This soft rock is burrowed in by a bivalve mollusc known as Piddock, which lives its whole adult life inside the chalk, where it is only seen if this friable rock splits.

The rockpooter is more likely to come across a loose rock after the Piddock has died, warren-ed by holes. Look carefully inside and small crabs like the Hairy Crab will be hiding in the holes. Look even more carefully and a host of small anemones, brittlestars, small crustaceans and even an adult Blenny could be discovered.

**Remember to return all rocks to the same place and the same way up in which they were found.**

In the limestone of Devon,



Limestone pools in Devon can become carpeted with Daisy Anemones.

deep pools near the high water mark could still feel cold to the hand in May. The interior of the pools could be completely covered with the buff discs and tentacles of hundreds of Daisy Anemone. At the slightest touch, the anemone will rapidly withdraw into fissures in the rock.

## Sandy pools

Drop a pebble in a shallow sandy pool and watch the activity as small sandy-coloured fish called Common Gobies dart in all directions. They are camouflaged to match the sand and are almost invisible when they come to rest. The fry will be between 22-28mm long in May.

The pool may also contain young shrimps and flatfish like young Flounder. The shrimps can be used as live food for aquarium fish.

Attuned to the clear pools, your attention may be drawn to a top-shell or wrinkle crawling along in an uncharacteristic fashion. On picking it up, you could well discover the two orange claws of a young Hermit Crab.

Well camouflaged young Flounders can often be found in sandy pools in May.



TREVOR McDONALD

Numbers of squat Lobsters fluctuate widely from year to year.



## MAY CHECKLIST

During May, the variety of weather and tide conditions can have a great bearing on what rockpool fish and invertebrates can be found between the tides. This applies to an average rocky shore. When all the varieties of shores are considered, from granite outcrops exposed to the swell of the Atlantic, to a sheltered sandstone and limestone shore in the north-west of England, this selection can only be a very rough guide to the most probable invertebrate inhabitants on a hot day.

### Adult Bony Fish (Teleosts)

Bleak or Shanny  
Rock Goby  
Common Goby  
Sand Goby  
Carnish Goby

Larropine goby  
Gobio paganella (soft and wet only)  
Pomatoschistus minutus  
Pomatoschistus minutus  
Tegulapogon aculeatus (soft and wet only)

### Fish Fry

Larropine  
Bleak or Shanny  
Common Goby  
Bullhead (Sea Scorpion)

Callinectes sapidus  
Larropine goby  
Pomatoschistus minutus  
Tubularia dilata

### Crustaceans

Harlequin Crab  
Long-necked Prawn  
Velvet Swimming Crab  
Common Sand Louse  
Horned Crab  
Sheep Crab  
Hairy Crab  
Slipper Crab  
Prawn  
Brown Shrimp

Pagurus maclaughlinae  
Pagurus longimanus  
Littorina rubra  
Littorina saxatilis  
Pagurus maclaughlinae  
Pagurus longimanus  
Callinectes sapidus  
Cancer pagurus  
Pagurus maclaughlinae  
Callinectes sapidus

### Echinoderms

Common Starfish  
Shore Urchin

Asterias rubens  
Pisaster ochraceus

### Molluscs

Periwinkle  
Limpet  
Grey Tiddler  
Purplish Turbellarian  
Diplommatina  
Grey Turb Shell  
Mussel

Littorina littorea (soft and wet only)  
Purplish Turbellarian (soft and wet only)  
Diplommatina (soft and wet only)  
Callinectes sapidus  
Purplish Turbellarian  
Diplommatina  
Mussel

### Sea Anemones

Stolonate Anemone  
Candy Anemone  
Saddle Anemone  
Daisy Anemone  
Tugboat Anemone

Anemone (soft and wet only)  
Callinectes sapidus  
Purplish Turbellarian  
Diplommatina  
Mussel

Water I would be interested in receiving reports of the species listed by email or on the shore during May. Reports could be published in A&P and in Oceanic, the quarterly journal of the British Marine Life Study Society. All reports will be copied to. On Saturday 12 May a group called Low Tide will be organizing a walk on the shore which will be open to all. Please write to: Andy Norton, c/o A&P for further details.

## BRITISH SEA TEMPERATURES (SURFACE, INSHORE)

MAY		°C	°F
	Thurso, North Scotland	7.8	46
Newcastle	7.8	46	
Donegal	12.2	54	
Brighton	8.9	48	
Plymouth	10.0	50	
Gibraltar	16.7	62	



Velvet Swimming Crab: a rockpool visitor.

### COASTAL CODE FOR ROCKY SHORES

As in any other natural habitat, the presence of humans disturbs the coastal environment. Wildlife needs undisturbed conditions in order to survive; over-exploitation can destroy the fauna permanently. Therefore:

- 1 Cause as little disturbance as possible. Always return rocks to the exact position and the same way up as they were found.
- 2 Collection of live animals, fish etc. should be kept to a minimum.

#### ! WARNING !

The coast can be a dangerous place. Seaweeds are slippery. It is easy to have an accident when crossing difficult terrain.

Beware of the incoming tide!



Juvenile Saltwater Cats clumping together for added protection.

Why is there only one kind of saltwater catfish (*Potomus lineatus*) when there are literally thousands of freshwater species?

Freshwater catfish are often loners, or, as with many *Corydoras* species, like to live in small groups. The saltwater version goes to the other extreme. To make itself seem less of a titbit, dozens of juveniles swim together in a tight clump, coordinating their movements so that, at first glance, they seem to be just one, much bigger animal. The sight of this large, striped, wriggling mass puts most predators right off the idea of a snack!

Just in case pretending to be something else doesn't work, saltwater cats have poisonous spines in front of both their dorsal and pectoral fins. As the fish moves, their attractive striped pattern begins to fade, and they become much less visible. This makes the spines even more dangerous, even to careful fishkeepers. Perhaps, on second thoughts, it's best that there is only one species!

Linda Lewis

# FASCINATING FISH FACTS

## Safety in numbers



# QUESTION TIME

Having problems? Send your queries to our panel of experts who will be pleased to be of service. Each 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 the name of the experts to whom your query should be

All letters must be accompanied by an S.A.E. and addressed to:  
Question Time, Aquarist & Pondkeeper, 9 Tuffon Street, Ashford, Kent TN23 1QN.  
Herpetology, Bob and Val Davies, Koi, Alan Rogers, Tropical, Dr David Ford, Coldwater, Pauline Hodgkinson, Plants, Barry James, Marine, Gordon Kay.

## COLDWATER

### Problems of overcrowding

I am a newcomer to the fishkeeping hobby, but my enthusiasm is beginning to turn to dismay as I have had so many problems with fish becoming sickly and dying.

At the moment most of them (I have six in a 24in tank) have what I presume is Fin Rot. What am I doing wrong?

Fin Rot is usually the result of a bacterial infection which can be brought on by a number of factors. Overcrowding is one, while poor water quality in unhygienic tank conditions is another.

Many people, when they first start out keeping fish, attempt to keep far too many specimens in their aquariums, allowing very little space for the fish to live their lives free from the constant stress of their neighbours and with not enough room to grow and develop properly.

We can suffer in cramped and crowded living conditions; fish are no different. The environment suffers and it is much more difficult to keep the

aquarium clean and healthy, so the water is not in a suitable condition to support or sustain life which, of course, breeds bacteria and disease.

Allow about 30 square inches of surface area for 1 inch of fish. Even with a filter, you can do small water changes about twice a week and this will help to keep the water clean and healthy.

Replace the old water with new of the same temperature.

Use a gravel cleaner when siphoning off the waste and debris; this will release the waste and particles of uneaten food from between the stones.

Once you have improved the conditions in the aquarium and added one of the proprietary treatments available from your aquatic retailer, things will improve and you can once again enjoy this wonderful hobby.

Make sure that your tank is not positioned where it is either in a draught or where it may be heated by a radiator. This will make the water within the aquarium subject to fluctuating temperatures which will eventually help to cause problems for the fish.



DR DAVID FORD

Goldfish, although they like each other's company, need space. Without it, things will soon begin to go wrong.

## PLANTS

### Gravel problem

How important is the type of gravel you use with regard to plant growth? My plants are not doing well and I am beginning to wonder if the problem lies with the gravel I have.

The first thing to insist upon is that the gravel be free of lime. You can test this by adding a few drops of hydrochloric acid to a sample. If it 'fizzes' violently it is unsuitable. Vinegar will also react in this way, but considerably more gently.

Of next importance is the particle size. Each particle should be 1-2 mm in diameter if possible, but anything up to 6 mm will be suitable.

The colour of the material is also important. Although light colours are better in deep tanks to reflect the light rays, darker gravels will offer contrast to the colours of the fish and plants.

Parrots' Feather: different conditions will result in different forms of this plant



### Cultivating Parrot's Feathers

I would like to try to cultivate *Myriophyllum brasiliensis* (Parrot's Feather) and would welcome any advice you can give me.

The old name for *M. brasiliensis* was *M. proserpinacoides*, so it's well worth checking your aquarium books for cultivation details under the latter name.

This plant is pretty hardy and generally grows well outside all through the year. It will stand several degrees of frost and survive.

It has two growing forms. The normal form grows emersed, producing large whorls of grey-green foliage

borne on thick fleshy stems. The flowers are minute and born in the axils.

In deep water, the submerged form is produced. The whorls are very large, sometimes reaching 3in (c7.5cm) in diameter. The leaves are very fine and quite magnificent. This form is difficult to grow, as the tendency is to break the surface.

Propagation is easy. Any piece of stem stuck in the gravel will root and produce a new plant within a week or so. *M. brasiliensis* grows best in cooler temperatures between 60-70°F (18-21°C); it will also succeed at higher temperatures, but will produce less luxuriant growth.





AQUARIUM

## TROPICAL

slightly cloudy; others, it is reasonably, but not satisfactorily, clear. There are also colourless thread-like 'structures' clinging on to plants, and I can see suspended particles in the water.

When the glass is cleaned, I am left with a brown deposit on the cloth.

Can you help me with my problem? Also, does a healthy tank have a smell at all?

You do not say what your filter medium is, and this is more important than the model of power filter used. Pack the filter with only a thin layer of filter fibre to remove large particles. The bulk should be a granular material to act as a biological filter. Use carbon loosely held in a nylon bag (lights are OK) or ceramic filter pieces.

If the water quality does not improve, you have a crowded tank, and extra filtering is necessary, using, perhaps, a submersible power filter. Do not neglect routine partial water changes—about 25% every other week.

The brown deposit may be algae or muck. Wipe some off on a cloth or tissue and pour a little boiling water on it. If it turns green, it is algae; if it remains brown, it is muck. Algae controls are available commercially, but muck is just dirt, and more frequent cleaning is required.

A healthy tank smells sweet.

### Photo tip

Whenever I try to photograph a shoal of fish in my tank, some come out in focus, others are out of focus and plants always get in the way.

Can you offer me any tips? Densely planted aquaria with numerous fish, all sharply in focus—as is always the case in books—may not be all they seem.

Great photographs don't always tell the whole truth!

Have a look at the accompanying picture. The end result would be one of the ideal pictures referred to above, but—in reality—the tank containing the shoal of Cardinals is narrow and bare. The tank with all the plants is a second one placed behind the one with the

fish. Simple but clever, isn't it?

