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## COVER STORY — Spottin Butterfly

Photograph: Alex Hamilton/Island Photography



**T**he Spottin Butterfly (*Chaetodon ocellatus*) is an elegant fish which, while not possessing the brilliant colours of some of its closest relatives, is nevertheless a most desirable species. Two key factors in this are its relatively wide availability and its hardiness in aquaria.

As in many other butterflies, the body patterns of the Spottin change as a fish grows. In particular, the vertical band that passes through the eye will appear proportionately narrower as a fish matures, while the spot which the specimen featured on our cover exhibits in its dorsal (back) fin, may become very faint and faded. Juvenile specimens also possess a bold black vertical band on the posterior of the body but this, too, disappears with age.

Spottin Butterflies can attain sizes of between 6-8in (15-20cm) in aquaria. In the wild, they are found in the Western Atlantic, from Brazil northward to Florida.



# Editorial

## GOLDFISH ABUSE IN NEW ZEALAND

If you flicked through the Teletext pages on your TV set at around lunchtime on 7 March, you may have just spotted an Oracle story carrying the headline: **Bar 'Hooked on Goldfish Cocktails'**.

Missed it? Well, I'm not surprised, it was only there for an hour, or maybe two, quickly to be overtaken by other, more world shattering items.

According to the story, there's a bar in Wellington, New Zealand, that serves up live goldfish in alcoholic cocktails. No kidding, honest! The report appeared in March, and it is now May, so this is no 'April Fool' stunt.

It is reported that barmen at the Route 66 bar drop live goldfish into a glass of tequila and then add a twist of lemon. Have you ever come across anything so insensitive, bird-brained or downright callous in our species' treatment of the most popular pet in the world?

What's with these people? How can they do this to an inoffensive goldfish for what they call "a joke"? And what about those who buy the cocktails? How can they possibly see the funny side of this idiotic gimmick? Aren't they every bit as cruel as those who actually drop the fish in?

A lawyer for Route 66 is reported as saying that the goldfish are dropped "occasionally" into cocktails "for a joke". He or she is also quoted as adding that, despite this, fish usually die "with a hook

through the face".

I haven't quite worked this one out yet. Does it really mean what I think it might mean . . . that the fish are actually hooked out of the tequila glass? Surely not!

Some things make me angry. Others make me REALLY angry. But acts of mindless, flagrant abuse of the power we can exert over the destinies of other species, especially those that we couldn't return to the wild even if we wanted to . . . well, that's something else!

As I write this, we are trying to follow the story up, including a report that there's a possibility of charges being filed against the perpetrators. If we come up with anything, we'll, obviously, bring you all the details.



John Dawes  
Editor

## News Desk

### New Sharks at Natural World

The Natural World on Poole Quay is now the proud owner of three juvenile Black Tip Sharks, which have taken up residence in a 6,000 cu ft (170 cu m) tank in the aquarium.

The three Black Tip Sharks, from Indonesia, have settled in happily, fostered by a Nurse Shark which is believed to be 9-10 years old.

Very few aquariums in the UK have been successful in keeping sharks for any length of time. However, according to Poole Aquarium, The Natural World has one of the most successful programmes in the country.

The young sharks are approximately 2ft (60cm) in length, and are fed on mackerel, herring, whiting and squid. They replace two Lemon Sharks which were brought to The Natural World four years ago and grew to nearly 6ft (180cm) long. They had to be found new homes as a result of their continued growth and are

now installed at private zoos in Belgium and Germany.

The Natural World reports that their sharks have starred in the BBC wildlife programme *SuperSense* which showed how sharks are attracted to biting underwater telephone cables because they sense the electrical fields: sharks are known to have particularly strong senses and can, for example, smell blood at a distance of almost half a kilometre (c 550yd).

The new sharks can be seen being fed every Sunday, Wednesday and Friday (3 pm), while The Natural World complex is open seven days a week.

For information, contact Robert Stephens or David Bird, The Natural World, Poole Quay, Poole, Dorset. Tel: 0202 686712/555583.

### Back to School

Ipswich and District Aquarist Society is providing a special service to the com-

munity by taking the hobby into schools (see *Reflections*, A & P February 1992).

The society has generated sponsorships from local businesses (such as Felixstowe Clock and Railway Company and Seapets) and is currently working on providing aquarium set-ups in no fewer than seven schools.

"It started when one of our members, Rob Smith, took some river shrimp to his son's school for study," explained Adrian Cooper, social secretary of Ipswich and District Aquarist Society.

The tanks are being set up by society members, who will also provide advice on the basics of fishkeeping. "The aquaria will remain the property of the society, so any school which does not try to maintain its tank properly will have it removed," Adrian stressed.

### Ceremonial Opening for EuroKoi

An opening ceremony with a difference was staged at the

headquarters of EuroKoi, at Grafty Garden Centre, near Lenham in Kent, recently.



Denis O'Neill and fellow director Frank Smith cross swords at the official opening of the recently extended premises at EuroKoi, near Lenham, Kent.

Dressed in kimonos, EuroKoi directors Denis O'Neill and Frank Smith used a ceremonial Samurai sword to cut the symbolic ribbon and officially open the 10,000 sq ft (930 sq m) premises, which house EuroKoi and the



recently-acquired **Aparrotly Pet Centre**, as well as a tropical fish centre.

### Fish Club Success

A fishkeeping club launched by **Tetra** just a few months ago has attracted members from as far afield as China, Chile and Australia.

By the end of February, the **Tetra Club** is reported to have gathered no fewer than 2,000 members. "We knew the club would receive a good response, but we certainly didn't anticipate that it would have such a far-reaching success, commented **Dr David Pool**, head of Tetra Information Centre.

Tetra launched the club at the beginning of the year, after research showed that more people would keep fish in aquaria and garden ponds, if expert advice was readily available.

As well as receiving a regular newsletter, all members have access to a special emergency hotline telephone number for fishkeeping queries. Pond, tropical, and children's membership schemes are available, and members receive a membership welcome pack containing sample products, £20 worth of discount vouchers to events and attractions throughout the country, and a handy information booklet about fishkeeping.

Subscription is £10 for adults and £6 for children. To join, send a cheque stating which membership is required to: **Tetra Club, Tetra, Lambert Court, Chestnut Way, Eastleigh, Hants SO5 3ZQ**. Further information is available on 0703 643339.

### Look in at the Pet Show

You'll have to be quick to catch this year's **Pet Show** (2-4 May, Earls Court, London), but **News Desk** could not resist including the most appealing photograph which accompanied the press release, and which really sums up the fishkeeping hobby.

The **Pet Show** is sponsored by **Pedigree Petfoods**, manufacturers of 'Aquarian' products; while, at the show, the **Federation of British Aquatic Societies** will be promoting the hobby of fishkeeping, providing, according to **FBAS** chairman **Joe Nethersell**, "Everything that is best in



Eyes down, look in... for advice on fishkeeping at the **FBAS** stand at this year's **The Pet Show** at Earls Court, London. But you'd better be quick: it only runs from 2-4 May...

fishkeeping, from the latest in equipment design, to the most recent update in societies' addresses".

Committed aquarists from all areas of the hobby are also expected to be on hand to answer any questions, and **Joe Nethersell** remarked: "Any visitor to the stand will be left in no doubt that, not only is fishkeeping a worthwhile and rewarding hobby, but also that there is no shortage of follow-up advice from organisations such as **FBAS**".

### Sparsholt Open Day

Members of the public are promised "a great day out" at an open day to be held at **Sparsholt College** on Saturday, 16 May. Over 7,000 people attended last year's event, and visitors this year will have the opportunity to see the **National Aquatics Training Centre** and the types of training provided by the college, as well as enjoying tractor rides, sheep shearing, milking, honey production and other activities.

For further information, contact: **Jane Lloyd, Sparsholt College Hampshire, Sparsholt, Winchester, Hampshire. Tel: 0962 72441**.

### The World of Fish

Members of aquatic societies throughout the country will be familiar with their society newsletters, which range from straightforward typewritten sheets, to a well-presented A5 magazine format.

Taking one giant leap into

the world of 'real' publications is **Fish World** magazine, produced by the **Federation of British Aquatic Societies**.

While still in A5 format, **Fish World** is not a long way from being a full-blown magazine. Editor **Peter Furze**, who has had a constant ambition to pro-

mote the hobby of fishkeeping, remarks: "I hope the magazine will encourage those persons who keep the 'odd aquarium or two', those who consider themselves to be fishkeeping hobbyists, or those who are among the thousands of unknown fishkeepers who do not belong to any club or society."

The first issue of the year, and the fourth since its inception, incorporates coverage of fishkeeping matters, including the differences in the genus *Barbus*, club news, seasonal care, marginal and moisture-loving plants, and an 'in-depth' look at water chemistry.

**Fish World** is available four times per year, priced at £1.50, or a special introductory subscription of just £5, including postage. Subscription details are available by contacting **Fish World Magazine, Dept QB, 194 Greenhill Road, Herne Bay, Kent CT6 7RS** (cheques should be made payable to **FBAS**).

## Trade Talk

### Advance Warning

**T**raders throughout the UK have been warned against the dangers of paying in advance for imported supplies following some unfortunate experiences with suppliers in West Africa.

**News Desk** appreciates that only a small minority of exporters are responsible for such misdemeanours, but the following experiences provide a timely warning for importers to be on their guard.

**Ken Williams**, proprietor of wholesale and retail outlet **Garden Pet Supplies** in Wrexham, Clywd, first became aware that "things were amiss" when he tried in vain to contact a supplier at **Sattelite Town, Lagos, Nigeria**, to chase an order placed last September and for which he allegedly paid an advance figure of £3,650 for a consignment of fish, birds, and other goods.

Seeking advice on the situation, **Ken Williams** subsequently contacted **Ann and Grant Weir**, directors of **West Coast Tropicals/Wholesome Farms** in Lagos, following a letter from **Ann** in *Aquarist & Pondkeeper* (see **News May**

1991: **Letter from Nigeria**). [Incidentally, see also **Basket Fishing in Nigeria** by **Ann and Grant Weir**, *A & P February 1992* Ed.]

The couple were not unfamiliar with the situation, and have promised to do everything possible to help **Ken**. "However," explained **Grant**, "we fear the worst. Nobody, but nobody, pays in advance for anything from this part of the world: they call the practice '419' after a clause in the constitution."

He continued, "There are a million would-be 'cowboy' shippers, who buy fish from keep nets in the riverside areas, transport them to Lagos, do a water-change, usually into 'iron-high' water, then fly them out to Europe. Obviously, if they can be paid in advance, there is no need to go anywhere, except to spend the money!"

"£3,650 would represent approximately 78 days' basket fishing, or at least two years' work!" **Grant** concludes: "I think it would benefit all if a trusted monthly carried a warning about paying in advance!"

This trusted monthly is only too pleased to be of assistance.



## Smashing!

Triple-laminated glass in a huge display aquarium at Kingdom of the Seas in Hunstanton passed the ultimate test when a piece of ironwork was dropped onto one of five special glass panels forming an enormous gallery window.

The 56,000-gallon (255,000-litre) display housed British sharks and stingrays, and the glass had been specially developed by aquarium specialists Sea Life Technical in conjunction with Pilkington. Each panel was manufactured by binding three separate sheets to a total thickness of two-and-a-quarter inches (5.7cm), and the theory and calculations proved accurate when only the inner sheet of glass shattered, leaving the two outer sheets strong enough to withstand the immense pressure of the vast volume of sea water.



Technicians of Sea Life Centre Technical re-align the new window panes of the giant display aquarium at Kingdom of the Seas Aquarium, Hunstanton.

Sea Life Technical were able to replace the glass in a £30,000 operation by draining the tank and removing a total of nine three-and-a-half metre (11.5ft) long glass sections weighing over four tons, then reassembling the complete panel with new glass in place and applying one continuous seal.

As Mike Causer, technical director of Sea Life Technical said, "We have always known that our glass is the strongest around, and that it would behave exactly as it did if damaged. It was clearly not a pleasant experience for the aquarium

proprietors, but it is reassuring to have this irrefutable proof of its strength and safety".

The laminate technology which has proven so successful at Hunstanton has enabled the company to install larger uninterrupted windows at all eight UK Sea Life Centres.

Such technology, coupled with allied expertise in moulding heavy-duty acrylic sheets, have resulted in projects for Sea Life Centre Technical throughout the Continent and in the Middle East.

Projects in the pipeline include three custom-built tanks for a new marina in Dubai, another for a brand new hotel in Oman, a new aquarium in Sweden, and a spectacular underwater tunnel in Tenerife; while, closer to home, the company has installed a giant underwater viewing window in Edinburgh Zoo's new penguin pool.

Sea Life Centre Technical Limited: 17 Cobham Road, Ferndown, Wimborne, Dorset BH21 7PE. Contact Mark Oakley or Mark Causer, Tel: 0202 896289; Fax: 0202 896049.

## Market Growth for William Sinclair Holdings

The half-year financial results of the pet and aquatic businesses of William Sinclair Holdings, which owns King British and Uno among its companies, are particularly encouraging, according to group managing director Peter Barton.

The Lincoln-based company reports a substantial increase in turnover and profits in the group's interim results, published in March.

Commenting on the results, Peter Barton remarked: "The pet and aquatic division has performed well up to expectations. There has been a particularly encouraging first half-year performance from King British, which was purchased last July, while, in November, we acquired the business of Uno, a manufacturer of pond heaters and thermostats, as a natural addition to the King British range".

Turnover is reported to be £32 million per annum, and pre-tax profits for the half-year ended 31 December 1991 amounted to £1.678m.

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First  
STEPS

# THE INCOMPARABLE PLATY

**T**he Platy (*Xiphophorus maculatus*) has been with us a long time. Conveniently small, the females being up to 3in (c7.5cm) in length and the males often about half that size, they are one of the most popular of all tropical freshwater fish. Platies are often recommended for beginners because of their wide range of colours and fin shapes, their hardiness, willingness to eat anything, and their ease of breeding.

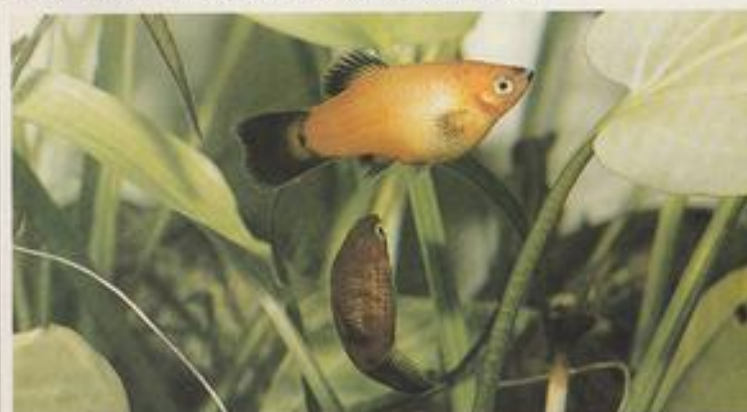
Linda Lewis 'returned to basics' a few years ago when she chose to keep Platies again . . . and has never been able to give them up ever since.

*Photographs by the author*

I began with the Red Wagtail variety some years ago and have stayed with it ever since. The peculiar black markings on the head and face and the velvety black fins are most attractive, and the vibrant reds of their bodies brighten up my tank. I have Harlequins and Bronze Corydoras Catfish, Glow-light Tetras and Guppies in this particular community set-up. All are lovely to look at, but they don't have that block of vivid colour that a Red Wagtail Platy adds to the arrangement — so I'm stuck with them! It's always the Platies that catch the eye of non-fishkeeping visitors — simply because they're so bright and lively.



A one-year-old female Red Wagtail Platy 'admires' her reflection.



A male Platy 'stalks' a plump female.

## AQUARIUM CARE

If you decide to try Platies, make sure to buy them when they are only half grown. They are then much better able to adapt to changes in water conditions. Should you buy nearly full grown specimens that have been raised in water containing a little salt, you would do best to duplicate those conditions, but if the fish are young and healthy to start with, you should find that no salt is needed.

With regard to other tank conditions, Platies are adaptable and can live in a wide range of temperatures, though it's best (as with all tropical fish) to keep any temperature swings to a minimum. We've had a couple of very hot summers which pushed water temperatures up into the 30°C (mid 80°F) yet this caused no problem at all to our fish.

Apart from such freak weather conditions, the two tanks which contain Platies are set, one at 22°C (c71.5°F) and the other at 24°C (77°F). A pH in the range of 6.5 to 7.5 suits them well. The water is hard — 12 degrees General Hardness — but this, again, presents no difficulties.

## GARGANTUAN APPETITE

One small drawback with Platies is their appetite — they eat all they can grab and there's a risk of other, less pushy, fish not getting a proper share.

My young Bronze Corydoras Catfish were being bulldozed out of the way as the Platies pounced on their pellets. Now I feed two types of food at the same time, keeping the Platies busy at the surface so that the catfish get to graze on their pellets in peace, if only for a minute.

I haven't found any food that Platies will



not devour greedily. They take flake and tablet food, dried worms and brine shrimps, frozen bloodworm and *Daphnia*, and live mosquito larvae, and still spend hours nibbling algae from plants and tank glass, using their almost prehensile mouths.

### EASY BREEDERS

The reward for keeping such a greedy fish is their ease of breeding, and the pleasure of watching tiny fish grow up.

### Gravid Spot

Unlike the Guppy, it's not so easy to tell when a Platy is about to give birth, especially in varieties like the Red Wagtail. The dark, tell-tale gravid spot is not as good an indicator.

In the Guppy it's possible to make out the tiny eyes of the unborn fish. You then know that birth is not far away. It's less easy to tell with the Platy — but an extra clue is the female's increased plumpness.

### Breeding Traps

When the fish are still small, it's possible to confine them in a breeding trap, for a week if necessary, in order to catch the fry. Once the females are full-grown, though, the traps are not large enough and the fish get too upset at being enclosed.

### Inbreeding Distress

On two occasions I've seen expectant females appear to be in distress. They sped off round the tank as though bitten. I had never encountered this behaviour before, so sought help from a professional enquiry service. They said inbreeding could be the problem, so I bought a new male, but I'll return to him later.

### Fry 'Collecting'

I use a powerful internal power filter in my largest tank, fitted with a spray bar to reduce turbulence. I rinse the foam insert, which acts as both a mechanical and biological filter medium, whenever I do a part water change, using the siphoned off water to rinse the foam.

If a Platy has recently had a brood, the odds are that one or more of the babies will have been trapped by the filter, so I can then remove them.

The other way I collect fry is to keep a careful watch on a plump female. When about to give birth, she will spend a lot of time resting on the gravel or taking shelter in an upturned flowerpot. If I'm lucky, I will spot a few babies sometime later.

When first born, Red Wagtail Platies are a delicate shade of salmon pink, making them hard to see, but they can be spotted when they flee the jaws of a hungry Guppy or Harlequin. To catch the babies I use a large, fine-mesh net.

They are born with an instinctive survival



Three three-week-old 'salmon-pink' Red Wagtail Platies photographed in a beaker with two Guppy fry of the same age, for comparison purposes.



Two young (six-month-old) male Platies derived from a cross between a male Blue Platy and a Red Wagtail female.

mechanism — namely, if something approaches, they rush into the undergrowth, where they are not easy to pursue. Patience, however, has its rewards. Once the fish is within the net, I raise it to the surface so my catch cannot escape, and then scoop the baby out using a plastic beaker. In this way, the fry is never out of the water and there's little risk of shock or injury.

My catch is then transferred to a spare tank which is used for breeding, quarantine and occasional hospital purposes. For the first few weeks, I keep the fry in a breeding trap. This makes it easier to keep a check on the young and to remove any dead or deformed individuals.

### REARING PLATIES

Platies are easy to rear — flake food crushed between the fingers will do — or you can buy liquid and powder foods made specially for fry.

They soon grow and are recognisable as Platies within days. Some are born with the beginnings of the black marks on fins and tail which give rise to their name.

Platies are slower to mature than Guppies which can breed after only three or four months. Development of the male's modified anal fin, the gonopodium — which is used in mating — is often delayed for four

months, and it is some time after that the females are sexually mature — normally at around eight months.

### PLATY CROSSES

As mentioned earlier, I received advice that inbreeding could lead to trouble. I decided, therefore, to buy a new male of a different colour variety so I'd be able to tell which broods he'd fathered. Even with no other male in the tank, babies could still have the Red Wagtail as a father, because of the female's ability to store sperm.

### Troublesome Male

From the start, there was trouble. The new blue male terrorised the young females by constantly chasing them. He kept them from the food and attempted to nip their fins. He did not attack the male or the full grown two-year-old females (who were about three times his size) though.

The chasing went on almost non-stop and the young females were far from happy and spent much of their time hiding. Male Platies chase females all the time, but this was different. He never once tried to court or mate with the females, old or young. All he did was chase and bite.

I therefore put him in a breeding trap for a few days hoping this would cool him down, but as soon as he was released, he was chasing. So, back into the trap he went. This time, I starved him for five days — if he was a little less vigorous, he might behave better. But no. I repeated the process several times with no improvement. It seemed he'd have to go back to the shop.

### Unexpected Solution

I decided on one last experiment. I transferred him to my second tank where I kept four 'spare' female Platies, along with Danios, Black Phantom Tetras, Neons and assorted Corydoras Catfish.

The transformation was instantaneous. He still chases the females, but for the right reasons!

The only explanation I can imagine is that he did not want to compete with the older, larger, established male. In order not to appear as a rival, he showed aggression towards the females. Now he's the only male in his tank, the problem appears solved. The odd thing is that I have not noticed this kind of behaviour when a batch of Platies has grown up together from birth.

### RETURN TO BASICS

If you kept Platies years ago but have since gone on to 'better things', I hope you might be tempted to give them another try. Perhaps you'll find they give you as much pleasure, and amusement, as they give me.

If you've never kept Platies before, I urge you to give them a try. You won't be disappointed!



# Coldwater jottings

By Stephen J. Smith



## TV PONDKEEPING

Gardening programmes always fascinate me; whether it is *Gardeners' Question Time* on Radio Four, or any of the several television programmes on the subject, they are always compulsive listening or viewing.

Not least of the reasons for this is that rarely is one of the most important aspects of gardening (in my own opinion) ever mentioned: water gardening.

So I just have to watch the programme on the off-chance of the subject of aquatics in the garden cropping up.

I was delighted, therefore, to catch Geoff Hamilton and his team presenting an excellent short feature on restoring old ponds at the beginning of his recent series *Old Garden, New Gardener* on BBC2.

In just a few moments, both a formal ornamental pond and a natural pond had been restored to 'as new' condition; how simple it looked! Hopefully, however, the item will have spurred a few garden pond keepers to restoring their own neglected feature, or even persuaded people to incorporate a new pond into their garden design.

## CAT-NAPPING

"Don't you ever have problems with herons or cats?" is a question almost always asked by casual visitors to my humble collection of back-garden ponds. While I have not encountered a 'heron problem', I have, in common with many fishkeepers, found myself tear-

ing my hair out at the wiles of the neighbour's cats, which have occasionally scarred, or worse, stolen, some of my favourite Fancy Goldfish (and it's always the best one which 'gets got').

So I must admit to a modicum of sympathy for the man who, reportedly, tried everything he could to deter his neighbourhood cats from nabbing his favourite Koi.

But my sympathies end with kidnapping — or should that be cat-napping!

According to a recent *Daily Telegraph* report, a Southampton fishkeeper became so desperate that he 'deported' the cats by trapping them and driving them miles from his home and abandoning them until neighbours complained to the RSPCA about their disappearing cats.

"He is entitled to protect his fish," an RSPCA spokesman is reported to have said, "but abandonment of animals is illegal and will not be tolerated."

The report failed to mention if the petulant fishkeeper was prosecuted (I believe he was), but I would not recommend any such extreme measures. However, the following (and perfectly legal) idea might be of help to fishkeepers who wish to solve a similar problem with their neighbourhood predators while remaining within the constraints of the law, and without causing offence to cat-loving neighbours.

Quite simply, install a fountain into the pond, if you don't have one already, and connect the supply to a passive infra-red detector (PIR), as used in security lights, and available fairly cheaply.

Then, when tiddles sneaks up to pondside when your back is turned, the fountain automatically turns itself on before those claws can get to grips with your fish. Such a device will cause no harm to tiddles, and won't wake the neighbours at 3 am.

## 'MODEL' GOLDFISH

Regular followers of this page will be aware that I am never too pleased when I see poor specimens of Goldfish in illustrations, whether for reference



Providing model treatment for a 'model' Goldfish, photographer John Brightmore captures my Hamanishiki for an advertising agency publicity photograph.

books, on packaging, in leaflets or advertisements (where, incidentally, Goldfish seem to be increasingly popular), or on video.