### Clean-up tips

I am a newcomer to fish-keeping. My tank measures 28 x 12 x 12in and it is cleaned by means of a power filter.

Some days, the water is

## MARINE

### Ever-circling angel

I have a Queen Angel which has started swimming around in circles. It also seems disorientated and has lost some of its colour.

There are no marks on it, so what could be the problem?

Oh, dear. This sounds tricky. Sticky for me, that is, because I'm sure you understand that without seeing your angelfish, myself, I cannot give a 100% accurate diagnosis.

However, the symptoms you describe sound like an internal fungal infection. If it is, then I'm afraid there is no known cure. The best you can do is to improve the animal's diet (in terms of variety and, if appropriate, its environment, ie your water quality).

I have a sneaky feeling that one or both of these are definitely and that if you improve things, you will find the angel improves.

### Shrinking and stretching inverts

Please help. I have been running an invert tank quite successfully for a few months now, but my anemones are slowly turning white and I'm sure they're shrinking. Also, my soft corals seem to be stretching!

What can I do?

Your problem is a very common one. Fortunately, it is also easy to put right. Look at your lighting arrangements. It seems to me like you either do not have enough light, or that which

you do have is of the wrong spectrum.

It would take more space than is available here to explain the whole gamut of aquarium

lighting for invertebrates but, unless you use metal halide lights, the answer lies almost certainly in the intensity, or lack of it.



If your inverts are not looking in tip-top condition, check the lighting as a first step.

STEPHANO BAZZALI



## KOI

### Liner drains & pipes

I would like to install a butyl-lined Koi pool. Is it possible to cut and fit bottom drains and outlet pipes in the side walls of such ponds?

Your thoughts of water transfer through the liner side wall or bottom drains can easily be carried out with the aid of specially produced adaptors designed for this purpose.

These adaptors are really, in the truest sense, flanges which sandwich the liner between each other. They are tightened together with stainless steel bolts/screws. If care is taken to fit them carefully, they will give absolutely trouble-free service.

### Kamikaze Koi

I have a Koi which has Kamikaze tendencies! By this I mean that it has, on more than one occasion, jumped out of the pond.

I do not net my Koi unnecessarily, but this particular Koi, once netted, goes absolutely crazy when restrained in this manner, ending up by releasing a profuse amount of blood from its gills.

I now need to treat it for recent superficial wounds and I am worried that this bleeding may have a dramatic, if not fatal, reaction once in the anaesthetic. Is this reaction in any way harmful to the health of my Koi?

My sympathies! Now and then one comes across an extrovert such as this, resenting any form of netting and restraint whatsoever. The bleeding from the gills is not unusual and is an extreme sign of stress expressed by individuals under such circumstances.

To prevent further infection from these wounds, you must treat the Koi and although it is quite likely to bleed in the anaesthetic, no harm will develop from this outcome, once the fish is successfully sedated.

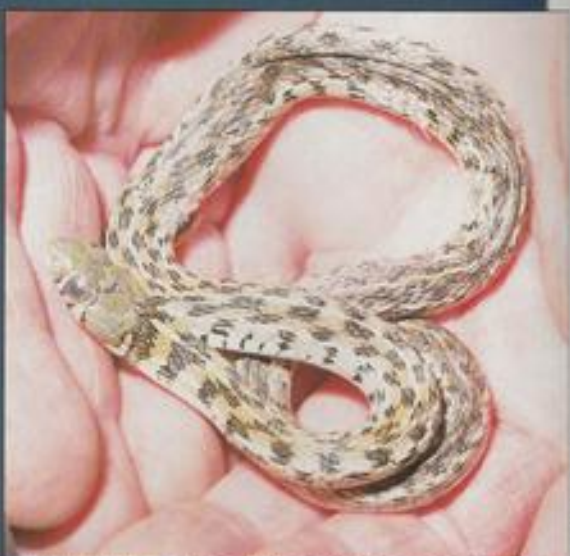
Often, Koi jump out of the pond in a specific area, and once this point is detected, one could create a form of fence restriction of soft netting or similar materials to prevent reoccurrence. Koi that are known to behave in such a manner, should be handled only in extreme circumstances and obviously (from my experience) individuals with these 'irrational' inclinations should never be entered in Koi shows.



GLORION WIKIGENS

Netting will protect 'suicidal' Koi from jumping to their death, but such measures can only be regarded as temporary.

## HERPETOLOGY



Chequered Garter Snake with a sloughing problem. If you look carefully, you will see that there are still some bits of old skin adhering to the body. The old 'spectacle' (brille) is also still stuck on.

### Sloughing difficulties

My snake seems unable to shed its skin properly. What is the reason for this and what can I do about it?

A healthy snake should slough without any difficulty. However, if its health is not 100%, then it may have a problem.

Snakes which are heavily infested with mites or ticks often have trouble sloughing. Dehydration is another possible cause. Snakes which would normally experience a temperature drop overnight, but are kept at a permanently high temperature may also be unable to slough properly.

The vivarium should have a stone or log against which the snake can rub when starting to slough. A bowl of water, large enough for the snake to curl up in, will also help.

A snake's skin should come off (usually) in one piece; if remnants are left adhering, then you can help by holding your snake in a wad of warm, wet paper towel and letting it move through several times. Do not forcibly peel off bits of skin.

Spraying the vivarium can also help, but the majority of snakes must not be kept in permanently wet conditions. If the above is not successful, the snake can be kept in a moist cloth bag for several hours. This is usually effective.

### Horned Frog diet

Can you advise me on the diet for Horned Frogs please?

Horned Frogs of the genus *Ceratophrys* are large animals with appetites to match; they will take prey almost as large as their own body. For example, an adult specimen has been known to consume a day-old chick (thawed) and part-grown rats (again thawed).

Horned Frogs are frequently available as captive-bred babies which will thrive on a diet of crickets, locusts, wax-moth larvae, earthworms, thawed pinkies etc; in fact, they will take almost anything that moves (even fingers!).

Insects should be dusted with a multivitamin calcium supplement according to manufacturers' instructions.

Thawed items will not need to be dusted. The size of food must be increased as the frog grows.

If using thawed food, forceps can be used to simulate movement, and the frog will normally seize it. Frozen foods should be thawed naturally, NOT microwaved.

Such gross feeders produce considerable amounts of waste, so frequent cleaning of the vivarium is needed to prevent disease.



# COLDWATER

## JOTTINGS

BY  
STEPHEN J. SMITH



### Neo-what...?

Remember rugosity? That was a little 'wrinkle' which I introduced into **Coldwater Jottings** way back in January 1993 and caused a few chuckles. Well, how about a new word to add to the aquatic specialists' vocabulary? Neoteny.

Neo-what? — I hear you ask. Of course, keepers of Axolotls will need no prompting, as these amphibians display all the characteristics of neoteny, in that, even in their adult form, there are certain characteristics of the animals' larval stage (i.e. external gills).

According to my dictionary, neoteny is "a persistence of larval features in the adult form of an animal". So, if you want to impress your friends at the next meeting of your aquatic society, see if you can drop neoteny into the conversation!

### Medal for Tetra

I was pleased to feature Tetra's recently-introduced Gold Medal range of foods for Goldfish in last month's columns, and have been trying the growth food with my young Calico Fantails, which were hatched last summer.

Boy, oh boy, have they grown! I had brought a fair number of youngsters indoors before Christmas to protect them from the worst of the winter weather and, frankly, they had not grown at all. However, since trying Gold Medal growth food, the fish have put on tremendous development and are quite impressive.

I apologise if this sounds like



Tetra's Gold Medal growth food has already proven ideal for my young Goldfish.

an advert for 'Miracle Grow', but as far as I am concerned, Tetra have hit upon a winner with my Goldfish!

### Priced out

A letter from **Mr E W T Hulse** of Prudhoe, Northumberland, was gratefully received and with perfect timing on my desk. Mr Hulse (no forename supplied) takes us to task over what he considers to be the high prices charged for Fancy Goldfish — and just when I had written a forerunner to this particular **Jotting** the day before!

Mr Hulse writes in response to the item **Disappearing Pandas** published in March's columns: "I have been keeping fish for only a short time and the most I have spent has been between three pounds and eight pounds for small Orandas for growing-on. About six months ago, my local shop had a pair of 'Oranda Pandas'; they were a fishkeeper's dream. What I would have given for these, as I looked at them with one eye on the fish and another on the price.

"No wonder the item in **Coldwater Jottings** was headed **Disappearing Pandas**. If the price stays out of my range, all I

can do is dream of one day owning a pair of Pandas."

Mr Hulse concludes with this plea: "Bring prices down so that more people can enjoy Fancy Goldfish".

I expect that it won't provide much comfort for Mr Hulse that my own personal opinion is quite the opposite: many Fancy Goldfish varieties are sold too cheaply! Now, that statement is not intended to give license to the trade to double their prices overnight. Far from it. However, when selling any commodity, two factors, among others, should be borne in mind in setting its price: the cost of producing the commodity and its value.

Taking the first item first: any breeder of Fancy Goldfish, whether a hobbyist or a professional, has similar costs, such as heating, electricity for air- and water-pumps, food and treatments (professional breeders also have fixed overheads for their premises, as well as, possibly, importation and transportation costs to cover). Added to this is the notional value of time, patience and expertise.

Wastage is also a factor — especially for the more 'fancy' varieties, such as Pandas, Jkin, or even Orandas, where varying proportions of fry are actually of sufficient standard and quality, and breeding programmes will be long-term.

This leads us to value. Having achieved the 'perfect specimen' of whatever variety, this specimen will naturally hold a greater value than a comparatively inferior specimen. And that this is why a good-quality pair of Pandas,



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for example, can command such a price.

However, all is not lost for Mr Hulse and other fishkeepers. My suggestion would be to obtain half-a-dozen reasonable young specimens — possibly available from specialist hobbyists at a more affordable price, or keep a keen eye at your aquatic retailer — and grow them on.

While they may not be of the highest quality themselves, they will have been produced from good stock and will, themselves, produce some good offspring.

Into the bargain, you will have the additional satisfaction of achieving your own 'perfect specimens' — which will be worth a lot more to you than forty or fifty quid.

### Coldwater alternatives

Some interesting correspondence has arisen following my repeated pleas for more information about 'other' coldwater

species ('other', that is, from the ubiquitous Goldfish and Koi).  
**Eric Hollis**, of Speke, Liverpool, has written to me with news that he has successfully kept North American fish such as Red Shiners and Fathead Minnows outdoors in a pond during the winter. "I have always maintained that these fish are a lot harder than most people give them credit for," explained Eric.

He has also been in touch with the North American Native Fishes Association with regards to Redbelly Dace, and I am indebted to him for passing on to me an extract from his reply: "Generally, these species are found in the mid to upper Mississippi Valley," writes Bruce Gebhardt of the NANFA.

The Red is viciously destructive throughout the west, where it has been unwisely introduced. They might not be as hardy at cold temperatures as other species and are found in small plantless creeks, especially in the quieter parts, such as in pools under bridges. Their range extends far north, so they are

more cold-hardy than their name suggests."

He adds: "Northern Redbellies are often found in swampy areas, even with tannic, acid water, usually well-planted. (The other species strongly requires alkaline water). By preference, in natural waters, Fatheads usually prefer quieter parts of streams."

For myself, I had little success last year with keeping Red Shiners (*Cyprinella lutrensis*) in a pond, though I won't be giving up the ghost and hope to try again during the warmer months of this season.

My attention has also been drawn to an article about Golden Medaka in the March issue of the FBAS publication *Fish World*. It can be a most attractive 'temperate' pond fish. If I can get hold of Southern Redbelly Dace, I shall give them a try, too.

So, if you are an aficionado of Goldfish, Koi and Orfe, why not give yourself a new challenge this year? Let me know what you try and how you get on.

**North American Native Fishes Association, 123 W. Mt. Airy Avenue, Phila, PA 19119, USA. Tel: 215-247-0384. Contact: Bruce Gebhardt.**

**Editor's note:** Look out for a feature from **Dr Robert Goldstein** on Dwarf Sunfishes in a forthcoming issue of *ASP*.

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70 AQUARIST AND PONDKEEPER MAY 1995



# THE CHANGING FACE OF QATIF

## INSETS —

**FAR LEFT** — Striped-neck or Caspian Terrapin (*Mauremys caspica caspica*) from Qatif.

**CENTRE** — The only native survivor is the beautiful Arabian Killifish.

**BELOW** — Eastern Arabia's only frog: the Marsh Frog (*Rana ridibunda ridibunda*).



Land reclamation at Taroot Bay showing destruction of mangroves.

William Ross records the changes brought about in one of his favourite places: the Qatif Oasis of Saudi Arabia.

Photographs — unless otherwise indicated — by the author

**M**y association with Qatif Oasis began way back in 1977 when, through my occupation, I joined the increasing number of expatriates working in the Eastern Province of Saudi Arabia. I was very fortunate in being in a position to collect and maintain in aquaria some of the naturally occurring fish of the oasis.

Between 1978 and 1983, through *Aquarist & Pondkeeper*, I was able to put on record some of my experiences with

these fish. Now, over 10 years later, and having recently left Saudi Arabia, I would like to take this opportunity to update these records.

## Disruptive influences

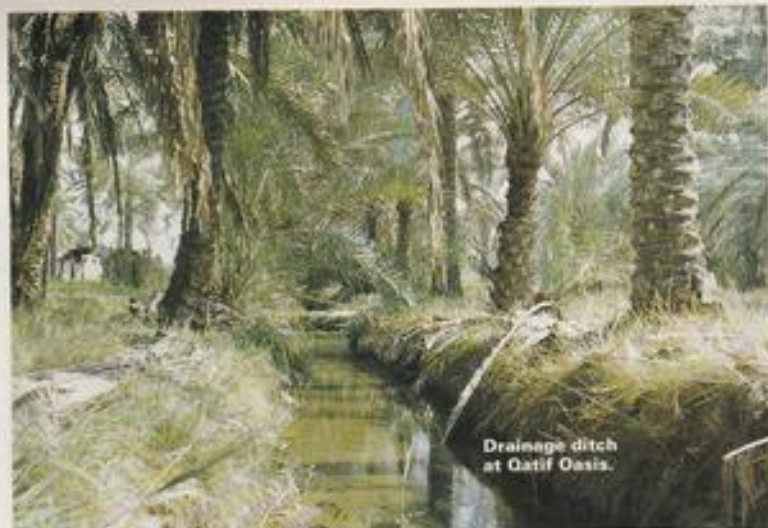
The long-term effects of the Gulf War may eventually produce changes in the fauna of the coastal oases of eastern Saudi Arabia, but it will be some time before this assessment can be made. For the present,

the most devastating effects have been the result of land reclamation, contamination of the drainage ditches by waste and the introduction of foreign fish to the waters of the oasis.

Coastal shallows and mudflats are conducive areas for land reclamation; Taroot Bay, adjoining Qatif Oasis, was one such area. The mudflats supported a fairly heavy growth of mangroves, and it was among these that Red Snappers, Black Bream, Silver Bream and many other species collected before making their way into the oasis via the drainage ditches.

The destruction of this valuable habitat takes many forms; for example: the re-routing of the drainage ditches, some of





Drainage ditch at Qatif Oasis.

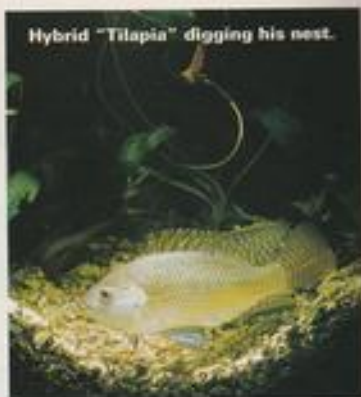


The Red Snapper is one of the native species to have disappeared.

P. W. STROUD



The suitably silvery Silver Bream — also gone from Qatif. This specimen is eating a snail. This observation instigated research into the possibility of using this species to control Bilharzia-carrying snails.



Hybrid "Tilapia" digging his nest.



Another "lost" species: the Black Bream.



One of the 'new' arrivals is the Sailfin Molly. This pair was actually collected in the oasis.

which now run for some distance underground in sewerage-type pipes, plus the building and habitation of houses on the reclaimed land, with their associated waste disposal, which unfortunately usually finds its way into the drainage ditches. Sadly, the accumulation of these factors has eliminated the aforementioned fish from the oasis.

## Exotic species

Since 1989, a small fish farming industry producing fish for the table, mostly "Tilapia", has contributed to the contamination of the oasis with exotics. The farms usually produce *Oreochromis niloticus*, *O. aureus*, or hybrids of these. Through escapees, these maternal mouth-brooding "Tilapia" have become established in the drainage ditches.

Three livebearing exotics which were present in the ditches in 1983 have had mixed fortunes. Guppies, at first, increased greatly in numbers but, of late,

appear to be on the decrease. Blue Platies, always few in number, have now disappeared, while Sailfin Mollies continue to survive, mostly as speckled or wild-coloured specimens; black specimens, which were common in 1983, are now very much reduced in numbers.

The Arabian Killifish is now the only naturally occurring fish to survive in Qatif Oasis; hopefully, those that are currently there, will continue to do so. However, where the exotics are established, there does appear to be a reduction in this local beauty. I fear that the success of the "Tilapia" in colonising the drainage ditches will eventually be the downfall of the Arabian Killifish in Qatif. I hope I am wrong in this prophecy.

To the conservationist, Qatif has not been a very bright story over the last decade, but it has not been all doom and gloom. Considering that many, if not all, of the large drainage ditches have become contaminated with waste, this has not spread into the smaller ditches, and these

continue to be suitable habitats for the Arabian Killifish, Striped-neck Terrapin and the Marsh Frog, the only frog to be found in eastern Saudi Arabia.

## Personal benefits

Although I strongly disapprove of the introduction of foreign fish into local waterways, I did benefit from those introduced into Qatif. For example, I was able to continue with my fish catching expeditions and found the keeping and breeding of these new introductions most fascinating. Through friends in the fish farming industry, I managed to obtain some purebred *O. aureus* and *O. niloticus*, the parentage of the fish in the ditches being dubious, since they were most likely to be hybrids.

Given the right conditions, "Tilapia" grow quickly, attaining adult size in four to five months; this is what makes them ideal fish for food production. Also, it is alleged that hybridisation of some species



## QUATIF FISH

1983

1993

### 1 Native Species

Arabian Killifish (*Aphanius dispar*)  
Red Snapper (*Lutjanus argentimaculatus*)  
Black Bream (*Acanthopagrus berda*)  
Silver Bream (*Rhabdosargus sarba*)

Arabian Killifish

### 2 Introduced Species

Guppy (*Poecilia reticulata*)  
Sailfin Molly (*Poecilia latipinna*)  
Platy (*Xiphophorus maculatus*)

Guppy  
Sailfin Molly  
"Tilapia" (*Oreochromis aureus*)  
"Tilapia" (*Oreochromis niloticus*)  
"Tilapia" hybrids

produces mainly male offspring, another benefit to the fish farmer. To the aquarist with limited facilities, this is still a good fish to keep. Under aquarium conditions, their maturity period is the same, but they do so at much smaller sizes, usually around 10cm (4in).

I managed to breed all the Qatif "Tilapia" in aquaria no larger than 85 x 30 x 40cm (33 x 12 x 16in). Normal tapwater with a hardness of 120 ppm, maintained at a temperature of 25°C (77°F), was used. The water was maintained in good fishkeeping condition with undergravel filtration and weekly partial water changes. Sometimes, bunches of Hornwort, or a *Cryptocoryne* species, were used as decoration.



A male Platy collected at the oasis in 1984. This species has now disappeared.

Guppies now appear to be on the decrease. These are typical Qatif males.



### A WARNING

Please note that collecting fish and plants from the wild (even if the species are exotics) may require government permission. Check before you do so, and if in doubt, don't. Fish and plants collected from the wild usually harbour parasites. Therefore, it is imperative that they are quarantined. Prophylaxis (preventive measures) is always beneficial.

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# WRITEBACK

## THE SHOW DEBATE

### The FBAS view

As organisers of the Supreme Festival of Fishkeeping, one of the most popular weekend events in the aquatic year, we were very interested to read John Dawes' constructive 'post mortem' or, perhaps to put it more accurately, 'end of term report' on the major show scene (March '95 issue of A&P).

Gone are the days when giving the exhibitors and visitors the mixture as before sufficed; nowadays people are far more discerning and are looking for all-round value for their money. With these aims in mind, the FBAS is constantly striving to upgrade the appeal of its events, and already we have been looking seriously at new things for this year's event at Weston.

I am sure you won't mind if we comment upon John's 'Ten Thoughts', though not quite in chronological order, as our most important news concerns his final point.

**1** From 1995, as reported in last month's A&P, the Weston weekend event (3-5 November for residents, 4-5 public days) will be supported by Rolf C Hagen (UK) and, bearing in mind the company's across-the-board pet involvement, there will be other 'Fancies' besides fish to attract visitors. As the Federation is also associated with ALFA (Amalgamated Live-stock Fanciers Association) this means that an extension to new pet exhibitors is extremely feasible.

**2** Tableaux at Weston have already taken on a new dimension. Because they are not needed simply as a 'show bench' for societies' fishes, as found in other major festivals, they are used as educational and informational vehicles for the public about the hobby in general, and the building society in particular. Creativity is therefore the theme for societies to get these messages across.

**3** While fishes are the main

attraction, everything is done to present them in the most appealing fashion possible. To our mind, fishes in bare tanks (Supreme Championship, single fishes, pairs or family breeders) are quite acceptable, providing there is accompanying information about the exhibits to explain what is being shown, for the benefit of newcomers or casual, non-fish-keeping visitors. Readers may remember that at the shows held in association with A&P at Alexandra Palace, each Class on display had full explanatory notes, both in the programme and at each individual show bench.

best (and worst) in its entrants' attitudes! Obviously, with repeated 'heats' to complete, there was no way real plants and substrate could be used but, this year's event could be different with the finalists having to do the 'real thing' with, of course, that remorseless time limit still hanging over them.

The Aquarian AquaChamp Final is yet another tense spectator sport and the participants probably felt the same way after the two specialist and general knowledge rounds.

Both these events provided an 'atmosphere' where onlookers



The 'shell' scheme adopted at Fishworld '88 received praise from both exhibitors and visitors. This ingenious tableau (where the 'seabed' under the pier consists of aquaria) was created by Southend, Leigh & D.A.S.

**4** Furnished aquaria certainly catch the eye, and biotope-based displays would add an extra valuable information dimension, but unfortunately, the cost of presenting each entry (often quoted at around £50-£60) makes individual participation difficult; sponsorship for such an event could be one way forward.