Therefore, I was delighted to be approached by an advertising agency who wanted to use one of my own Fancy Goldfish — as a model!

Having visited my home on behalf of the agency, Merriions in Lutterworth, Leicestershire, to view my collection of Fancies, photographer John Brightmore wasted no time in setting up floodlights, tripods and camera — complete with an anti-reflective screen, to photograph the Hamanishiki in 'full flight'.

The result? At last, a reasonable photograph of a reasonable specimen now appears in the agency's promotional leaflet, entitled: "What a Good Idea".

How appropriate. . .

## CONCLUSION TO WAKIN DEBATE?

In the absence of any further correspondence following previous comments with regard to the Wakin, can I assume that the debate about the finnage of the Wakin is now closed?

So my final word (surely?) on the subject is this: yes, the Wakin does have twin anal fins. How can I be so sure?

During a browse in a book sale recently (another rewarding, if occasionally expensive, pastime) I was fortunate to encounter a most beautiful book, *Fish of the World — A Collection of 19th-Century Paintings* by Hiroshi Aramata.

With a name like that, there must be some Goldfish references, I thought — and how!

This really is a glorious volume, presenting a collection of over 1,000 full-colour plates made by naturalistic painters, specialists, and ichthyologists of the 19th century. The Latin index runs from *Aburama brama* (Cypriniformes, Cyprinidae) to *Zoarces viviparus* (Perciformes, Zoarcidae); or, if you prefer, the index of English names runs from Achilles Tang to Zingel.

However, as you might expect, the immediate reference for me was *Carassius auratus* (Cypriniformes, Cyprinidae) or Goldfish, where, alongside some remarkable plates of some spectacular varieties from Ohno and Takagi (both Japan) was a plate from Tansyu (1819) showing the underside of a Wakin, no less, complete with twin anal finnage!

*Fish of the World — A Collection of 19th-Century Paintings*, by Hiroshi Aramata. Published 1990 by Portland House, New York. ISBN: 0-517-03048-9. Original published price \$70.



Right, the beautiful falls of Dunns River — home to Wray's *Gambusia*.

Far right, the Great River where we collected the Striped *Gambusia*.

Below, much of Jamaica is still inaccessible, so there is plenty of scope for finding new species in out-of-the-way places like this river in the heart of the Blue Mountains.

Centre, a wild-caught male Striped *Gambusia* (*Gambusia melapleura*) in our net immediately after capture. The black spots in the caudal (tail) fin are encysted digenetic trematode parasites.

Centre right, wild-caught female *Gambusia wrayi* photographed in one of our aquaria at home.

Bottom right, an impressive tank-bred male *G. melapleura* from the 1983 Great River collection.



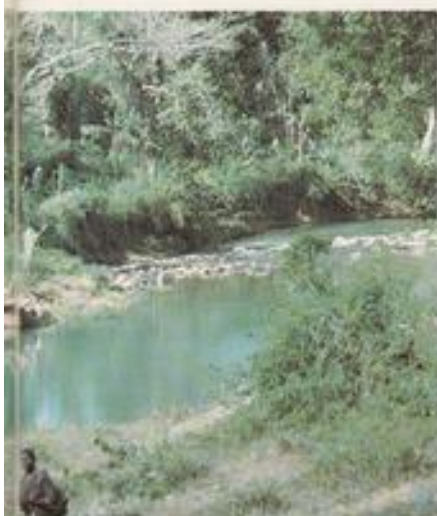


# JAMAICA

## Part 1 In Search of Livebearers and Killies

Pat Lambert reports on an exciting and fruitful fish collecting trip she made with her son Derek to this beautiful tropical island.

Photographs by Derek Lambert



In the June 1988 issue of *Aquarist & Pondkeeper* Derek reported on how he collected one of my favourite livebearers *Gambusia melaleuca* — sometimes referred to as the Striped *Gambusia* — in Jamaica in 1983. It was from this collection that virtually all the current aquarium stock of this species has descended. Eight years and about 16 generations have now passed, and Derek and I decided it was time to look again at this species in the wild and also try to collect several of the other Jamaican fish.

### 'TARGET SPECIES'

We were particularly interested in obtaining stock of the rare Jamaican Killifish, *Chiropodius pengelleyi*, which comes from the south-western corner of the island, around the town of Black River. We had heard about this fish from one of our friends in America and it sounded a really beautiful and challenging species to work with.

Another fish which we particularly wanted to collect was *Limia caudofasciata*. Rivas (1980) synonymised this species with the Black-Bellied or Blue *Limia* — *Limia melanogaster* (Gunther, 1866) — but Chambers (1987) listed it as a separate species and included a figure of the gonopodium (modified male anal fin) structure for the first time (\*see Footnote). While exact collection data for this species were not available, we were certainly going to be on the lookout for any different *Limia* species.

### ARRIVAL AND ACCLIMATISATION

We arrived in Jamaica on 28 January and, within ten minutes, had been offered a "smoke" (Marijuana). During our stay not one single day passed without being offered drugs of one sort or another. In the end, shock was replaced by disgust and a mechanical, "No, Thank You!"

The hotel we had chosen was in a secluded bay about 20 minutes from the bustling holiday resort of Ocho Rios on the north side

of the island. The hotel was lovely and had its own very small private beach. Just down the road was a large public beach which you had to pay to get into, but, at 20p per day, we felt it well worth the money! Much of the holiday was spent in the usual holiday activities, but, in the second week, we hired a car and headed off to do some collecting.

### FIRST LOCATIONS

Our first location was the Río Bueno, just 10 minutes down the road. The river was deep and fast-flowing, with luxuriant plant growth along both banks. We caught young of a freshwater Mullet here. They were silver fish with two dorsal fins much like the Rainbows of Australia. Being fish which require high levels of oxygen in their environment, we decided to leave them until our last morning before collection to maximise their chances of survival. Unfortunately, as so often happens, the fish were not there when we returned.

Our next location was Dunn's River Falls just outside Ocho Rios. This is a celebrated beauty spot, where guides lead long chains of visitors up the unique tiered rock formations of the 600ft waterfalls. What most of the visitors fail to notice are the little fish swimming in the water around their feet. These are Wray's *Gambusia* (*Gambusia wrayi*) which is a very common species on the island, but also quite variable. In slow-moving or still waters they are a more slender fish than in the rushing waters of falls. The different body development is purely due to environment and, if various collections are bred in captivity under similar conditions, no difference will be seen between the offspring. From the base of the falls the river flows into the sea and, even here, *Gambusia wrayi* live in the fresh/brackish/sea water cocktail, passing from one to another without apparent harm.

### 'BIOLOGICAL' POLLUTION

Another location visited that day was Río Cobra just near Spanish Town, which was



the old capital of Jamaica. This is a wide fairly shallow river with patches of water plants teeming with aquatic life. In 1983 Derek had collected *Gambusia obliquata*, *Limia melanogaster* (Blue Limia) and *Xiphophorus maculatus* (Platy) here.

The last of these had been introduced by man to this location and was not doing too well trying to compete with two such hardy species. This time, we had trouble catching anything except the newly-introduced cichlids. The Platies had died out completely, as had the Blue Limias, and we could only find a few *Gambusia obliquata*.



Baby cichlids caught in the Rio Cobre. This species was introduced as a food fish for the local people and may well cause at least some of the native species to become extinct.

Whether this was just coincidence (fish populations naturally vary from month to month, or from one time of day to another), or due to the cichlids, is difficult to assess without further study. However, this sort of exotic species introduction is by far the worst form of 'biological pollution' possible. Now the cichlids are in this particular habitat, it is virtually impossible to eradicate them, so the native species may have a death sentence hanging over them.

### COLLECTING STRIPED GAMBUSIAS

The next day's collecting was to be fitted in around a tourist visit to Negril Beach. This is a 7-mile long beach of golden sand at the western end of the island which can only be described as spectacular, wonderful, marvellous, unbelievable — a true tropical beach paradise. I think you realise by now that I quite liked it here! We could not stay for the sunset, but I have seen photographs of it and I now wish we had made this our base for the holiday.

On our way to Negril we took a road which wound through lovely countryside from Montego Bay on the north coast to Savanna-La-Mar on the south, passing over the Great River near Settlement. It was at this location in 1983 that Derek caught the two fry of the Striped *Gambusia* (*Gambusia melaleuca*) which were the ancestors of the aquarium stock available today. Since we started with such a small foundation stock of this species,

we wanted to compare our captive-bred fish with wild-caught fish to see if the colour had changed due to the close inbreeding.

### Parasitic Black Spots

Last time Derek collected at this site, he only had a hand net with a short handle which made catching fish very difficult because of the steep bank. This time, our long-handled dip-net worked like a dream, and we soon had a reasonable number of fish to do a comparison with. Looking at the wild-caught fish, we were struck by a number of black spots which were present on both the body and fins.

Had our fish lost some of their natural colouring? Well, actually no. The black spots were encysted Digenetic Trematodes. While these are parasites, they are generally harmless to the fish, which only act as intermediate hosts. In a later stage of their life cycle, these parasites can cause severe damage to birds or other animals.

### BLACK RIVER COLLECTION

Our last day's fishing was to take us to Black River, passing through Bamboo Avenue. This road is lined by tall bamboo which forms a canopy for miles. Black River is a wide deep river which is inhabited by crocodiles and tourists.

Since neither the indigenous denizens (crocodiles), nor the exotic introduction (tourists) are our favourite animals, we passed this area by and found ourselves an out-of-the-way place on the edge of marsh land close to the Black River. The water was shallow and brown in colour here. Large rafts of aquatic plants gave refuge to myriads of fish and other aquatic life.

### Changeable Limia

Our first sweep with the net produced two species of livebearer. One was the inevitable Wray's *Gambusia* (*Gambusia wrayi*) and the other was a *Limia* species. This was different from the Black-Bellied or Blue *Limia* (*Limia*

*melanogaster*) so we thought that it might just possibly be *Limia caudofasciata*.

It had iridescent blue scales on the sides and hint of yellow in the fins. There was no sign of the black belly which is so prominent in the Black-Bellied *Limia*. We brought about ten specimens home with us but, after two weeks in captivity, the females had all developed the classic Black-Bellied *Limia* coloration. Quite why this should happen is still a mystery. (A photograph of one of these specimens will appear in Part 2.)

### Sword-like Killifish

Using the hand net, and digging deep into the plants at the banks of the marsh, we finally caught a small fish which looked like a baby Pygmy Swordtail (*Xiphophorus pygmaeus*). The similarity was so striking that we had to stop and remind ourselves that we were in Jamaica, and not Mexico, so this had to be a different fish altogether.

Since we had only seen photographs of adult *Chiropodius pengelleyi*, we could not be sure that these were fry of this species, but they certainly looked similar to the female, so we collected what we could of them.

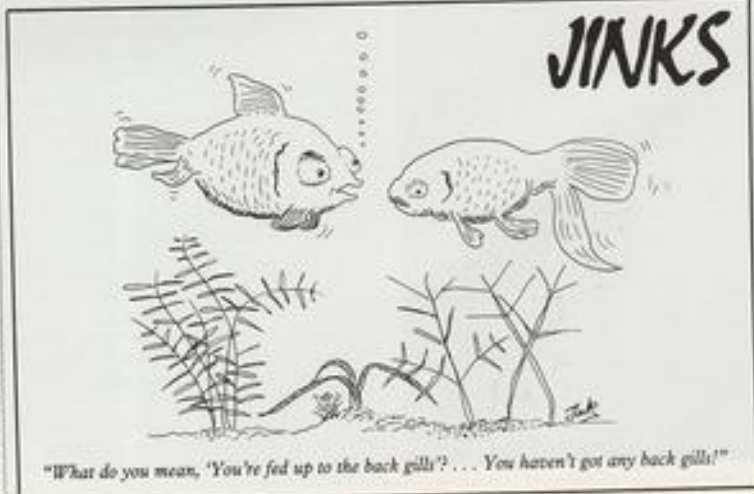
They were very few and far between and we spent several hours at this location trying to find a large enough group to give us a reasonable chance of establishing them when we returned to England.

In the end, we had about 20 small fry, none bigger than 5mm (c 0.2in) and some as small as 3mm (c 0.1in). It was a risk taking such small fish, but we had no choice.

Of the 20 fry we caught, 12 made it back to England alive. Three of these we left with a friend in London on our way back from the airport, and another pair later went to a friend in Scotland. This way, the species would have three chances to become established in the UK, which was one of our main aims in going to Jamaica... besides having a wonderful holiday! More about *Chiropodius* and the other fish we collected in Part 2.

\* Footnote: The full reference list will appear in Part 2.

(TO BE CONTINUED)





# Growing Tips

By Barry R James



To avoid 'lily failure', due attention must be given to the initial stages of cultivation.

## SEEDS OF SPRING

This month I have to throw off my winter torpor and really get down to the preparations for the water garden season.

Seeds have to be sown, cuttings taken and plants re-potted. All these tasks have to be undertaken, and completed, in such a short time...

Fine seeds, such as the dust-like *Mimulus* and *Lobelia*, need such a lot of effort pricking out and potting on that I often feel it would be cheaper to buy them in. However, the thrill of seeing them germinate never leaves the true gardener, so we go through the same ritual every year.

I collect the seeds of *Iris laevigata* hybrids in the autumn. I then place them outside for the frost to stratify them before planting. This ensures quicker germination. They sprout quickly and are then grown on for the following year.

The sticky, glutinous seeds of *Lysichiton americanum* are collected in late summer and sown immediately in pans of wet loam. They germinate quickly and are ready for sale as first-year plants the following spring.

All aquatics grow fast, and water lilies are no exception. Plants have to be re-potted every year for the first three years, as they soon become pot-bound. It is most important to label them with waterproof tags as it is amazing how, by the following spring, you have forgotten which variety is which.

## LILY FAILURES

I am amazed how many water lily failures are reported to me every year by disgruntled cus-

tomers. Most were bought as loose plants. These are mostly imported stripped of all leaves and roots before shipping to cut down on the freight cost. Few of these plants will take if potted in this state and soon die from attacks by fungi and bacteria.

The tubers should have any rotten tissue at the severed end removed. A little powdered charcoal and sulphur should then be applied to the cut end.

The plant should then be floated on the surface for some weeks until roots and leaves have started to form. At this stage, the tuber should be potted up and grown on in shallow water for one or two years before being transferred to deeper water.

## VEGETABLE FILTER SUGGESTION

Hobbyists installing vegetable filters in their Koi ponds are on the 'phone a lot during the early part of the season wanting advice on which are the best plants to use.

I am a great fan of *Sagittaria latifolia* for this purpose. It absorbs large quantities of nitrates, etc, but does not form a dense root system like other quick-growing aquatics. [See *John Cavalier's article Filtering the 'Green' Way in the Focus of Koi section*. Ed.]

## HOUSEPLANT EXCEPTION

Although I have always made clear my abhorrence of the practice of using houseplants for aquarium decoration, there is one plant for which I make an exception. This is *Spathiphyllum wallisii*.

Hailing from South America,

this plant is an Aroid which produces white flowers in the form of a spathe-like Arum Lily. The leaves are a bright shiny green, long and lance-shaped, tapering to a fine point. It reaches a height of around a foot (30cm). It is a rapid grower and needs constant feeding.

Submerged, most people would mistake it for a *Cryptocoryne*. It seems to survive indefinitely underwater, but gradually loses vigour and stunts after about a year.

However, all is not lost. Potted up in Levington Compost, it will soon regain its former glory and, after a year growing in its emergent form, can once more be submerged.

In Colombia and surrounding areas there are numerous species of *Spathiphyllum*, many of which grow in swampy areas.

No doubt, there are others which would do as well, if not better, than *S. wallisii*.

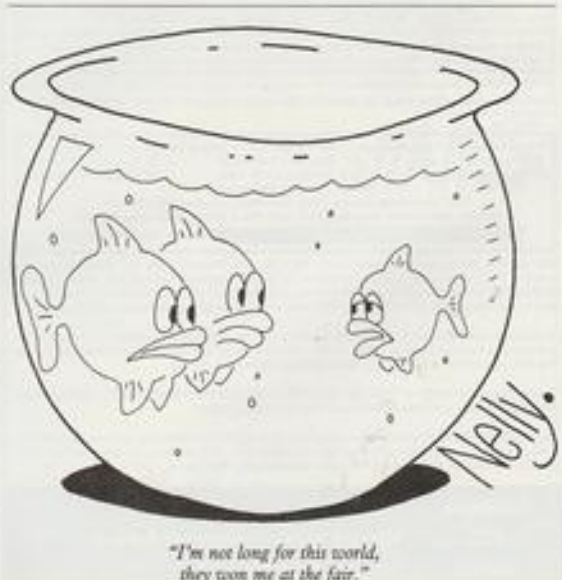
## AQUARIUM MICRO-PROCESSOR

For fans of Dupla equipment, there's a brand-new product — an aquarium micro-processor. Dupla MP 'regulatory' and measuring equipment works by means of an integrated micro-processor which performs two essential functions:

① It tackles all data numerically. This means that incoming information is transformed into a series of signals — a technique so different to traditional ones that the manufacturers compare it to the difference between a normal record and a compact disc.

Minor fluctuations are totally eliminated by the new equipment, while major ones produce only minimal effect. In addition, the micro-processor is capable of carrying out very rapid calculations and never gives a single value but, rather, an average obtained from the incoming readings.

② The Dupla MP series can also carry out other operations, e.g. they possess an alarm signal and an 'intelligent' regulatory device.





Jason Endfield

# THE FAX CONCERNING SIBERIAN MONSTERS



Jason Endfield should have known better. It's sometimes difficult enough sending a fax to the nearest aquatic shop ... but Siberia?

**H**ave you ever tried to contact somebody in Siberia? Well, if you haven't, don't bother — it's virtually impossible, especially when you are investigating something that might be regarded by some as a 'sensitive' matter. I was compelled to try after seeing a newspaper report a short time ago (which some readers may have noticed) — just a few lines telling the world about an aquatic 'monster' sighting in Siberia.

The creature had been spotted by 'dozens' of locals in the remote village of Sharipovo; it was seen in and around a lake and was "snake-like, several yards long ... and had a sheep's head."

Yes, it sounds a bit bizarre to say the least, and sceptics would say somewhat unbelievable; yet, why, I wondered, would remote Siberians want to invent such a tale? Apart from publicity, what could they hope to gain — and why would they desire publicity anyway?

Well, I pride myself on having an open mind (some would call it an empty mind ...) about such matters, and being an intrepid and adventurous aquarist, I decided to investigate. I toddled off down to the library because, according to my atlas, the village of Sharipovo didn't exist (one/nil to the sceptics!). Strangely enough, the place was only listed in one enormous volume of an atlas at the library; nevertheless there it was — not actually in Siberia proper, but in the Bashkir Republic.

Step one of my mission successfully accomplished, I pondered on what to do next. Although my passport is up-to-date, I wasn't quite ready to undertake a journey into deepest Bashkir, though the idea did cross my mind — would AGP fund my fact-finding mission, I wondered? [Forever an optimist! Ed.] Having come to the conclusion that they might not [That's more like it!], I thought about writing to someone in Sharipovo; but that could take months, and even then there would be no guarantee that my letter would get there, or that they could

understand English, or that 'they' (whoever the recipient of my letter might be) would write back offering further details of 'Strangus monstrus'.

Then I hit upon the idea of sending a fax! Of course, I thought, a fax was the obvious answer — instant results! The nearest major town to Sharipovo is Ufa; I was sure that there would be at least one major newspaper there, or even a school or a University, with a fax machine to receive my urgent enquiry.

I knew I could get access to a fax machine here and, as I made my way home from the library, I day-dreamed about writing the 'world exclusive' on this newly-discovered amphibious species and about the reams of eye-witness reports that would soon arrive on my desk direct from Bashkir, thanks to the wonders of 'fax'.



I got home and 'phoned British Telecom International Directory Enquiries. I got through first time (things were looking hopeful!). "Siberia please," I said, "I need the fax number of a newspaper or a school — actually, any fax number in Ufa, please." I spoke positively.

A bewildered Scottish gentleman at the other end of the line asked me to hold; I didn't have to hold for very long.

"I'm sorry," he said, "I've no numbers listed at all for that place."

"Well, how about a telephone number?" I asked desperately.

"No, nothing listed," he said.

I had my atlas with me. "Well," I said, "the nearest major city to Ufa is Kuybyshev; surely there must be something listed for there?"

"No," replied the weary operator.

"Nothing at all."

I began to suspect a major international cover-up — like in one of those spy films — were 'they' trying to stop my investigation? No, 'they' probably couldn't care less.

The operator and I exhausted the list of towns and cities in the then Soviet Union and Central Asia; there was a number listed for Macdonalds in Moscow, but I decided that they would be of only limited help as I thanked the operator, who I suspect went off to lie down in a darkened room, and I pondered in frustration about my Siberian aquatic monster.

As I mused, I flicked through the pages of an old aquatic book I have, stopping at a chapter entitled *Sea Monsters & Co.* There was an illustration taken from a sixteenth century woodcut. To my astonishment, staring at me from the picture was an animal that perfectly fitted the description of *Strangus monstrus!* The accompanying notes informed me that the animal was a 'Hydrae' that 'inhabited Northern waters'. That's it I thought! ... And that's where my investigation ended — at least for the time being.

Having solved that mystery, I leisurely read more about the subject of 'mythical' animals that nearly always seem to be aquatic. It seems that up until the end of the nineteenth century, it was rarely doubted that such creatures existed — even scientists, naturalists and zoos then acknowledged the existence of 'Sea Serpents'.

Regular sightings continue to this day and, whereas 'Nessie' might be considered somewhat fanciful in modern scientific circles, there is, in my opinion, no good reason to doubt the actuality of hitherto undescribed species in remoter parts of the world. Like our Hydrae living in Sharipovo.

We don't know for sure that they're real, but as one who knows a bit about the wonders of underwater life, I really believe that we have no right to dismiss the possibility. I stake my reputation ( ... reputation, what reputation?) on the fact that some of these wonderful creatures do indeed share this planet with us.

Well there we are. I'd welcome any strange 'monster' sightings from readers, though it would make my investigative journalism much easier if they could appear in more accessible regions — or for that matter, if BT issued a telephone and fax directory for the Bashkir republic. ...



# Tomorrow's Aquarist

By Gina Sandford



**W**ell, I didn't make a roll call wide enough last month! Two days after writing the instalment, I received a letter from Australia. So, I'll begin this piece with, "G'day Warners Bay!" I wonder where else this journal is read around the world — Falkland Islands, Japan, Singapore, Brazil — who knows?

## WANTED: KOI AND GOLDFISH PEN PAL

The Australian missive came from **Rodney Ingersoll**, a Goldfish and Koi addict who is breeding and selling Goldfish in order to finance his latest project — a new pond, 4 x 3.2 x 1m deep (c 13 x 10.5 x 3.3ft). He says, "This pond has given me heaps of trouble, as it has decided to leak on me".

Rod's request is twofold: the first is for any old books or pamphlets you no longer want, as he is seeking information about Koi (I think any information on how to build ponds that don't leak or how to repair leaky ones would also be appreciated!). The second request is for a pen pal, male or female, with the same interests.

So, if you want to communicate with someone from the other side of the world, or can help with information, write to **Rod, 9 Martin Street, Warners Bay 2282, N.S.W., Australia.**

## FOOD FOR FREE

The other day I went down to my allotment, armed with the usual implements — fork, basket, bucket, fish net... yes, I did say fish net. Why? To get my live food.

On the plot next to mine is a large water butt, and it teems with mosquito larvae — just the thing for my fish! But before dabbling in the water butt, I asked the owner's permission and also checked to see if he had added any fertilisers, because my fish would not appreciate food laced with fertiliser.

Now, while I'm not advocating that you all invade your local allotment sites (the plot holders get very annoyed with unknown people wandering around their sites, and rightly so), I am suggesting that you can all have live food free.

All you need is a container to hold water — an old bucket or large ice cream container will be fine. Then, when doing a water change on your tank, three-quarters fill the container with tank water, put it outside and, with any luck, you should be able to collect some mosquito larvae in a couple of weeks.

As we all know, mosquitoes fly, but what you may not have realised is that the first part of their life cycle is aquatic. The eggs are laid in rafts that float. When they hatch, the black larvae are excellent food for your fish. To complete their life cycle, they then pupate before hatching into the adult mosquito. Incidentally, it's only the female mosquito that bites so,

before you flatten the next one, just check on its sex!

## GROW YOUR OWN

For the past two or three years, I've had great fun growing unusual plants from seed, mostly American species from Utah, Colorado and Arizona — cacti, yucca and other desert plants.