**5** Yes, the Interpet Furnished Aquarium Race was frantic fun for all those involved, including spectators, and the competitive aspect certainly brought out the

could take sides. As with all the side attractions, it is the intention to keep people occupied (entertained and informed), instead of just wandering off to come back later for the results.

**6** The response from schools last year was superb; the walls of the main hall at Pontin's were covered with a multitude of coloured paintings; considering each picture was the same (courtesy of Interpet) it was amazing how much variation in artistic skills was produced. Young

aquarists could also be targeted by sponsors in demonstrations, quizzes and talks.

**7** Show discounts are often a talking point; most visitors like to take something home from the shows, but the pressure to buy something at all costs can work out not to be a bargain after all. One way round this might be for redeemable vouchers to be issued at the show, so that these can be spent at the local retailer after a 'consideration period' of deciding what to buy has elapsed. Visitors still get their bargains, and the local retailer still gets his or her business supported.

**8** The best, visually-speaking, show in recent memory was Fishworld '88, again at Alexandra Palace, where every exhibitor (fish Classes apart) had an identical shell stand and there was blue carpet on the gangways. It looked immaculate and even the most modest display appeared to grow in stature and overall presentation. This is a very worthwhile standard to aim for, but finances for it have to be found somewhere, often at the expense of other areas.

**9** There is no point in any participation at shows by societies, specialist or otherwise, if they see no return for their efforts.

Generally, financial assistance for tableaux participation is widespread; FREE advance accommodation for tableaux-building teams is standard at Weston where the prizes already take into consideration subject matter content, as well as design and visual appeal. Specialist societies are offered free space, but accommodation must be paid for.

A Society Corner could encourage more competitiveness of displays and, of course, there would be no need for a long walk all round the halls to see each one! Awards for Best Society Stand, Best Trade Stand and Best Society and Trade Furnished Aquaria are already in place.

**10** Despite TV exposure and local radio bringing in impulse visitors, well-organised press releases in the hobby magazines and society newsletters; follow-up reminders to past visitors, the best (and most inexpensive) advertising you can get is by word of mouth from satisfied visitors and exhibitors. The urge not to be left out or to miss the event is the best encouragement of all, but this leads us right back to the beginning again: the show must go on, and will go on with everyone's continuing support and ideas.

Finally, please let organisers know what you want, or don't want, to see at shows. We are here to make shows the best we



## Changing face of aquatics

In spite of the growth of the aquarium trade over the last ten years, the mushrooming of new outlets and the intense cut-throat competition engendered by the mail order companies, hobbyists increasingly complain about the diminishing selection of plants and fish available to them.

In the case of fish, the answer is fairly simple. The number of species and varieties available from exporters continues to increase. For instance, importers now have several dozen varieties of each livebearer species available to them. However, you would be lucky to find more than one variety of Guppy, Platy or Molly on sale in the average outlet. The reason is simply too intense competition.

# GROWING TIPS

BY BARRY R JAMES

*Photographs by the author*

### Honeymoon period

Thirty years ago, soon after I had started in the business, I maintained about 150 tanks of tropical fish. I had virtually no competition and, being young, with unlimited energy, ambition and enthusiasm, I kept them all fully stocked. When the Sucking Loach first appeared, for instance, I bought as many as I could lay my hands on. The customers queued in droves to see this new wonder. We sold out of them in a matter of hours.

Because of the lack of competition I was selling hundreds of Neons, Angels, Swordtails, etc. At the time, I worked out that I was making a lot of money on about 50 tanks, breaking even on another 50 and losing on the last 50. So, I was not only making a living, but providing a free public aquarium at the same time!

### Mounting competition

This honeymoon period lasted for a few years. Then, first one, then another, of my customers opened their own shops, until every surrounding town and village seemed to have its own aquatic outlet. At this point, we realised that our previously care-free attitude of stocking anything and everything had to be modified to take account of the changing economic environment. We therefore went wholesale.

The next major problem on the retail side came with the appearance of the cut-price mail order companies. I have no beef with the principle. Customers will go

where the goods are cheapest.

The problem lies with the viability of shops. Livestock and perishables carry a high risk factor by their very nature, so that profits can be very variable. It is therefore important to maintain a busy dry goods sector to subsidise the other side of the business, which, with high heating, lighting, feeding and other costs, is very difficult to justify in its own right. The result of all this is that most shops only stock 'bread and butter' species which sell easily without excessive risk.

### Plant sales

With regard to aquatic plants, the situation is similar in one respect. The growth of 'cut-price' mail order companies has made it very difficult to justify stocking rare and expensive species on which it is difficult to make a profit when the turnover is decreasing due to a dilution of orders between many companies in a fixed and, basically, small marketplace.

However, other factors are at work with regard to plants. While the very best plants are cultivated in nurseries in Europe, the prices are high, due to high heating and labour costs. Similarly, in South East Asia, increasing labour and air freight costs have led to a policy of only growing the very popular species.

Others, which are slow-growing, such as Cryptocorynes and Aponogetons, are still collected from the wild. Wild plants are dif-

ficult to acclimatise to aquarium conditions and, consequently, losses are high. Furthermore, the continuing destruction of the rain-forests leads to a silting up of the streams which run through them. This results in plants dying out in those areas.

### Political factors

Politico-economic instability also causes problems. For instance, the continuing instability in Cambodia means that collecting plants near the Thai/Cambodian border is a hazardous operation. Nobody is going to do it if it means risking being shot or taken hostage!

Madagascar Aponogetons are difficult to obtain these days due to the increase in Cerebral Malaria in the watery areas of that country. The natives have lost their resistance to the disease since the French de-colonised it, as they discontinued the policy of spraying swamps with insecticide, and are therefore now vulnerable to the disease.

These are just a few of the problems now facing the aquarium trade, seemingly without any solutions, except a major change in the public's attitude towards price.

**ABOVE** — One of the many forms of the Sesale *Alternanthera*.

**BELOW** — A nicely bunched *Water Rose*.





## ABC OF PLANTS

*Alternanthera* belongs to the family Amaranthaceae which contains over 900 species, mostly native to the Americas and Africa. Many are marsh plants which have yet to be properly evaluated as to their suitability for aquarium use. The genus *Alternanthera* contains about 170 species, but only a handful are potential aquatics.

### 1 *Alternanthera reineckii* Briquet

**Synonym:** *Talanthera ovata*  
**Common name:** Reinbeck's *Alternanthera*  
**Distribution:** Southern Brazil  
**Description:** Extremely attractive 'stem' plant with paired lanceolate leaves of a striking red coloration. Some specimens are given rank as a separate variety and are coloured bronze. In my experience, these varieties change into another depending on the intensity of the lighting. Grows to a height of 25-50cm (c. 10-20in).

Needs planting at the rear of the tank and requires intense lighting to retain its colour. Newly planted specimens will often shed the lower few pairs of leaves.

### 2 *Alternanthera sessilis* var. *lilacina*

**Common name:** Red Sessile *Alternanthera*  
**Distribution:** South America  
**Description:** A plant whose leaves are light to olive-green above, and pale pink below. Both surfaces take on darker hues when submerged in good light. The easiest of the genus, it succeeds quite well underwater and prefers a pH of around neutral.

### 3 *Alternanthera sessilis* var. *rubra*

**Common name:** Sessile *Alternanthera*  
**Distribution:** South America  
**Description:** A beautiful, if frustrating, plant. Leaves and stems are ruby-red. Grows and flowers freely in the immersed state. Underwater, it normally sheds most of its leaves within a week or two. Excellent for short-term decoration, but not a true aquatic.

### 4 *Alternanthera versicolor*

**Common name:** Water Rose  
**Distribution:** SE Asia  
**Description:** A variable plant with many different growing forms, principally dependent on light and temperature. The leaves and stems of newly imported plants are often bunched tightly together to form a wiry tangled mass. Close inspection reveals a creeping knotted stem, rooting freely at the nodes. The oppositely arranged leaves are an inch or so in length and fin in width, often tightly curled along their length. The colour is a mixture of rose pink, red, green and yellow, the red shades becoming more prominent with increased illumination.

**Cultivation:** A marsh plant which is ideal for decorating the margins of pools, in a stove house, but only suitable as a submerged aquatic for short periods of time.

**NB:** There appear to be three varieties of this plant in cultivation. There is a robust form with dark green foliage, another with green and yellow variegation and, finally, the variety described in the text.

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# WATER'S EDGE

BY DICK MILLS

## More for less

The new BIO-MEDIA filter medium from INTERPET, because of its unique construction, offers — it is claimed — several advantages over other biological filter media. For example, its rough exterior is said to offer many more oxygenated sites for nitrifying bacterial occupation, while its innermost interstices (this month's big word!) gives equal opportunities to anaerobic denitrifying bacteria, thus providing complete water cleansing (ammonia-nitrite-nitrate-nitrogen).



The cylindrical shape means greater efficient use of any canister filter's body chambers, especially the company's new Prime 10, so that you can even find room for other filter products, such as sachets of Nitratesafe nitrate remover or carbon.

With the equivalent surface area of 1.33 tennis courts per litre of Bio-Media available for bacterial use, it should come as no surprise that every 400 grammes of medium can support 180m (460cm) of fish — double that of other biological filter media.

Details from INTERPET LTD, Vincent Lane, Dorking, Surrey RH4 3YX. Tel: 01306 881033; Fax: 01306 885009.

## The final straw

Control of those perennial subjects, green water and blanketweed, has always intrigued, especially the use of barley straw to combat these menaces. At one time you would be forgiven for regarding this natural remedy as a

myth for, while everyone had heard about it, nobody quite knew how much would do the trick!

Now POND PADS, from GREEN WAYS, solve the uncertainty and effect a remedy too. Why nobody thought of sandwiching some barley straw between cotton sheets before is anyone's guess, but this combination results in an easy-to-use, hang-it-in-the-pond product.

Each 7in square pad (preferably placed in the water flow returning from a filter) will treat up to 700 gallons (3,000 litres) and is effective for up to four months — hence, a year's protection is covered by the standard Three Pad Pack. A larger Pond Pad Plus treating up to 2,500 gallons (11,000 litres) will be introduced later in the year, and there is also a Matting Type for large ponds. Unlike straw merely bundled into a string bag, the cotton enclosing pad presents no danger as far as fish becoming entrained is concerned; the bags are also fully biodegradable.

Details from: GREEN WAYS ENVIRONMENTAL CARE, South End Farm, Long Reach, Ockham, Woking, Surrey G23 5PF. Tel: 01483 281391; Fax: 01483 281392.

## New Koi filters

It's not often you get a range of pond filters measuring anything from 4 to 18ft long, but that's just what the new STAR FILTERS from KOI KRAFT offer. Ready for the new season about now, (if our elements follow expected patterns), these filters are aimed at the upper market of discerning Koi keepers.

Apart from being designed specifically as filters from scratch, rather than converting ubiquitous loft tanks, their performance is also improved, thanks to thorough attention during the design stages. The unique settling chamber on all models does away with the need for a space-consuming Vortex chamber; the settlement and brush chamber combination will — it is claimed — outperform any Vortex chamber of similar size by at least 35%, and the biological chamber offers up to five times the biological surface area of filters using certain plastic filter media.