It wasn't until I was chatting with a friend that it came about that he had bought seeds of aquatic plants from the same company that I had used. Why hadn't I thought of that? For that matter, I don't even remember seeing some of the species in the catalogue. Mind you, there are so many seeds on offer, I guess it was a case of not being able to see the wood for the trees!

Out there, among all the millions (wishful thinking!) of TA readers, there must be a percentage who love plants. How about a challenge? Why not try and grow some aquatic plants from seed? These needn't be exotic species; some companies specialise in our native species; the choice is yours.

Imagine your pond next spring with a group of Marsh Marigolds (*Galba palustris*) that you have grown bursting into bloom. However, don't forget

that this is a challenge; you have to decide on the germinating conditions, type of soil and what is necessary to grow the plants on, so some research will be needed on your part.

I get my seeds from a company called **Chiltern Seeds, Bortree Stile, Ulverston, Cumbria LA12 7PB**, but there are other companies who sell them. Just look in the gardening papers. Whatever you do, do not be tempted to collect the seed from the wild. Good luck, and let me know how you get on.

## WHAT NEXT?

I have written the April and May editions of TA without really knowing what you, the reader, want from this column.

I hope to run some competitions. I also thought about a glossary, with one or two terms explained each month but, would this be of help to you?

For instance, I know that when I started keeping fish I was confused by the fact that some books and lecturers referred to 'pelvic fins' and others to 'ventral fins', but not to both in the same book or lecture.

I began to think I was missing a pair of fins somewhere along the line, or even thinking that fish had both sets of fins! Then I discovered that they are one and the same thing. My *aide-mémoire* was that as they were positioned next to the vent, they were therefore ventral fins.

However, our editor refers to them as pelvic fins and believes that this is the correct English version and mine is an Americanism. This is probably the one and only time he'll let me get away with using the term 'ventral fins'! [Well, maybe... maybe not! Ed]

So, please let me know what you think about the last two issues of TA and, more importantly, what you would like to see in the future.



The mosquito pupa hangs at the surface breathing through special 'tubes' on its back. It remains as a pupa for up to 48 hours so, if you are feeding these to your fish, make sure they are eaten, or you may meal for a swarm of hungry female mosquitoes!

Please send all correspondence for TA to:  
**Gina Sandford,  
Tomorrow's Aquarist,  
Aquarist & Pondkeeper,  
9 Tufton Street,  
Ashford, Kent  
TN23 1QN**



# Seaview

By Gordon Kay

It's amazing how months can go by without me hearing about anything world-shattering, then enough to fill two or three Seaviews comes in all at once. Still, 'twas ever thus, so I shall stop prattling and get on with it.

## DOLPHIN CAMPAIGN UPDATE

You must all know by now the story of Alan Cooper, the anti-dolphinarium campaigner who went to court charged with "outraging public decency" with Freddie the Amble Dolphin.

I thought it would be rather nice to put the story to bed once and for all with a little footnote on what Alan has been up to since his acquittal. Doug Cartledge, an ex-dolphin trainer who became convinced that keeping dolphins in captivity was morally wrong, said after the trial that it had all "exposed a sinister plot by the dolphin industry to intimidate and discredit a man of great sensitivity and integrity who was campaigning against keeping dolphins in prison".

Now, on the face of it, that statement seems a touch melodramatic, but the more I thought about it, the more I thought he could be right. Stranger things have happened, especially when one considers that Alan was receiving death threats (and 'phone calls in the middle of the night!) at the time of the trial.

Meanwhile, after the trial, Alan had sworn to continue with his mission to see the captive dolphins freed. Well, he is as good as his word, and was back in the news again in January when he was pictured

with a group of supporters, carrying a dolphin-shaped coffin in a peaceful picket outside a dolphin-holding establishment.

His campaign still goes on and I would ask that anyone interested write to Alan Cooper at PO Box 11, South East District Office, Manchester M18 8GU.

## 'HONORARY' FREDDIE

Still on the subject of Freddie (well we were, loosely) he can no longer be referred to as the 'Amble' Dolphin — he has moved! Apparently, he arrived further down the coast of Tynemouth, Northumberland in early March and the local Chamber of Commerce immediately elected him as an honorary member! The local business community reckon that he will boost trade by attracting tourists.

I think that's lovely and choose to look beyond their apparent pre-occupation with profits, because the Chamber President, Alan Slade, said: "This is our way of welcoming him. He even has his own framed membership certificate".

## JUNIOR FAROE LEAD

Regular readers will have read on this page about the plight of Pilot Whales on the Faroe Islands. Hundreds are slaughtered there in mass blood-letting. Well, the International Dolphin Watch launched their Pilot Whale Project sometime ago, in an attempt to put an end to this massacre and, apparently, one junior member (I don't know

who) came up with the plan to contact as many children as possible in the Faroes and Denmark.

By now, envelopes containing a poster imploring children to help, have been sent to all Danish High Schools. We certainly have a lot to learn from children, who seem far more caring and switched on when it comes to our environment and the other animals which share our planet.

South Hunsley School ran a poster competition and one that I particularly liked came from 11-year-old H Shore (I wish I knew your first name, 'H!'). There was a picture of a dolphin with the words:

## PROTECT

**D**OLPHINS AND WHALES NEED PROTECTION AND CARE

**O**CEANS ARE THEIR RIGHTFUL HOME ENVIRONMENT

**L**OVED BY MOST PEOPLE FOR THEIR FRIENDLY AND TRUSTING NATURE

**P**ROTECTION IS NEEDED FOR DOLPHINS AND WHALES

**H**ORACE DOBBS IS A WELL-KNOWN STORY WRITER ABOUT DOLPHINS

**I**NFAMOUS DRIFT-NETS KILL DOLPHINS AND WHALES

**N**EW NET DESIGNS ARE NEEDED TO KEEP DOLPHINS ALIVE

**S**TOP SLAUGHTER!!!!

Why don't we all follow the children's lead? Write to: Prime Minister Jogvan Sundstein, Box 64, RF-11, Torshavn, Faroe Islands, AND to Mr Rudolph Thorning-Peterson, Ambassador for Denmark, Danish Embassy, 55 Sloane Street, London SW1.

Please do it. I've seen this barbaric spectacle and, believe me, it's vile.

## CORKY THE ORCA

Orcas (Killer Whales) are highly social animals who, in the wild, spend their lives in

close groups which only death — or capture — can break. There is one Orca — Corky — who has been deprived of this for the last 22 years in San Diego's Seaworld. Not only has Corky lost this family bonding, but she has suffered the incalculable trauma of losing each of her seven calves — primarily, it seems, because she was captured before she had learned the rudiments of maternal behaviour from her own mother.

Since 1970 Corky has been walked on, ridden on, climbed over and generally (in my opinion) been made a fool of, solely to entertain man. Surely, it's time to give her a break.

All through 1991, many moves have been made to secure her release. Sadly, they have failed, so I believe it's time to introduce some 'people power'. I know that I've asked you to spend a lot of time writing, but each issue is important.

Time is running out for Corky in captivity. She is believed to be around 26 years old and at the upper limit of a captive Orca's life expectancy. However, in the wild, she could expect to live for another 25 years and, possibly, much longer.

Please send a personal letter to: August Busch III, Grants Farm, 10501 Gravois Road, St Louis, MO63123, USA.

## GOOD BEACH GUIDE

Closer to home, in March of this year, the 1992 *Heise Good Beach Guide* was launched in conjunction with the Marine Conservation Society.

This year's guide has been thoroughly updated and revised. It now includes a detailed section of how readers can get involved in the campaign to increase the degree of treatment of sewage and the dumping of litter at sea and on beaches. It also shows the lack of impact that the 1995 Compliance Programme is having so far.

MCS needs to keep pressure on the Water Companies and may need our help. The guide is available from: MCS Sales, 9 Gloucester Road, Ross-on-Wye, Herefordshire HR9 5BU.

Meanwhile I'll be with you next time. . .



IAN HEINT



# Letters

## Sex Colour Changes in Mbuna: Assistance Sought



A mated pair of *Melanochromis*. In this shot, the male is much darker than the female... but will this change?

I am writing to ask for help from any of your readers who have kept Mbuna over the years. I have for a long time been studying the phenomenon of *Melanochromis* females altering their 'normal' coloration to one closely resembling that of the male. In fact, the first piece I ever wrote about fishes was on this subject.

Some time ago, Dr Eithelwynn Trewavas, well known to cichlid keepers for her work on African Cichlids, asked me to collaborate with her on a paper on this subject, and in the course of writing this, we have realised that it would be helpful to ask Mbuna-keepers (past and present) to supply us with details of any females they may have owned that behaved in this way. So, if anyone would like to help, please let me have the details listed below, using a separate sheet of paper for each female. Please send your replies to me care of *AGP*.

- ① How old was the female when she changed to male coloration? If you don't know her age, how long had you had her, and what size was she when you got her?
- ② What size was she at the time of change (Standard Length)?
- ③ Was she wild or tank-bred?
- ④ Under what circumstances did she change; e.g. was she in a com-

munity or by herself? Was a male of her species present? If so, was she bigger than him, or above him, in the pecking order? Were there other females of her species present? Did any of these change?

tribution to scientific knowledge. I therefore hope that you will all help if you can.

Many thanks to you all in anticipation of your help.

Mary Bailey,  
Devon

ACA  
23 Castlegate,  
Grantham,  
Lines NG31 6SW  
Tel: 0476 61008; Fax 0476  
60900.

R W Earle,  
Rotherham, Yorkshire.

## Hagen's Show Support

We have read Messrs Mayles' letter (*AGP February 1992*) regarding Hagen-sponsored show prizes. Our comments are as follows:

We feel that Messrs Mayles may have got hold of the wrong end of the stick, or should we say fishing rod? We would like to set the record straight in the event that there are others who may have misunderstood our intentions.

Rolf C Hagen Ltd, in co-operation with the Federation of British Aquatic Societies, decided that the primary method available to us for supporting the organised hobby was through Open Shows. We also decided that we would not be selective with our support. Any society holding an Open Show (as well as some specialist societies' shows) would be eligible to receive a Hagen Nutrafin Open Show Pack. The Federation of British Aquatic Societies agreed to organise the scheme and deal with the distribution.

We are pleased to confirm that the same offer is again available to all societies during 1992, i.e. coverage for all their open Classes (up to a maximum of 50 Classes); the Best in Show Award will also include the much sought after Nutrafin Champions Sweatshirt. Do not delay; any society organising an Open Show in 1992 should apply at once to:

A Henderson,  
5 The Nook,  
Corby Village,  
Corby,  
Northants NN17 1AX.

You may rightly say "What about those societies that do not hold Open Shows? Are they always to be left out?" Certainly not, neither by the FBAS, nor Hagen! By now, all known societies should have received a Nutrafin Society Gift Pack. If

## Cleaning Up our Natural Waters

I would like to reply to the letter from Jerzy Gawor **Where Have All The Clean Coasts Gone?** (*AGP Feb 92*).

What can we do? I think I have the answer. One of the problems concerning the pollution of rivers, ponds and estuaries, was the reluctance of the water authorities to prosecute (often because they are polluters).

So, many years ago, anglers, alarmed at poor water quality, realised the need to stop polluters by private prosecution. As individuals or small angling clubs, it was not possible to find the large legal fees required, so the Anglers' Co-operative Association was formed to raise money to prosecute the criminals poisoning our waterways, and to claim compensation to restore the health of the water and replenish fish stocks.

It is in the interests of everyone in this country to have clean unpolluted waters. The Anglers' Co-operative is always desperate for funds, and would be delighted, I'm sure, to enrol hundreds of thousands of concerned aquarists.

The subscription is £5 per year and is a positive way of stopping this menace. HRH the Duke of Edinburgh is the ACA Patron. Further information can be received from:

Don't worry if you can't answer all the questions; we are planning to tabulate the information and look at the data from a statistical point of view, so every question you can answer is of value. If there is anything else you think relevant or interesting, please let me know that too. Our primary interest is *Melanochromis*, but please also give details of any other Mbuna (or other Malawi cichlids) with marked sexual dichromatism (colour differences between the sexes) which have exhibited this behaviour.

This is an opportunity for you to make a valuable contri-



not, ask your Secretary to contact Mr Henderson for yours; remember Hagen's support is total support, not just for the showing fraternity.

While much of Messrs Mayles' concerns have been dealt with above, there are a few specifics, for instance, when Mr Mayle seems preoccupied with 'certificates'. Since Hagen have not given out certificates, we can only assume he is alluding to the 'place' Show Cards. Societies issue Show Cards to the winners and we assume societies will continue to do so. Hagen do not give out either certificates or Show Cards — they give goods, power heads, filters, Nutrafin Foods etc.