Cleaning is made simple, thanks to drainage sumps and flush-fitting outlet, and each filter



can be gravity or pump fed.

An innovation in service, too, are the performance figures given for various pond sizes/fish stock levels/pump flow rates; these suitability charts for each of the models clearly show how varying any of the three previously-mentioned important parameters will affect filter performance. It is possible to 'add on' extra settlement (S1, S1 Super), and biological (B2 Super), units to any Star filter system (SB2, SB3, SB2 Super, SB3 Super, SB5 Super), should any fishkeeping expansion demand it.

Details from: KOI KRAFT, Mount Pleasant Farm, Brishing Road, Chart Sutton, Maidstone, Kent ME17 3SP. Tel: 01622 743413; FAX: 01622 743307.

## Bradford Style

KING BRITISH have ensured keepers of many aquatic animals are well catered for at the start of the new season by announcing news of several products.

Realising that HYPE FOOD probably wouldn't sell, KB have cleverly used the fish's old scienti-



fic name for a species-dedicated food that is instantly recognisable: PLEC FOOD, aimed at the popular 'Plecostomus' the algae-eating Suckermouth Catfish (actually *Hypostomus*, scientifically). The high vegetable and fibre content encourages healthy growth (in some species, 10in or more, so you have been warned!) but, of course, any algae-eating or vegetarian-minded species will find it just as palatable and an excellent alternative to eating the aquarium plants. The food can be stuck on the glass so that the travelling Plec doesn't miss out.

Out in the pond, FLOATING POND STICKS from POND PRIDE are being snapped up by Koi and Goldfish who relish their correct mix of proteins, vitamins, minerals and trace elements. The sticks are also twice the weight per litre to comparable products but still cost the same, representing excellent value for money too.

What can you do while waiting for a vet's prescription to get KB's Medicated Flake or Pellets? OPEN WOUND is very effective for any surface wound or for slowing down ulcer development and can be obtained without prescription, allowing a cure to be effected in the interim period.

FIN CLEAR and GOLDFISH TONIC are two latest additions to what KB call their 'pet shop boys' range of small-sized treatments suitable for newcomers in an easy-to-use-with-confidence format. The former is designed to aid fin regeneration after damage during transit or through mishandling. The latter is aimed at assisting Goldfish over constipation, often caused through feeding low-cost foods.

Last, but not least, terrapins have come in for the KB treatment. It is very likely that the terrapin tank is small and, hence, liable to water fouling, with the attendant smell. TERRAPIN WATER FRESHENER helps to maintain the water's freshness over longer periods, thus reducing the frequency of water changes. Newcomers to terrapin-keeping will therefore not be put off their new interest at the first signs of poor water conditions, nor by the thought of frequent water changes being necessary.

Details from KING BRITISH AQUATICS LTD, Haycliffe Lane, Bradford, West Yorkshire BD5 9ET. Tel: 01274 573551/576241; Fax: 01274 521245.



## Invisible pond filter

Crystal-clear water, no sign of any filter — an impossibility, you may say. Well, now it can be done. Oh, you can see the filter alright; you just don't recognise it as such. The people at AQUA-



# WATER'S EDGE

BY DICK MILLS

SOIL have disguised their external pond filter, the AQUA-FILTER, as a pondside planter.

The 18in diameter, 15in high terracotta coloured pot has an internal tray which supports your easily-exchangeable, according-to-season plants over and above the filter itself. The new filter medium, AQUA-FIBRE, resembles horse-hair and provides a massive surface area to colonising bacteria; a topping mat of bonded Aqua-Fibre collects suspended solids from the pond water and is easily removed for periodic rinsing.

Inlet (0.75cm) and outlet (1.5in) connections are located low down and out of sight. The system is normally top-fed by spraybar, but can be changed to bottom-fed (reverse-flow) by simply changing one push-fit tube (supplied) and removing the spraybar.

The Aqua-Filter can be used with any pump size from 250-820 gph output and will effectively service any pond up to 1,000 gal-

lons without being seen doing so — and it looks good too!

Send 2nd class stamp and self-addressed envelope for product leaflet to: AQUASOIL PRODUCTS LTD, Blue Waters Estate, Bovey Tracey, Devon TQ13 9YF. Tel: 01626 835135; Fax: 01626 835585.



achieved by using the relevant pump size.

For driving waterfalls, higher fountains and maybe filtration systems requiring more power than is provided by submersible pumps, the new range of SURFACE PUMPS have been developed. The range consists of four models — delivering 1,700, 2,100, 2,900 and 3,500 gph respectively. Each comes with 1.25in bsp connections, two metres of cable and a two-year guarantee.

The plastic pump head allows dirty water to be passed and a foot valve and strainer are used as the pumps, being normally operated above water level, are not self-priming. Low maintenance requirements and high reliability are essential for pond owners such as Koi keepers.

Details of all products from: STUART TURNER LTD, 47 Market Place, Henley-on-Thames, Oxon RG9 2AD. Tel: 01491 572855.

## Turner power

STUART TURNER has launched a new pond filtration package and new surface pumps for the 1995 season.

The POND POWER FILTER comprises a biological and mechanical filter fitted to an internal submersible pump which obviates the need for an external pump and filter system — ideal where 'around the pond' space may be limited. Two variants are available: the 1,250 gph and 2,000 gph, where the differing performance is obviously

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# FROGS AND FRIENDS



Having been readers of *Aquarist & Pondkeeper* for many years we have always looked forward to herpetological articles, in addition to having an interest in fishkeeping. In the early sixties, *A & P* was one of the few sources of popular coverage and, consequently, every word was eagerly devoured.

In more recent times we have enjoyed Julian Sims' regular monthly column and herpetological queries, finding them interesting and informative. We hope that readers will continue to derive similar benefits from our monthly offerings; we also wish Julian well in his new post.

## Herps on display

One of the most interesting ways of displaying reptiles which we have seen is at the **Lakeland Wildlife Oasis**, near Milnthorpe in Cumbria on the southern fringe of the Lake District. The lizards (iguanas, water dragons, basilisks, tortoises, chameleons, etc) are 'free' to roam and climb in a large compound with only a three-foot high barrier to separate the public from them. Particularly impressive were the two pairs of chameleons, *Chamaeleo parsoni*.

The Oasis was the brainchild of **Dave and Jo Marsden** both of whom have former zoo experience. However, it is more than a collection of animals. There is a strong educational theme in the way the exhibits are arranged.

Basically, the visitor goes on a circular tour, starting with an audio-visual display explaining evolution; thereafter, sections are devoted to various classes of animals, with live examples where possible. There are also interactive exhibits which provide additional information.

One item worthy of mention,

**Male *Chamaeleo parsoni*, one of the free-roaming reptiles at Lakeland Wildlife Oasis.**



By **BOB and VAL DAVIES**

Photographs by the authors

which was totally absorbing, was a huge colony of leaf-cutter ants carrying bits of leaf down to their underground chamber. Snakes, amphibians, scorpions, spiders and stick insects are obviously kept in enclosed vivaria, but in addition to roaming lizards, there are birds, butterflies and fruit bats at liberty.

Of interest to aquarists should be the small aquarium section which includes bichirs. Visitors who wish, can handle a snake, large lizard or even a stick insect.

The Oasis is a relatively new concept and a valuable experience for children. Difficult to categorise, it is part museum, part zoo, but totally fascinating. It is situated on the A6 three miles north of Junction 35 on the M6.

## CITES News

At the ninth CITES Conference (7-8 November 1994) a number of changes affecting reptiles and amphibians were decided, viz:

- Uplisted to Appendix I**  
Egyptian Tortoises (*Testudo kleinmanni*)
- Nile Crocodile (*Crocodylus niloticus*)
- Added to Appendix II**  
Eastern Box Turtle (*Terrapene carolina*)
- Oenote Box Turtle (*Terrapene ornata*)
- Spotted Box Turtle (*Terrapene nelsoni*)
- Indian Flap-shell Turtle (*Lissemys punctata*) except *Lissemys punctata punctata*
- Golden Mantella (*Mantella aurantiaca*)
- Downgraded to Appendix II**  
Northern Indian Flap-shell Turtle (*Lissemys punctata punctata*)

These changes

will come into force in the EU once the European Commission draws up a new amending regulation to incorporate the changes.

## Challenging Emperors

This rather spectacular animal is frequently available but, as yet, there are no documented reports of them being bred in captivity, apart from E Zimmermann, Breeding Terrarium Animals (T.F.H.).

Known variously as the Emperor Newt, Crocodile Newt, Emperor Salamander, Mandarin Newt or Mandarin Salamander, *Tylotriton verrucosus* has its natural habitat in Western China, Burma, Thailand, Nepal and parts of India in cool, moist, shady areas at high elevations.

Some six species exist, but the other five are not usually imported. The bright orange and black (brown) coloration probably indicates some degree of toxicity or, at least, an unpleasant taste.

## Housing

A 24 x 12 x 12in (60 x 30 x 30cm) aquarium with part glass/part mesh cover will house three or four specimens. High humidity seems to be important, but they will often be seen sitting on raised, drier areas, such as cork bark, which is used to provide caves for hiding.

A shallow (4cm — 1.6in) water area must be provided. *T. verrucosus* are poor swimmers and must NOT be kept in fully aquatic conditions. The land area can be planted, but frequent cleaning and water changes may be necessary to avoid pollution.

High temperatures should be avoided — maximum 75°F (23°C), lower if possible, as they come from high altitudes.

## Diet

Earthworms, slugs, waxmoth larvae, etc; raw lean beef may be accepted from forceps. Many specimens will learn to accept food in this way, which ensures each gets its share.

Feeding often takes place in the daytime as, unlike many sala-

## LONGEVITY

Having read Kathleen Pickard Smith's book some years ago it was interesting to find that 'Stumpy' was still thriving (*Frogs and Friends*, January 1995).

A female of this species in our collection is known to be at least 25 years old. Although she sometimes has a 'weepy' eye and her claws are worn to almost nothing, she is still very active, with a healthy appetite, hardly any thing being refused.



The beautifully marked and challenging Emperor Newt.

manders, Emperors are not strictly nocturnal and will wander about at anytime if hungry.

## Breeding

If trying to breed this species, a cool winter period of two months at around 12-15°C (c 54-59°F) is needed. The water level is raised — increased spraying over a period could do this and may help simulate the rainy season.

Eggs (if laid) are stuck to aquatic plants, floating cork, etc, and must be removed to a small aquarium or similar container.



Each female is reported as laying up to 50 eggs, which will take up to four months to hatch, according to temperature (21-23°C — 70 to 73°F).

Once hatched, the small larvae should be divided up into several containers of (preferably) aerated water. First food is *Daphnia* (infusoria could be tried also), food size increasing as the larvae grow.

Metamorphosis takes about 18 to 20 weeks. The metamorphosing larvae must have facilities for climbing out of the water and can then be transferred to a vivarium to start their terrestrial existence.

*T. verrucosus* are quite hardy and easy to cater for and should not be impossible to breed. A little experimentation with varying conditions might bring unexpected results. Captive breeding could help in reducing the numbers imported.



## British Chelonia Group

The BCG was set up in 1976 to bring together people interested in Chelonians (tortoises, terrapins and turtles) in order to pool and disseminate information on all aspects, whether it be captive breeding, ecology, conservation or whatever.