Conservation has become an issue of general interest and, if not already, it will soon become an issue within the hobby, and rightly so. During 1992, Hagen and the FBAS are inviting societies to think about both conservation and the hobby and see if they can nominate a suitable Class at their Open Shows for a Special Award which will include a Nutrafin Sweatshirt.

Breeders, Pairs and Cultivated Fish Classes are typical conservation examples, whereas

Furnished Aquaria and Aquascape Classes can be considered as promoting the hobby. Societies will be at liberty to nominate any Class they wish,

although they should state on what grounds they are seeking special support for their nominated Class. Please note that this is an extra award. There is

no question of Hagen reducing Society Support; they are, in fact, increasing it.

Federation of British Aquatic Societies.



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# Paper Round

By Dr Ian Winfield



## BARBEL MOVEMENTS REVEALED BY RADIO

Although the Barbel (*Barbus barbus*) has been spreading in UK waters in recent years, some of the populations of this species in mainland Europe have declined over the same period. Not surprisingly, this latter trend has prompted considerable conservation research, including work by Etienne Baras and Benoit Cherry at the University of Liege, Belgium.

One research priority is to identify which particular parts of a river are used by Barbel. By the use of state-of-the-art radio-tracking equipment, Baras and Cherry followed the movements of two female Barbel in the Ourthe River for 86 days, including eight continuous 24-hour periods, during the spring and summer of 1989.

Both fish largely confined themselves to a 1.6km home range, within which they each had a number of residence areas. The area covered over the course of a day was strongly influenced by river flow, while the timing of activity was primarily influenced by temperature.

With the exception of the spawning week, when activity was restricted to the daytime, most movements occurred at dawn and dusk, when the fish occupied shallow, fast-water areas.

Future work by the two researchers will look at winter distributions and movements, and the homing mechanisms used by the Barbel.

(Source: *Aquatic Living Resources* 3, 283-294)

## FISH KILL ON AN AFRICAN SCALE

Fish kills are, unfortunately, common events in European waters, but at least we do not have to contend with mortalities on the scale recently witnessed on Lake Victoria by Peter B O Ochumba of the Kenya Marine and Fisheries Research Institute. The Nyanza Gulf of this huge lake can be greatly affected by violent storms, during which nutrient-rich bottom mud is mixed with sediment-laden runoff water from adjoining marshes and rivers.

One such storm in 1984 resulted in the death of approximately 400,000 fish weighing over 2,400 tonnes. The main species killed were Nile Perch, *Lates niloticus*, and Tilapia, *Oreochromis niloticus*. The fish were probably killed by a combination of several factors, including high levels of suspended material (detritus and algae) which clogged gills, low levels of dissolved oxygen of between 3.2 and 4.8 mg/l, and a rapid reduction in pH to between 6.0 and 7.6.

Ochumba states that, while

the storm was the proximate cause of the kill, the ultimate cause was massive algal blooms and their subsequent breakdown. The blooms themselves are the result of organic pollution in Lake Victoria's drainage area.

(Source: *Hydrobiologia* 208, 93-99.)

## STREAMS, SHINERS AND SOURCES OF FOOD

The importance to small streams of organic material originating from the surrounding land has long been appreciated by stream ecologists. Greg C Garman of the Virginia Commonwealth University, USA, has now found that invertebrates originating from terrestrial habitats are also important as a direct food for the Rosefin Shiner, *Notropis anodens*, a major cyprinid fish of Virginia streams.

During the summertime, when stream-dwelling invertebrates are relatively rare owing to emergence and other factors, terrestrial prey are found in abundance on the surface of the open water and dominate the diet of the shiners. However, when the availability of terrestrial prey was greatest during the spring months, they were consumed only rarely.

Garman suggests that this seasonal difference is because food supplies in the stream itself are adequate for the shiners during the spring, and so they do not forage in the open

water habitat of the stream where they are, themselves, more liable to predation by Bass (*Micropterus*), Pike (*Esox*) and Belted Kingfisher (*Ceryle alcyon*).

(Source: *Environmental Biology of Fishes* 30, 325-331.)

## NEW ZEALAND DOLPHINS (I)

While New Zealand is well known for its unique land animals, this part of the world also has a claim to fame in the sea mammal stakes, because Hector's Dolphin (*Cephalorhynchus hectori*) is found only within its waters.

Sadly, like other dolphins, this species is regularly entangled in coastal gill nets. Elisabeth Slooten, of the University of Canterbury, New Zealand, has recently studied the age structure, growth and reputation of this small cetacean, since such information is essential to assess the impact of the gill nets on Hector's Dolphin, and so to construct appropriate conservation measures.

Slooten was able to gather information from 60 dolphins found washed ashore and killed incidentally in fishing gear. Individual ages were determined by counting growth layers in the dolphins' teeth, which, unlike those of terrestrial mammals, are not shed. The maximum age of males was found to be 20 years, while that for the females, which tended to grow larger, was 19 years. Males reached maturity between six and nine years of age, while females produced their first calf when they were between seven and nine years of age.

Given these statistics, which are typical of small dolphins, and a calving interval of two to three years, a female Hector's Dolphin could produce a maximum of four to seven young in her lifetime.

This investigation also suggested that Hector's Dolphins have a promiscuous mating system, rather than staying with a single mate for life. If such a system does operate, it has important implications for the population dynamics of this species because, in a low density population, there are likely to

Barbel. Radio-tracking reveals dawn/dusk movements of this bottom-dwelling species.



CLAUDIA E. PEREIRA



be times when a fertile female is not accompanied by a mature male, and so misses the opportunity to reproduce.

(Source: *Canadian Journal of Zoology* 69, 1689-1700.)

### NEW ZEALAND DOLPHINS (II)

Following the above study, Elisabeth Slooten collaborated with Frank Lad, of the Uni-

versity of Canterbury, New Zealand, to examine the possible patterns of population growth in Hector's Dolphin.

By taking the data on age structure, growth rates and maturity patterns gathered in the above study, and entering them into computer population models, Slooten and Lad found that Hector's Dolphin has the very low population growth rate typical of small dolphins and

porpoises. At most, the population can increase by just 5% in numbers each year, although a more likely value is less than 2%.

This low growth rate gives some cause for concern, given that the total number of Hector's Dolphins is estimated at only 3,000 to 4,000 individuals, and that the numbers lost to gill nets each year are probably greater than the numbers pro-

duced according to even the most optimistic models. On a more positive note, Slooten and Lad remark that their population models formed part of the work which led to the establishment of a Marine Mammal Sanctuary which now protects, at least, part of the Hector's Dolphin population from the ravages of gill nets.

(Source: *Canadian Journal of Zoology* 69, 1701-1707.)



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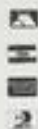
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The Brown Snakehead (*C. gachua*) is one of the smaller species, growing to an average size of 15-20cm (6-8in).

# SNAKEHEADS *Part 3*

## Aquarium Care

Stephen Clark completes his review with advice on captive care, plus news of a first-ever spawning.

**T**o simplify the subject of maintaining Snakeheads adequately in aquaria, we must first categorise them according to adult size attained by the 23 species of the genera *Channa* and *Parachanna*. It should be stressed that 'small', 'medium' and 'large' are relative terms, of course.

**Small species (up to 300mm — 12in)**

- |                       |                          |
|-----------------------|--------------------------|
| <i>C. asiatica</i>    | <i>C. orientalis</i>     |
| <i>C. bankanensis</i> | <i>C. mauerhodes</i>     |
| <i>C. biotriata</i>   | <i>C. pleurophthalma</i> |
| <i>C. burmanica</i>   | <i>C. punctata</i>       |
| <i>C. gachua</i>      | <i>C. siamensis</i>      |

**Medium-sized species (300-600mm — 12-24in)**

- C. lucia*
- C. maculata*
- C. melanostoma*
- C. stewarti*
- P. africana*
- P. insignis*
- P. obscura*

**Large species (over 600mm — over 24in)**

- C. argus*
- C. barca*
- C. maurusia*
- C. melanoptera*
- C. micropeltes*
- C. striata*

**SMALL SPECIES**

A pair of the dwarf-sized species, such as the Smooth-breasted Snakehead (*C. orientalis*) or the Brown Snakehead (*C. gachua*) — approximate size: 150-200mm (6-8in) will



*Channa maculata*, the Hei-yu can be classified as a medium-sized species, i.e. species grouped in the 30-60cm (12-24in) category.





Mud Murrel (*C. punctata*) fry (the first record of a successful UK spawning) at around 3cm (1.2in).



The immense 'graceful' power of snakeheads is beautifully shown in this 'action shot'.

feel comfortable in a standard 90 x 45 x 30cm (36 x 18 x 12in) all-glass aquarium with a simple water filter. A tight-fitting lid, preferably glass, is a definite advantage, owing to the persistent jumping that certain individuals go in for.

Although predatory, these fish seem to be nervous or flighty if moderate lighting is not given. Snakeheads of this length are terribly shy and a decision must be made either to create a backdrop of aquarium plants, or the swirling muddy biotope I have so often seen in the wild.

My preference is for the latter. These conditions are accomplished by the addition of aquarium peat, but if you want to see your fish, be willing to hunt for your specimens! Always remember to clear unnatural obstructions to the water surface, though, as all Snakeheads breathe atmospheric air and, if prevented from doing so, will asphyxiate.

Other small-sized species (up to 300mm — 12in), if kept singly, may be accommodated in a tank as above, but feel more comfortable if the decor is 'rocky' with a suitable robust cave (situated at the front of the aquarium for easy viewing) and a soft gravel base. A water temperature of between 24-28°C (75-82°F) is quite adequate. I have taken *C. gachua* down to 13°C (55.4°F) in gradual changes in temperature, but sudden changes will almost certainly kill, especially if they are towards the lower temperatures.

All small Snakeheads can be trained to take beast heart, worms and other chunky foods. Insects are also a good food. In particular, maggots present a tasty morsel when they turn to flies. So, instead of spraying harmful insecticides into the air, the bold among us can go hunting for Snakehead fodder and watch our excited specimens lunge to the surface for their prey, just as they hunt in the wild.

Other foods found in the digestive tracts of Snakeheads have been ants, crustacean fragments, crabs and even gravel! This is not surprising to experienced Snakehead keepers who frequently watch their pet take food and gravel simultaneously when searching the aquarium base.

#### MEDIUM-SIZED SPECIES

As the size of the fish increases, the precautions against the destruction of your holding area does too. Medium-sized fish just love climbing out of their aquarium in search of their 'master'. One such story is of my brother's Hei-yu (*Channa maculata*) being tucked in its watery bed for the night, only to be found the next morning dried up on the carpet (it did survive, however).

With such species, we must move to 10mm (0.4in) thick glass and a tank measuring 120 x 45 x 45cm (48 x 18 x 18in) minimum... and we mustn't forget to include the lid!

Remove rocks; they will only cause the fish to damage itself. An undergravel filter with a top layer of 75mm (c 3in) of coarse gravel with a shortened uplift tube of maybe 100mm (4in) is safe; any longer, and you will spend the majority of your time re-aligning the tube's position, owing to the 'devilish' nature of some specimens. Beware of unprotected internal heaters, too; an excited Snakehead will casually smash glass.

You can filter the water if you wish, but without a deal of water movement and with a monthly water change to freshen the environment. Water temperature and pH can be kept to average aquarium conditions. If you feel you would like a tankmate for a fish of this size, please choose it well, as a Snakehead can devour another fish two-thirds of its own size. The once-lucky *Channa maculata* (at a size of 400mm — 15.7in), I mentioned earlier, finally met its downfall by attempting to eat a large Armoured Suckermouth Catfish (300mm — 12in) head-first. Both fish died; the Snakehead of asphyxia!

#### LARGE SPECIES

We now meet the 'biggies', past 600mm (24in), rippling with solid muscle — a body builder's dream! A 180 x 45 x 45cm (c 72 x 18 x 18in) or a swimming pool would be desirable, depending on the size of your prized specimen.

It is now time to opt for a powerful outside filtration system and a reinforced heater (shielded thick plastic); when a fish of this size gets angry, anything goes.

Be careful with water changes, as a large Snakehead thrashing around can cause considerable damage, both to its surroundings and to itself. Watch out also when feeding, not to confuse the fish by dangling a tasty human finger on the water surface.