The group supports worldwide conservation projects, issues care sheets and newsletters and supports local and national meetings for enthusiasts. An annual symposium is held at Bristol University, with specialist speak-

ers from the UK and overseas.

For further details send S.A.E. to:  
**British Chelonia Group,**  
 c/o Dr R Avery,  
 School of Biological  
 Sciences,  
 University of Bristol,  
 Bristol, BS8 1UG.

## IN THE NEWS

Two recent press reports concerned reptiles:

① A 12in King Snake which escaped from a passenger's pocket caused "chaos" and "turmoil" in Terminal 2 at Heathrow. Since many people have a deep-seated fear of snakes (innate or learned), no matter how small the snake, the chaos is understandable. Had the snake escaped on the plane, the possible effects are unimaginable!

② Customs officers in Stockholm stopped a woman whose figure looked unusual. Sixty-five baby Grass Snakes and six lizards were discovered in her bra and blouse. The culprit claimed she was intending to start a reptile farm.

## ON TV

Reptile and amphibian enthusiasts often grumble that these animals are neglected by wildlife filmmakers in favour of birds, wildebeests, lions, etc. They will therefore be pleased to know that sometime this year, there will be a programme devoted to chameleons in the *Wildlife on One* series on BBC (exact date unknown as yet).

## Out of doors

While thinning out the plants in the garden pond on a mid day in January, three common Frogs were disturbed, obviously having hibernated in the mud. As the weather warmed up, others, which had hibernated on land, arrived to join in the spawning.

A number of tadpoles from the previous year were also seen. Overwintering of some tadpoles is a frequent occurrence in our pond, although a prolonged, hard frost in January or February may kill them off.

More frogs were seen on 8 February; there was much activity but, from our records going back 20 or so years, it was too early for spawning.

A group of Slow-worms were found basking. Occasional sightings of these occur — they are probably remnants of a group which escaped from an outdoor enclosure some years ago. It would be nice to think they were breeding, but so far, no babies or juveniles have been spotted.

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Slow-worm basking in mild February sunshine in our garden.



# TRAVELLER'S TALES



Millions of British holidaymakers visit Florida, so statistically these must include thousands of aquarists. The Americans certainly cater for them with Sea World, Seaquariums and Epcot's Living Seas. However, there are other fishy attractions: in one, the tourist visits the wild fish of Florida and, in another, you are invited to swim among them! This month we visit the fish in the Silver River; next month we will visit Disneyland's fish.

Silver Springs is in Ocala, a

town about 70 miles north of Orlando, Florida. Open 365 days a year, it is a typically American nature reserve, is sanitised and controlled, with entertainment laid on from jeep rides to shows and restaurants galore.

Fig 1 shows the main entrance where visitors part with around \$25 each. For this, a whole day's entertainment is available, with a Petting Zoo, Jeep Safari, three different animal shows — called 'Creature Feature' — and, of course, the all-singing, all-dancing, Silver River Showcase. There is also a Jungle Cruise, where flat-bottomed boats take you along the Fort King Waterway to see the original Florida flora and fauna, plus a Lost River Cruise with a boat journey to Florida 'as it was 1,000 years ago'.

The main claim to fame of Silver Springs is that this is where the glass-bottomed boat was invented. It is the site of the largest natural freshwater spring in the world and the crystal-clear water makes their fish easily visible, even at great depth.

Every ten minutes a boatload of tourists sail off in the silent, electrically powered, glass-bottomed boats to view the artesian wells (see Fig 2). There are seven spring formations that are the origin of the Silver river.

The local flora and fauna were first seen from home-made glass-bottomed boats designed during the American Civil War. The locals used the boats for amusement, but it was soon realised that they had money-making potential. Tourists have been using them ever since.

The fish that live in the crystal waters are Florida Gars, Mullet and Bass. These waters are now protected — the area is designated an American Natural Landmark. Therefore, the fish are very large and fearless, slowly swimming in indolent shoals around and under the boatloads of tourists.

Clutching Cokes and shakes, the million visitors each year that go to Silver Springs climb on board and glide silently to the wells. By looking down into the clear waters, shoals of fish are seen swimming over wavering fields of Waterweed (*Elodea* sp) (Fig 3).

However, the aquascape is not quite as spectacular as it sounds — these local species of fish are all a uniform pale brown, which offers them some camouflage in the glassy water. In protected waters, this camouflage is not really necessary, but the fish need many more years for genetics to take this into account. Perhaps this is the reason the rare but colourful Golden Gar developed (Fig 4).

In this 'Traveller's Tale', the tourists visit Florida fish by boat. Next month we will meet captive fish face to face . . . in Disneyland.





## FBAS NEWS

### Contact addresses

**General Secretary:** Adrian Dempsey, 194 Greenhill Road, Greenhill, Herne Bay, Kent CT6 7RS

**Trophy and Brooch Scheme Officer:** Alan Henderson, 5 The Nook, Corby Village, Northants NN17 1XA

**Show Stand Officer:** Roger Crew, 26 The Mall, Binstead, Isle of Wight PO33 3SF

**Merchandising Officer, Fish World Subscriptions:** John Edwards, 14 Upper Dane Road, Margate, Kent CT9 2LX

**Public Relations:** Dick Mills, 10 Rosken Grove, Farnham Royal, Bucks SL2 3DZ

**Aquataks Officer:** Colin Pannell, 9 Edwin Road, Hastings, East Sussex TN35 5JT

**Society Location:** Bob Esson, 22 Flamstead Avenue, Wembley, Middlesex HA9 6DL

## First for North Devon

The inaugural meeting of the North Devon Fishkeeping Club was recently held at Eggesford Garden Centre and Restaurant, Chulmleigh, North Devon. The society formed by enthusiastic fishkeeper Roy Lane, reported a good turnout for the meeting.

Roy told A&P that he has recently launched an aquatic franchise at Eggesford Garden Centre and was aware that there was a need for an aquatic society for the region. "The club is intended for all forms of fishkeeper, whether beginner or exper-

# SOCIETY WORLD

enced," he added. For further details, contact David Burke, Tel: 01769 580250, or Roy Lane, Tel: 01271 42870.

## Marines made simple at MAPS

Keeping marine fish need not be that difficult was the theme of a talk given by Desmond Ong of Underworld Products to a recent meeting of Midland Aquarists' and Pondkeepers' Society (MAPS). "As long as you have a good water purification system, including a protein skimmer, then success with marines needs to be no more difficult than keeping any tropical freshwater species," explained Desmond.

In addition, he explained that reef collecting causes little, if any, adverse effects upon natural reefs. "Much of the coral which is collected is gathered as rubble from the shoreline," Desmond said.

MAPS is designed to appeal to all types of fishkeeper and meets monthly from March to September inclusive and bi-monthly from September to January inclusive. The society's normal venue is Burbage Liberal Club, Burbage, near Hinckley, with occasional meetings at 'outside' venues. Meetings are held on the second Thursday of the month; non-members are welcome.

For information, contact MAPS secretary Warren McKenzie, 5 Thomas Street, Aston, Birmingham B6 4TE. Tel: 0121-359 4469.

## Obituary

**Dave Monk**, former treasurer of the British Cichlid Association, has died after a courageous battle against cancer.

Following the death of Hugh Parrish, in July 1979, the BCA was left without a treasurer for almost a year. In the absence of any volunteer to fill the position, When Dave and his wife, Wendy,

heard about this situation shortly after joining the BCA in 1980, they immediately offered their services and Dave served as treasurer for the next eight years, while Wendy took on sales. Thus, between them, they performed half of the total work involved in running the society.

During their period of office the now-regular spring auctions were introduced, with Dave being a regular feature of all of them, setting up his own Apple Mac computer and trying to persuade it to divulge the list of auction lots it supposedly contained.

Visitors to the Monk residence in Peterborough never failed to be impressed by the variety and quality of their fish, mostly cichlids of course, not to mention other live-stock, though some people had their reservations about the snakes. Those with a less nervous disposition, however, positively enjoyed breakfasting there while draped with a python, or sharing toast with a tame rat on their shoulder while watching Chromidotilapia courting on the other side of the room.

In 1987, the Monks decided that they had had enough of the 'rat-race' and moved to a more amenable biotope in the Welsh mountains. Unfortunately, the cottage was too small to house cichlids as well as people, and the near-vertical lie of the land precluded a fishhouse, so the fish had to go. Dave and Wendy, nevertheless, remained in touch with many of their 'fishy' friends all over the UK.

Wendy has asked for Dave to be remembered "with love and laughter". Those of us who knew him will have no difficulty with that.

Mary Bailey,  
British Cichlid Association.

## MAY

### Tuesday 2

**Gloucestershire AS** — AGM, Bell and Gavel, The Cattle Market, St Oswalds Road, Gloucester, followed by a talk on Killifish by Martin Jones of Merthyr Tydfil AS. Details: Andy Ramsbotham, Tel: 01452 521609

### Sunday 7

**Brecknell AS** — Open Show, Pinewood Leisure Centre, Old Wokingham Road, Crowthorne, Berkshire. Details: Terry Welditt, Tel: 01344 52483; Fax: 01344 302313

**Gateshead AS** — Open Show. Details: Tom Gray, Show Manager, 1 Bruce Close, Stockgreen, West-Hepp, Newcastle upon Tyne NE5 3LH

**Macclesfield AS** — Open Show, Community Centre, Black Road, Macclesfield, Cheshire. Details: K. Hayter, Tel: 01625 431520

### Thursday 11

**Midland Aquarists & Pondkeepers Society (MAPS)** — Meeting, Burbage Liberal Club, Burbage, near Hinckley, Leicestershire (7.30pm) with a talk on Water Quality by Adrian Exell of Interpet. Details: Christopher Nelson.

## DIARY DATES

Treasurer, 438 Loughborough Road, Bristol, Leicestershire LE4 3EE. Tel: 0116 267 5115

### Sunday 14

**Association of Midland Goldfish Keepers** — Meeting and adult fish show (members only), Foleshill Community Centre, Foleshill Road, Coventry (2pm). Details: Mrs Anne Bloor, 10 Barnett Crescent, Woodford Halse, Daventry, Northants NN11 3SP. Tel: 01327 61198

**CAST 86** — Open Show, Boys' Brigade Hall, Castle Street, Caerwisle, Wrexham. Benching: from 1pm, entry fee 20p. Details: Peter Jones, 1 Hope Street, Caerwisle, Wrexham, Chwydd LL12 9AA. Tel: 01978 761829

**Corby DAS** — Open Show, Festival Hall, George Street, Corby. Booking in: 9.30 am-12.30 pm; Open to public: 4-5 pm. Details: Terry Driver, 30 Culross Walk, Corby, Northants NN18 9HP. Tel: 01536 460957

### Tuesday 16

**South Park Aquatic Study Society (SPASS)** — Talk by Bill Leach.

Guide to Showing Fish, Wimbledon Community Centre, St George's Road, Wimbledon. Details: Ken Seaton, 283 Sutton Common Road, Sutton, Surrey SM3 9QB. Tel: 0181 641 2948

### Sunday 21

**Robin Hood Aquarists** — Fourth Open Show, Highbank Community Centre, Farnborough Road, Clifton, Nottingham. Details and show guides: Dilya Hinton, Show Secretary, 45 Wollaton Avenue, Gedling, Notts NG4 4HY. Tel: 0115 953 1635