One of the large species, and certainly the most geographically Northern (North-western China and Western Russia) is the Amur Snakehead (*Channa argus wuyangensis*) which has been kept alive under ice (with sufficient air holes), in ponds. At the other end of the scale it has also survived temperatures up to 40°C (104°F). In the aquarium, a temperature between 14-22°C (c 57-71.5°F) is reasonable for this fish which, owing to its ability to survive in the most severe habitats, makes carefully maintained water conditions not essential.



**NOTE:**  
 Part 1 of the series — Snakeheads: The Species and their Distribution — appeared in the November, 1991 issue of *A & P*.  
 Part 2, entitled — Snakeheads: Thoughts on Classification — *Channa gachua* and *C. orientalis* — was published in *A & P* in February, 1992.

Another predator, such as the River or Giant Murrel (*Channa marulius*) can live to an age of 10 years and prefers to eat fish of all sizes, shrimps, prawns and crabs. Juveniles feed more frequently, and take in more food per unit of body weight, than adults. Giant Murrels feed at all levels of the water, and the majority of the food intake occurs during the daylight hours.

In their natural environment (except when breeding) they tend to be 'lone wolves', mostly lying under cover waiting for their prey of frogs, tadpoles, insects, worms and other fishes. Fish particularly bred for sale as food in their native countries, are fed animal offal, so you can imagine that you will never find difficulty in devising a tasty menu for your pet!

#### CLOSING REMARKS

Owing to their ability to inhabit filthy conditions in the wild, Snakeheads rarely suffer with diseases in the aquarium. However, quarantine wild-caught specimens

well, and particularly look for fungal fin rot or the first signs of dropsy.

Finally, check before buying that the eyes

are clear. Look out also for the presence of crustacean parasites, such as *Argulus*, on the body of the fish.

#### POSTSCRIPT

Since completing the writing of this series, I have obtained a spawning of the Mud Murrel or Spotted Snakehead (*Channa punctata*). Although the spawning occurred more by accident than design, it is still worth mentioning because it is the first record of this species having bred in captivity in the UK.

*Channa punctata* grows to a maximum size of 10in (25cm) and originally hails from India, Pakistan, Bangladesh, Sri Lanka and Burma.

I couldn't resist the opportunity of buying a secondhand water tank measuring 32ft (yes, feet!) x 8ft x 4ft (9.75 x 2.4 x 1.2m) with only one thing in mind — breeding Snakeheads. I guessed that, half full, it would hold about 2,000 gallons (c 9,000 litres). However, it had a leak but, with more to do than just cure this minor problem, I just carried on regardless.

An import of brood fish from a German wholesaler soon arrived, consisting of two Striped Snakeheads, *Channa striata* (which turned out to be Brown Snakeheads, *Channa gachua*) and 30 River Murrel, *Channa marulius* (disguised as *Channa punctata*). The *C. punctata* settled in nicely and basked in the midday sun shining through the greenhouse, with tempera-

tures fluctuating between 54°F (c 12°C) to the upper 80°Fs (around 30°C). A handful of maggots were thrown in daily as food.

The fish were sexed by the pin-head black spots on the males' yellow under bellies, while the females displayed diffused black blotches in this region. The size of fish ranged from 4-6in (10-15cm).

A natural slope had occurred in the base of the tank so that, at one end, the water was 8in (20cm) deep and only half this depth at the other. The fry were found in the latter region. They were small for a Snakehead — only about 5mm (0.2in) long, all huddled together in a corner, with no sign of a nest.

I scooped a hundred of the attractive little fish into my bucket and placed them in an observation tank for close scrutiny. The coloration on the body consisted of two crisp, sharp bands above and below the lateral line; the mid section was cream and, on the surface of the head, there was a diamond-shaped off-white patch. They busied away, moving around as a group, greedily chewing the newly-hatched brine shrimp I fed them.

After three months, the lateral stripes have broken into a characteristic blotched pattern and they have attained a size of 50mm (c 2in).

M J QUINLAN  
 South Wales,  
 CF48 4BZ.

Dear Sir or Madam,

I've just recently set up a tropical aquarium and, having introduced fish from several different shops, I've acquired a terrible outbreak of whitespot. I've spent a considerable amount of money on cures but none were effective until I was recommended to use WATERLIFE 'PROTOZIN' which I am very pleased to say has done the trick perfectly. Thank you for a wonderful product.

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# What's your opinion?

By Billy Whiteside,  
BA, ACP

## Silver Jubilee Edition

25  
YEARS



Welcome to the Silver Jubilee edition of W.Y.O.? 25 years ago this month, the first W.Y.O.? was published in *A & P* and I vaguely hoped that my idea might run for about six months. Well, I got that bit wrong anyway! The reality is that, allowing for a short break I had a couple of years ago, I have now been producing W.Y.O.? for half of my life — literally!

Beside me I have 21 letters from readers, so I'll be able to use only a few of them this month. I'd like to thank all the many readers who have written to me over a quarter of a century — and our editor, John Dawes, who's kind enough to give me an occasional phone call to remind me that my W.Y.O.? copy is overdue.

Incidentally, have you noticed the giant strides forward being made by *A & P* in quality of content, presentation, readability and size? Last month's issue contained 140 pages — the largest issue ever — of good articles, photographs and advertisements.

As one of the old-hands on the magazine, I feel able to say 'Well done!' to John Dawes. The magazine is growing from strength to strength. (You flatterer, Billy! Thanks a lot for the compliment. Ed.)

### BLAST FROM THE PAST

Brian Curtis, of 51 Kings Road, Glemsford, Sudbury, Suffolk, was surprised to see his name in the February 1992

issue of W.Y.O.? because he last wrote to me around January 1986.

Brian tells me in his latest letter, that since 1986, he has married and moved to Glemsford — and he's still a reader of *A & P*. "I've been reading *A & P* since 1972," he writes, "and am rapidly running out of space in which to keep the magazines. Is there a market for back issues?" he asks.

Brian continues: "My fishkeeping now consists of a community tank with Clown Loaches, Gouramis, Neons, Glowlights, Zebras, Black Widows and Rummy-Nosed Tetras; plus a garden pond with Goldfish and Orfe. You asked about pond care in winter. I always remove all dead lily leaves, etc, before winter and install a pond heater to keep an area ice-free. Feeding of the fishes is stopped until the water begins to warm up again, and the pond virtually looks after itself". [It's good to hear from you again, Brian. B.W.]

### PROPER U/G USE

Mary Bailey, the popular writer of articles about cichlids, is treasurer of the British Cichlid Association and resides in Devon. She tells me that she has been meaning to write to me on numerous occasions over a 20-year period, but has just now got round to it!

Mary writes: "Firstly, sorry to hear about your problems with Angels. I wonder if you have checked the level of nitrate in your tank. The die-off of the algae may have hugely increased your nitrate level, to the gradual, rather than immediate, detriment of the occupants. It might be worth your while checking this, and if you find there is a high level, change water like mad to get it down — assuming your tap-water has a low level. If it doesn't, then you will need to treat the tapwater first.

"I am writing with regard to u/g filtration (*A & P* March 1992). I have been using this form of filtration for about 18

years, and use other types only rarely. I have found it adequate for all types of cichlids — from dwarfs up to Uaru — but it is important to understand how it works and to use it properly. Far too many aquarists fiddle with it, and the process of constantly disturbing the filter bed is to be deplored.

"It's true that, over a long period of time, the filter bed will become filled with a fine sediment, but this is the inert residue left after the bacteria in the filter bed have done their work of processing fish and plant wastes — as well as uneaten food, corpses, etc. The active end-product of their labours, nitrate, will be in the water, and it is this to which attention should be given on a regular basis.

"Although nitrate is relatively harmless, high levels will gradually affect the well-being of fishes, and may be immediately harmful — if not fatal — to newly-introduced fishes from purer water, which are chemically shocked by the different water quality in much the same way as they would be affected by a major change of pH or mineral content.

"The residual sediment in the filter bed is harmless; but after a period of time — variable, according to the depth of gravel, grain size and the loading of the filter — the filter bed may be clogged, and it will then be necessary to clean it. It is easy to tell if the bed needs cleaning: the residues will start to accumulate on the gravel surface. Do not confuse the residues — fine particles, sometimes clumping into fluffy deposits — with unprocessed wastes, which require a little time to be processed and will always be present, even on a new filter bed.

"Except with a heavily-loaded tank, I would not expect the filter bed to need any attention for at least a year after setting up; and if it does clog, then one should ask if a deep enough bed is in use (2.5 to 3in — c.6.4 to 7.5cm is optimum), or whether it is being grossly overloaded. I have just serviced a

Tanganyikan Cichlid tank u/g for the first time in three years!"

Mary continues: "How one sets about cleaning a filter bed depends upon a number of factors: type of tank decor, type of fishes, and equipment available. If there is minimal decor, or if what there is can be easily removed, then a thorough 'hoovering' of the substrate is usually sufficient, leaving the fishes in situ. Some of the water can be changed, the rest passed through a filter — a net full of filter wool will do — and returned to the tank. Alternatively, the gravel may be thoroughly stirred up and the mess filtered off using a power filter.

"Under normal circumstances, the fishes would be removed beforehand, either to a spare tank or to a plastic bin full of water siphoned off before any work is started. A heater/stat can be used to keep the water up to temperature, and aeration supplied if necessary. If no power filter is available, let the mess settle and siphon it off.

"The real problems arise when you have a Mbuna tank full of rocks and uncatchable fish, and you don't want to remove all the rocks. I have found that, as long as you have a really powerful power filter and can complete the clean-up in a couple of hours, the fishes seem relatively unperturbed, and certainly unharmed, if you operate with them in the tank — but then you can send Mbuna 500 miles by train and have them feed 30 seconds after unpacking!

"Stir up the visible gravel; the rest may be cleared by connecting a siphon tube to the uplift (the two pipes must form a tight seal) and blowing like mad until the gravel erupts round the rocks. If you then suck hard, any sediment accumulated under the plates will siphon back down the tube. It is advisable to avoid getting a mouthful of this, so be quick off the mark!"

Mary then writes: "After the filter bed has been cleared in this way, it will not function optimally for a few days as the population of aerobic bacteria responsible for converting wastes will have been severely disturbed and reduced by the



cleaning process. Reduce feeding to a minimum, or cease feeding altogether in the case of large fishes, for a day or two, then gradually return to normal levels. All should be back to normal in about ten days.

"I think it is very important to realise that any disturbance of the gravel is liable to affect beneficial bacterial activity, even if only temporarily. Thus, I deplore the habit of regular weekly, monthly or whenever 'hoovering' of the substrate advocated by some aquarists. Even if u/g is not used, there is a considerable amount of beneficial bacterial activity at the interface between water and gravel, and if the substrate is constantly disturbed, this activity will not become properly established.

"In fact, it may be even more important to leave the substrate undisturbed in a tank without u/g as churning the gravel will bury the surface bacteria in anaerobic (oxygen-free) lower levels where they will die off. At least, with u/g, the gravel is oxygenated so that disturbance does not eliminate the useful bacteria. Obviously, this means that u/g is well-suited to fishes which themselves disturb the gravel, e.g. cichlids.

"If a population of beneficial bacteria is not allowed to develop then the tank will never mature properly and the aquarist will be in constant danger of outbreaks of 'New Tank Syndrome' in the event of even a minor overload. I prefer to have a little margin for error by letting my tanks function as naturally as possible, even if this means sacrificing aesthetics to a slight degree. I firmly believe that the well-being of the fishes should always take precedence over other considerations, and I would rather have grubby-looking gravel than corpses.

"U/g gives an even greater margin for error as, by increasing the area available for colonisation by aerobic bacteria, i.e. passing oxygenated water through the substrate, we create a filter with a huge processing capacity. I have had the odd, large (6in or more — 15+cm) fish die when I have been away, and the u/g has coped with this loading with flying colours, so that all the other occupants of the tank have survived.

"It is sometimes said that fry may die of bacterial and/or fungal infection in a tank with u/g filtration. In my experience,

this can be true; but equally so if there is any substrate — whether used as a filter bed or not. With cichlids the key factors seem to be whether or not the parents are present. If they are, they will lead their fry around so that they are clear of the substrate for most of the time. However, if the parents are not present, the fry will tend to huddle on the gravel as there are no parental signals to do otherwise. This continuous proximity to the substrate can cause problems and a bare tank may be more appropriate for artificial rearing — as long as strict levels of hygiene are observed.

"I think that's more than enough for one letter! Do keep up the good work. I must add that I was really pleased to see you back in harness with *A & P* as I have always enjoyed the column."