**Cardiff & District Fishkeepers Society** — Open Show, Roath Community Hall, Nuan Road, Roath, Cardiff. Details: Paula Gray, 41 Cylartha Street, Roath, Cardiff CF2 3HE. Tel: 01222 491077

### Saturday 27

**Oldham & DAS** — Convention, Blue Club, Victoria Street, Chadderton, Oldham, Lancs. Programme: 12 noon — get-together, plus free refreshments; 1-2 pm: lecture; 2-3 pm: sale of fish and equipment; 3-6 pm: breeders' section organised by FNAS, to include

talk on breeding fish, prizegiving and raffia. Entry: £1. Details: A Grant (Secretary), 47 Willow Avenue, Middleton, Manchester M24 2HE. Tel: 0161 653 5210

### Sunday 28

**Bridlington DAS** — 22nd Annual Open Show, Hilderthorpe Junior School, Shafesbury Road, Bridlington. Benching: 12 noon — 1.45 pm; Judging: 2 pm prompt. Details: Mick Jordan (Show Manager), 12 Greenfield Road, Bridlington, E. Yorks YO16 4TE. Tel: 01262 674100

## JUNE

### Tuesday 6

**Gloucestershire AS** — First anniversary meeting, 6 pm, Bell and Gavel, Cattle Market, St Oswalds Road, Gloucester, celebrated with a quiz, club table show and party. Details: Andy Ramsbotham, Tel: 01452 521609

### Sunday 11

**Redcar Fishkeepers Society** — 21st Annual Open Show of Tropical and Coldwater Fish, West Redcar School, Kinkesatham Lane, Redcar. Details: J. Duffell, Tel: 01642 478636



# KOI TALK



by  
Alan  
Rogers

## If it's written down, it must be true . . .

The popularity of Koi keeping has grown in the last decade at an enormously fast rate; so fast, in fact, that even the early trend-setters in the hobby have been left in utter amazement. Any subject gains in popularity simply by promoting that hobby, thereafter supported by a continuous enrolment of new enthusiasts from all walks of life.

Naturally, as the hobby progresses with this endless enthusiasm, there arises an insatiable demand for avenues of information and advice. Often, this advice is discovered through local clubs and societies, helpful and knowledgeable dealers and experienced, well-informed Koi keepers.

However, many beginners do not have access to this local information and prefer to complement the practical side of their hobby with information from magazines and books based on the relevant subject. For newcomers to obtain sound knowledge to become proficient Koi keepers it is vitally important that such information originates from reliable and accurate sources.

The very essence of our fish-keeping hobbies deals with living creatures, and one imprecise piece of advice could, in the hands of an inexperienced beginner, result in a disastrous loss of

all of one's fish. It is very much a fact of life that many people are inclined to believe, that if it comes from the 'written word' it must unquestionably hold great credentials pertaining to the truth!

Regrettably, this is a grave misconception, one that merely compounds the problem by creating appalling confusion when inexperienced 'experts' quote misguided and erroneous facts.

Consider the outcome if our children, while at school, were taught by an educational system which employed inexperienced and unqualified teachers. The students would naturally accept their tutors' wisdom without question, until such time that an intellectual authority challenged that knowledge. The outcome of such an unacceptable method of education would result in varying degrees of ignorance, confusion and chaos, a situation which no self-respecting parent would accept or tolerate.

To put this into a real life context, let me explain a typical and true example. I recently read in a local Koi magazine a statement written by a 'new' writer. He states that after a brief discussion with his local pharmacist, the pharmacist 'strongly advised against the use of potassium permanganate in a pond, as it would irrevocably damage the gills of any fish!'

This 'written claim' led to considerable controversy among a number of members. I also observed several experienced and informed hobbyists of the club in question disputing the statement, while at the same time attempting to justify the use of such a chemical to a group of thoroughly bewildered novices. As would be expected, the discussion ended in total confusion and

## Dangers of hearsay

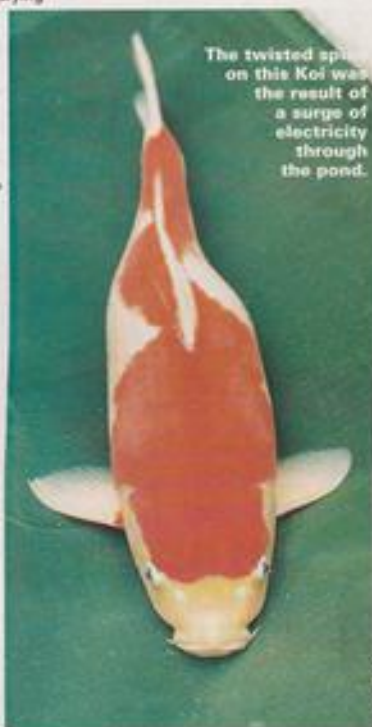
For years the use of potassium permanganate has been recommended as a safe pond treatment; during this time, much has been written on the chemical from many authoritative sources: the vast resources of the US Fish and Wildlife Service, the US National Fish and Agriculture Research Laboratory in Alabama, the Canadian Rivers Fish and

## USEFUL TIP

Get into the habit of logging all treatments on individual Koi, recording relative and relevant information and results which can be evaluated for future reference.

Research Department and Stirling University in the UK, to name just a few highly respected institutions.

Naturally, ANY treatment or medication requires handling with caution and must NEVER be used without adequate knowledge of associated dangers and relevant safety precautions. In addition, accurate dosages must be strictly observed at all times.



The twisted spine on this Koi was the result of a surge of electricity through the pond.

SHARON INYBY

The impressionable writer in this case was innocently attempting to convey factual information from a source which he considered to be dependable, but by so doing, took on a personal responsibility to outlaw the use of a tried and approved remedy for eradicating known parasites. Lesser informed readers of that magazine would have no reason to doubt that such an 'authoritative' statement was not valid.

The real point I am trying to establish here is: when will people appreciate that hearsay statements or unsupported evidence have never been acceptable in practices of law, science or medicine without first being proven or

substantiated? The whimsical belief of an individual hardly constitutes grounds enough to support such a theory.

## Opinions v facts

Many such statements are simply personal opinions of individuals and often go unchallenged because of an editorial disclaimer. While such comments are not intended to deny individuals their rights to express personal thoughts and impressions, equally, there needs to be a point of redress when unquestionably false information is being quoted. Consequently, and with far-reaching effect, invalid information is being accepted and implemented by novices around the world.

These self-assigned experts and alleged authoritative sources without experience, having never dedicated essential time researching vital data BEFORE making public statements, must be considered totally irresponsible in their actions. Information which cannot be substantiated must always be considered worthless.

More significantly, such indiscriminate actions can be very damaging to research which has already been established. What better example of that old proverb: "A little knowledge is a dangerous thing!"

## Fred's deformed Koi

Permit me to put this into context once again. In recent years there have been a number of topics which have been stressing certain safety features. One such subject is the highlighting of the serious dangers posed by electricity, especially when used in close proximity to water. It is a fairly well known fact that incorrect use of such electrical power can have a devastating and lethal effect to both humans and fish alike if mandatory safety precautions are ignored.

A new Koi keeper, who I shall refer to as Fred, contacted me recently and reported that he was concerned about the behaviour and lethargy of most of his fish. He went on to describe that most of his Koi were not interested in feeding and some had developed a laborious swimming behaviour, while others were just resting on the bottom of a fairly shallow, unheated pond, just four feet deep.

As this observation had been reported during the month of November when the temperature was 42°F (c 5.5°C), there appeared initially no real cause for concern. Two days later, Fred made a further phone call describing three of his largest Koi



as being "deformed" and having great difficulty in maintaining stability and equilibrium in the water.

During the conversation he informed me that, prior to these events, he had noticed that his submersible pump at the end of his filter bays had been progressively running slower and slower, until it finally failed completely. A similar new submersible pump had been purchased and was installed and running the same day.

I could tell from Fred's tone of desperation that he was obviously concerned and puzzled, so I arranged to visit his pond and view these unhappy Koi. On arrival, I found, to my dismay, that now there were three 20in fish that were very distressed and notably deformed, with little control over balance or direction whatsoever.

In each case, the spine (backbone) of the Koi was severely distorted and the normal power derived from the peduncle (tail) muscle had been rendered ineffective. Any attempts to gain movement or direction ended with a slow sinking motion in a tail-first direction to the bottom of the pond. I had been informed that two other Koi behaving in a similar manner had recently died.

### RCD proof

My suspicions had already been aroused. I was shown the original pump and had noticed that the electrical supply was unprotected without a suitable RCD (Residual Current Device) fitted. Fred permitted me to take away the original pump to qualified engineers for examination and testing.

The pump was submerged into a drum of water, and plugged into a protected RCD switchboard and mains socket outlet. Immediately, the RCD tripped out and the power supply was safely interrupted. The pump was dismantled and the watertight seals



**A Residual Current Device (RCD) can be the difference between life and death, or irreversible deformities in Koi.**

were found to be totally ineffective. The electrical components of the pump were literally soaked in water. The pump was proclaimed lethal, condemned for further use and eventually destroyed.

### Electrifying experience

A number of points here need further accentuating. All of these Koi had been subjected to a continuous and highly dangerous electrical current, causing irreparable damage to the nervous system, destroying areas of the brain controlling muscle response, as well as the functional ability of many internal organs. There is no known cure for such a disaster.

The more deformed Koi were unable to gather food from the surface, while several were unable to feed and were clearly distressed. For the worst of Fred's Koi, the only recourse, thus avoiding excessive and further suffering, would probably be anaesthetic euthanasia. It has never been ascertained if Koi

really feel pain, but I rather suspect they do; they should therefore always be given humane consideration.

Fred was obviously deeply saddened by the loss and disfigurement of his Koi, but it was horrifyingly clear that when I explained to him the significance of HIS personal safety and miraculous escape under such circumstances, it was only then that Fred fully appreciated the lethal danger of his pond and mains electrical supply.

### The final surprise

Unbelievably, he had been informed that "because the power was supplied from a 13 amp fused socket outlet, in the unlikely event of a defective appliance, the rated fuse would blow and interrupt further mains supply at source". He was, indeed, an extremely fortunate man, but still, the most incredible point was still yet to be revealed.

The pond had been designed and built by professional pond builders who were recommended by his local Koi dealer just sixteen months previously. All the electrical components such as UV filters, additional aeration, lighting and power supply to the pump were fitted and connected by the builders to an unprotected power source in the nearby garage.

The standard fuse in a power point must NEVER be considered an adequate form of protection for personal safety. If an approved RCD unit had been fitted from the start, this hobbyist, his fish and defective pump would have been protected by a far more reliable design of fail-safe equipment. Thankfully, this story did not end with a human fatality, but one can only surmise how close it came to being just another one of those unfortunate accidental statistics!

The result of all this leaves me considerably unnerved and

extremely horrified when I realise that somewhere out there are further cases of irresponsible and highly dangerous people masquerading as being skilled and qualified.

### Responsible challenge

Fortunately one bright side to all this concern is that misleading information and controversial statements are often challenged by more reliable, authoritative ones, often through the respected pages of specialised magazines and books. Having said that, attempting to redress inaccurate and contentious statements originating from verbal discussions is not so easily accomplished. Regrettably, it is in these territories where the biggest source of misunderstanding, ignorance and danger really lurks.

John Dawes, our editor, recently went on record stating: "We are constantly on the lookout for inaccurate and damaging statements, some of which are made with the best of intentions in the world and with genuine concern for the welfare of fish and invertebrates, but with incomplete knowledge of the true facts!"

I have heard many opinions of the biggest single factor in this hobby which is responsible for killing Koi. Some blame stress, others blame strange diseases and hard British winters, but for me the biggest single factor is, simply, ignorance.

My feel-good factor about this month's *Koi Talk*, is that I recently spoke to Fred, who informs me that his new RCD has been installed by a qualified electrician. The purchase of any new Koi will have to wait until his reserve funds improve, though. This may be a minor setback, but the important issue here is that, it's really great to still have Fred around... and thinking positively!

Talk to you soon!



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# DISCUSSIONS

BY STEVE DUDLEY

## All-important oxygen

Adequate oxygenation of water is essential for sustaining life within the aquarium.

The amount of oxygen that can be dissolved in water is largely dependent on temperature (the higher the temperature, the less the oxygen) and is measured in ppm (parts per million).

In the sort of environment that we keep our Discus in, e.g. a temperature of 86°F (30°C), the level of saturation of oxygen is about 5.6 ppm. This reading — low as it is — is without any demand for oxygen from the fish themselves. So, the 5.6 ppm has to sustain all the fish and all the aerobic biological filter bacteria. Add to this the fact that the higher the number of fish, the higher the organic load and the higher the demand for oxygen, and you can soon see how serious problems can arise.

In order to keep saturation at, or near to, its maximum, an air-stone should be placed at the bottom of all aquariums. This will not only assist oxygenation, but will also disperse carbon dioxide (CO<sub>2</sub>) at the water surface. It is the turbulence created by the air-stone that is of greatest importance with regards to gaseous exchange.

Discus suffering from oxygen depletion will be seen a-gasping at the water surface, especially after mealtimes.

## Copepod boom

I am often asked what "those little white bugs crawling on the inside surface of the aquarium"

Brooding Discus such as this one (the tiny 'spots' on its body are feeding fry) produce large amounts of mucus which, apparently, copepods love.

are. They are, in fact, copepods.

Although some species are parasitic, the ones found in the aquarium are not harmful to the inhabitants. Quite the contrary, they are a good food supplement for growing fry.

Interestingly, copepods are often found in abundance at spawning time. This is possibly as a result of over-production of body slime by spawning Discus, which copepods can take advantage of through grazing.

These tiny creatures mainly breed in great numbers, either in the gravel or in the filtration system, and are expelled via the uplifts of undergravel filters or through the outlet pipe of a canister filter.

## Diminishing return

Newly hatched brine shrimp (nauplii) have a rich yolk sac and are also an excellent first food for weaning Discus fry from the parents, usually at around 7 days when they (the fry) become free-swimming.

The nutritious yolk sac soon becomes depleted as the growth of shrimp progresses, in which case the nutritional food value to Discus fry is greatly decreased.

If you need to, you may store nauplii in a cooler environment in order to preserve their nutritional value.

## Tankmates for Discus

Clown Loach are ideal companions for Discus in a furnished aquarium, as they will forage and sift through the aquarium gravel, removing any uneaten food that would normally have been overlooked by the Discus, and thus helping prevent water quality problems.



JOHN DAVIES

Another favourite is the Bristle-nose Catfish or a small 'Gibbiceps'. However, the latter has a tendency to graze on the sides of larger Discus. Although not harming them, this behaviour often frightens the Discus. This does not apply to all 'Gibbies', but some individuals can become very boisterous.

## Safe bogwood

Quite a lot of Discus hobbyists utilise the planted aquarium approach to Discus keeping, as such an aquarium often forms the aesthetic point in the living room. Unfortunately, many keepers also make the mistake of using bogwood or curio wood, which may spoil the whole appearance of the tank.

Tannins leach out from bogwood into the aquarium as well, regardless of whether or not it is soaked in a bucket for two or three weeks. It is also possible for other contaminants to find their way into the aquarium, causing problems to both Discus and their ecosystem. If we were to seal all these contaminants in with a polyurethane varnish, though, all could be avoided.

Sealed bogwood will, however, float. It is therefore advisable to find a suitable piece of slate and silicone the base of the bogwood to it, in order to weigh it down. Gravel can then be spread over the edges of the slate, leaving the bogwood in full view while, at the same time ensuring that it does no harm to the aquarium inhabitants.

Bogwood, unless properly sealed, as the piece in the background of this photo evidently is, will leach out tannins and other contaminants which Discus don't take kindly to.



M. P. & C. PREDATOR



STEVE DUDLEY



Watch out reef month for my review of  
— a video we have recently received and which is really well worth seeing

Sailfin Plec or Gibbiceps — a suitable tankmate for Discus.



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## KEEPING AND BREEDING:



An unusually deep orange form of the Golden Mantella.

# Mantella Frogs

PART  
ONE

# The Species

**Bob and Val Davies** introduce some colourful, tiny frogs which are often confused with their better-known and equally brilliant Arrow-poison counterparts.

*Photographs by the authors*

Madagascar is home to a group of small, in many cases brightly coloured, frogs which were previously classified as Dendrobatidae (Arrow-poison or Dart-poison Frogs). They have since been re-classified as belonging to the same family as the Common Frog, the Ranidae (sub-family Mantellinae).

Their bright coloration has led to speculation that, like the Arrow-poison Frogs, they may possess skin toxins but, as yet, little has been done to investigate this. Certain birds and animals have been seen to reject them, so they must, at least, taste unpleasant.

Unlike the Dendrobatids, Mantellas tend to be largely terrestrial, although one species, *Mantella laevigata* (most species don't have common names) has been found to be semi-arboreal in the wild and certain other species may do a little climbing at times.



## MANTELLA FACT FILE

Scientific name: *Mantella* species.  
Common name: Mantellas.  
Natural distribution: Madagascar (predominantly eastern rainforests — varying altitudes).  
Size: up to 1½in (4cm) according to species.  
Size of clutch (in captivity): average 16/20 eggs.



*M. betsilio* — this specimen shows the copper-coloured dorsum.

**ABOVE** — The Green Mantella is one of the largest species.

**BELOW** — Green Mantella — ventral view.

In recent years, Mantellas have been exported from their native land in large numbers for the pet trade, many of them to this country, although the bulk has gone to the US and mainland Europe.

### Bewildering variations

The most familiar species is the Golden Mantella (*Mantella aurantiaca*). A close second is a form usually sold as *M. cotyana*. The classification of Mantellas is confused at the moment — certain 'species' are claimed to be simply colour morphs (forms) and not valid species. *M. cotyana* was recently classified as a colour morph of the Painted Mantella (*M. madagascariensis* — a highly variable species). One writer stated that the true *M. cotyana* was thought to be extinct but has recently been rediscovered.

A consignment of Mantellas imported some two years ago, contained sixty or more individuals with a bewildering variety of colours and patterns. They were thought to be mainly *M. madagascariensis*, but it was difficult to be sure.

It is highly likely that new forms of *Mantella* will be discovered and the taxonomy revised. As recently as 1992 a hitherto unknown species, *M. expectata*, was found — as yet little is known about it. To confuse things even further, it is reported that *M. aurantiaca* and *M. 'cotyana'* hybridise in the wild, the resultant progeny being fertile.

### Climate

Although Madagascar is in the tropics, the high north/south mountain range influences rainfall and temperatures to such an extent that some fairly distinct regions exist.

The east and north-west are the wettest areas, with fairly heavy rainfall most of the year, combined with high temperatures. By contrast, the extreme south-west is semi-desert with a long, dry season and may have no rain some years.

Temperatures between high and low altitudes, as well as between certain latitudes, can vary considerably. For the keeper this means that all *Mantella* species may not necessarily require exactly identical conditions in captivity. The distribution of certain species is also occasionally, revised as they have been found to inhabit areas where they were previously unknown.

### The species

□ **Golden Mantella** (*Mantella aurantiaca*)

Adults may measure up to 1 inch (2.5cm). At least four colour morphs are known: yellow, orange, red and a little-





**ABOVE** — The Painted Mantella is highly variable.

**BELOW** — *M. crocea* — this brownish specimen has produced green young.

known dark red form which has a red spot on each side of the head. In the first three forms, the female may be slightly paler in colour.

Inhabits rainforest, near pools around Perinet and the southern half of eastern Madagascar (usually below 800 metres — 2,600ft). In the wild, it undergoes a rest period during the dry, cold season from May to September.

Vivarium temperatures: 68-74°F (20-26°C). Maintain tadpoles at the lower end of the range. Size of froglets at metamorphosis — 7mm; colour brown, but by age of six months will have attained adult coloration.

☐ *Mantella crocea*

Occasionally imported under the name *Mantella 'spezic'* — possibly a misspelling of species. Slightly smaller than the Golden Mantella. Dorsal coloration is variable — may be fawn, yellowish-brown to greenish. A black band runs from the lower jaw along the flanks, curving under the belly towards the groin. Bright red marks in each groin — inside of hind legs also red (flash colours). Some specimens exhibit a faint black 'design' on the dorsum.

High-altitude species found around Perinet (Andasibe) and Moramanga. Green specimens are often listed as a separate form and priced differently, but green young have developed from brownish parents. The young are small and dark brown, later developing the greenish coloration.

This species seems to be the easiest to breed.

☐ *Green mantella (Mantella viridis)*

Not commonly imported into the UK. Restricted distribution in Northern



*M. crocea* — showing 'flash colours'.

Madagascar around Montagne des Francais. Can be slightly larger than the Golden Mantella — our adult specimens would eat houseflies and even blowflies.

Dorsal surface green to 'dirty' yellow. Black mask on each side of the head, extending past the armpit. Belly, black with blue markings.

Although frequent calling is heard, there have been no reports of successful breeding in the UK. In the wild, it breeds between December and January.

☐ *Mantella betsileo*

Adults 20-28mm (0.8-1.1in). Variable coloration — dorsum (back) of observed specimens, copper-coloured, sometimes with faint, dark, diamond marks. Sides (from snout) black, legs greyish with faint dark bands; ventral surface black with irregular blue spots; lips white; upper half of iris bright gold.

Variable habitats (humid and deciduous forests) in north-west and west and in relic forests of central plateau, possibly also in the north-east around Maroantsetra.

Little information available on this species; very few specimens imported into Britain — no breeding reports as yet. Reputed to lay 60 eggs per clutch in the wild.

☐ *Painted Mantella (Mantella 'osani'/'madagascariensis')*

Highly variable coloration — the form referred to as 'osani' has various colour morphs: blue/black, yellow/black, green/black. Other colours, such as red, green, white may be present and the black background may be absent.

*Madagascariensis* may have similar coloration, but the distinguishing feature is claimed to be black marks or bars on the hind legs and feet. Wide distribution — practically all the eastern rainforest. *M. 'osani'* is restricted to a much smaller area within the northern half of this same rainforest.

According to distribution maps, the range of *M. asaniana* overlaps with both species, but 'osani' tends to live at higher altitudes and requires similar conditions, with possibly slightly lower temperatures. *Madagascariensis* tends to live at lower altitudes.

Clutches in the wild have contained 65 eggs, but in captivity they are usually considerably smaller. Eggs of *M. madagascariensis* have been found at the end of October/ beginning of November in humid places. Both species have been bred in the UK, but survival rates of metamorphosed young have been low.

(TO BE CONTINUED)

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In Part 2, we will be showing you how to keep and breed these delightful little amphibians.