Thank you for the long and interesting letter Mary. I appreciate the few complimentary remarks also.

#### FISHY TRENDS

A much shorter letter came from Mrs V Thompson, of 13 Merevale Avenue, Hinchley, Leics.

She says: "Over the years, trends for fish have come and gone a bit like fashions for clothes. It all started with yours truly with the Goldfish, then progressed to tropicals, and now if you don't own Koi or marines you're not just with it.

"What a shame some people don't buy fish — or, may I say, pets in general — because they like them for what they are, rather than because they are trendy. I find it most sad that one sort of fish or other animal is classed above another just because it's fashionable to own it.

"I own three tanks of Goldfish/coldwater fish and find it irritating when people ask me why I haven't considered tropicals or marines; they can't understand my fascination with coldwater or Goldfish. I've got nothing against any other type of fish, so why should they criticise the one fish that started it all? I say, thumbs up to the humble Goldfish!"

#### SOLE SURVIVOR

As suggested by Mary Bailey, I've just tested the water in my



My sadly missed Angels — only one is still alive.

'Angel' tank and find its nitrite ( $\text{NO}_2$ ) level is below 0.1 mg N/litre — which the test kit says is 'ideal water condition'. I put a single set of speech marks around 'Angel' above because only one Angel has, unfortunately, survived in the tank over a couple of years.

I still think that the Angels have slowly and gradually died because of the original algae killer which I had earlier used in the tank.

I think it was the actual chemical itself, and not the resulting dead algae, which were siphoned out on a regular basis. The algae killer was only partly successful and I certainly would not use that brand (made in Britain) again.

More recently, I used an American brand of algae killer, in the form of tablets that dissolve, releasing a few bubbles, in the aquarium.

I have always found it to be perfectly safe: it has never caused the death of any fishes in my tanks, and has always been most effective in killing off troublesome algae. The higher plant life in the tank is not exactly thriving, but it is surviving, at least.

Most importantly, the tank is clear of algae, the nitrite level is low, and the surviving Angel-fish has had a variety of other fishes living happily in the tank for a long time, e.g. Neons, Cardinals, Pearl and Thick-Lipped Gouramis, Clown Loaches, Aymonieri (Sucking) Loaches, etc.

My local pet shop never seems to stock anything but 'fancy' Angels and I think the original Angels, mostly those elegant, stately fish with black-and-white stripes, are by far the most appealing specimens; hence I shall wait until I visit

my dealer's shop in the city before I add any more Angels.

#### UNTOUCHED KRIB TANK

My most interesting tank at present is one that I set up a couple of years ago and have not touched since — except to take out the occasional handfuls of plants when it became overgrown.

I started off with a couple of Kribensis and simply fed them, and added some water to the tank when the surface level was below the top of the frame. The fish thrived and bred several times, and the plants grew wildly.

At night I switched on an outside power filter, and a small air-stone attached to a small pump. The aeration was simply to keep small particles of waste in motion so that they would be picked up by the power filter.



Male Kribensis (female in the background) with a shoal of fry in my 'untouched' tank.

It's interesting to note that when the fish population of Kribis reached a certain density, they stopped breeding and simply grew larger. I don't know how many Kribis are in the tank





BILLY WHITSCOR

Baby Kribbs in their 'almost-virgin' jungle.

— I can never see too many of them at one time because of the thickness of plants — but I reckon there may be around 60-80 large Kribbs, as well as the two original adults.

Something else that interested me was the fact that when the fish population in the tank reached a certain density, there seemed to be no more aggressive behaviour from any of the fish — possibly because they are not breeding.

The tank is only 30 x 12 x 15in (75 x 30 x 38cm) and is an absolute jungle of plants and fish. Everything is thriving and I see no reason to remove anything, other than excess plants; and to add anything, other than dry fish food and fresh tapwater when required. Sometimes, I clean the front glass when it gets a light growth of algae; but the strong, higher plants shade the surface of the water to such an extent that algae have never been a problem in the tank.

I'm lucky in that my local tapwater is soft, slightly acidic and seems to contain little or no nitrate — and no one has yet decided to add fluoride to it. (However, my teeth would suggest that the addition of fluoride to the water could do nothing but good — but it's too late to improve my own gnashers.)

Incidentally, my Kribbens tank is lit by two ordinary tungsten bulbs of 40 watts and the lights are on for about seven hours per night in the winter months; less in summer. The air-pump and power filter are on most nights during some hours of darkness only, e.g. from about 2 until 8 am, when room lights are off.

I'll repeat my message: don't keep tanks too clean if you want plants to grow; and if plants thrive, they'll keep the water in

good condition so that the fish will also thrive. As one of the older generation of aquarists, I'm still a believer in the 'balanced aquarium' concept.

### JUBILEE THANKS

I hope you enjoyed the Silver Jubilee of W.Y.O.? I always enjoy receiving and reading readers' letters and send my thanks to those who have written to me over the past quarter of a century — especially people such as Brian Curtis, who has been a reader for about 20 years; and Dr Neville Carrington of Interpet who has been writing letters to W.Y.O.? for most of the 25 years. I look forward to meeting Neville again in the near future; and no doubt, as when we last met about 18 years ago, I'll pick up a few more useful tips to pass on to readers.

### FUTURE TOPICS

For next time please send me your opinions on: (a) live, freeze-dried, liquid, flake, fresh and granular fish foods; (b) aeration in aquaria; (c) good varieties of water lily for small garden ponds, and how to cultivate them; (d) small, colourful fishes for an 18in (45cm) aquarium; (e) photographing fish; (f) public aquaria you have visited; and (g) marine invertebrates.

I look forward to receiving a letter from you — especially if you are a new aquarist. Goodbye until next time. Write to me c/o A & P, 9 Tufton Street, Ashford, Kent TN23 1QN.

CONGRATULATIONS, BILLY, ON 25 SUCCESSFUL YEARS. HERE'S TO THE NEXT 25! BEST WISHES FROM ALL AT A & P.



# KOI



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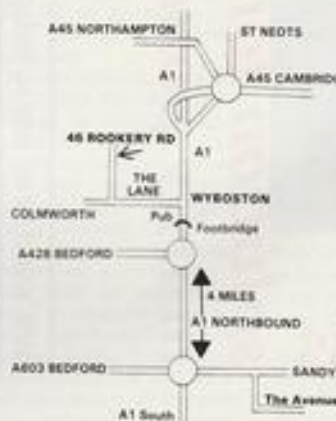
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# OUT AND ABOUT

## KEDINGTON KOI

By John Dawes

Photographs by the author



**Y**ou don't have to be 'big' to be 'beautiful'. In fact, if anything, you probably stand a better chance of succeeding if you go the other way... with appropriate planning, of course.

When Alan and Linda Price set up Kedington Koi, something over a year ago, they could easily have gone for the 'big' approach — they certainly have the space for it on their land. However, they chose — quite rightly, in my opinion — to go for a modestly sized 'specialised', rather than 'generalised', Koi retail outlet.

As a result, all the fish they sell are exclusively Japanese: not because they don't rate Koi from other sources, but because they felt that, with the size of retail outlet they envisaged, it would be better to go for fish from a single, specific source, rather than for a 'mix'.

When you walk around the small centrally heated indoor pond room in the middle of winter (as I did) and witness the superlative quality of the Koi they have in stock, there's overwhelming evidence that they made the right choice.

Just take a look at the Koi photograph accompanying this feature. The colours, conditions and obvious 'energy' of the fish speak for themselves. The fish



Each of the pools in the heated indoor area has a separate filter of equal dimensions.

which had been 'hardened off' and introduced into the three new outdoor ponds built for this season, were in equally great condition. It's a very long time since I've been to a place where I haven't been able to



Kedington Koi's three new attractive outdoor ponds photographed on a dismal winter afternoon.

Exceptionally healthy, and with an equally healthy appetite, Kedington Koi's fish made a deep impression on me.

spot a single ailing fish, so full marks to Alan and Linda.

The TLC (Tender, Loving Care) which they subject their fish to — including long-term quarantine in warm quarters, with a subsequent gradual 'cooling off' period — undoubtedly has a great deal to do with this. So has the fact that, by not wildly over-expanding, they don't have to spread their attention over countless ponds filled to the brim with countless fish. Yes, small can be beautiful too... and it shows when the approach is just right.

On the dry goods front, while you are likely to find most of your Koi needs provided for at Kedington Koi, specialisation is, once again, the key word. Drains, pipes, pumps, filter media, food... and so on, are all there, but it's in the biological filters that Alan's very personal touch really comes through.

Where, in most retail outlets, you can buy anything you need for a filter, at Kedington Koi, you can buy the filter fully 'kitted' out with all the internal pipework and filled with a range of media, consisting of Bio Rings, overlaid with a thick layer of Perlax (a highly porous lava rock biological medium) and finally topped up with filter foam.

The actual model shown in the accompanying photograph is the KF3 — suitable for ponds



Alan Price demonstrating one of his fully kitted out biological filters.

up to 1,200 gallons (5,455 litres) — at the excellent-value-for-money price of a mere £99.

I thoroughly enjoyed my visit to Kedington Koi, and not just because the fish were so good. I always enjoy meeting dedicated, enthusiastic people who 'do their own thing' and do it well. In Alan and Linda Price, I encountered two such people.

**Opening times** (April to September): Mondays, Thursdays, Fridays, Saturdays and Sundays — 10 am to 5.30 pm (Closed on Tuesdays and Wednesdays).

For further details, contact Alan and Linda Price, Kedington Koi, The Bower House, Cock Hill (Simms Lane), Kedington, Suffolk, CB9 7QW. Tel: 0440 708080; Fax: 0440 702961.

# Koi Talk

By John Cuvelier



KOI AND CHIPS?



Confusing... or interesting shop name?

Well, I suppose it had to happen sometime! Hard on the heels of last month's issue, the enclosed photograph arrived. Unfortunately, I don't have any details of the subject's background, but I can't help wondering. Is the owner of the business a Koi keeper? Surely, with a title like that he must be.

I'm afraid I'm simply going to leave it to our readers' imagination. For my part, the mind boggles!

## TOO MUCH/TOO LITTLE

We all know how the people of this nation enjoy endless discussion about our weather and the part it can play in upsetting our hobby, sometimes even managing to be kind to us. I've just heard the weather

story to end all weather stories!

At a certain Kibbutz in Israel noted for their breeding of quality Koi, the rearing ponds have been devastated by severe flooding with some of the ponds being under 3 metres of water! Can you comprehend such a happening? It really does make one wonder what is happening to this planet of ours.

At the other end of the scale, we have areas in the UK where drought orders are still in force from last year! When you consider that some impounding areas have only received 20% of normal rainfall, it does not bode well for the Koi keepers among us, never mind the ordinary population who, without a

normal water supply will be in a very precarious position.

As a former member of the water industry, I cannot help regretting the lack of foresight on the part of some of our masters in not adequately addressing the future needs of water impounding and distribution. Anyway, I mustn't get started on that topic, otherwise there'll be no stopping me.

## SPRING RUSH

Moving on to more cheerful topics, what a welcome sight it is to see the first new growth of the season sprouting away in the bog gardens around us. What with all the daffodils, tulips, etc in full flower as I write, it makes one feel like rushing outside and starting to garden.

Our frogs and toads are already well advanced with their courtship routines, the first of the spawn already showing their shape in the shallows. Strangely enough, there do not appear to have been anywhere near the numbers of amphibians this year as in previous years. I'm hoping that there is no sinister reason behind this reduction in numbers.

While on the subject of these creatures, if there are any Koi keepers out there tempted to take punitive action against these little animals because they think they constitute a threat to Koi, please do think again. There is only the slightest risk of a frog or toad 'clamping' a Koi, a risk so small that it isn't worth comparing it to the need for protecting these little creatures.

Don't forget the statistic which is forever flying around to the effect that more than 90% of natural ponds have now disappeared. Do you really want amphibious life in the UK to follow the same route?

## GOOD OMEN?

I read that fellow contributor David Twigg's column is going from strength to strength in detailing coming Koi events. Could it be that 1992 is going to be a bumper year for Koi keepers? The more the word gets around, the bigger our pastime will become, and that can only be good news for all of us!

With all the doom and gloom which surrounds us, it's good to know that our beautiful fish give us something to hang on to. My only regret is the fact that circumstances prevent me from getting to all these wonderful places I see described in our magazine although, between you and me, I'm on a promise to visit Shirley Aquatics and other centres in that area soon, provided I can organise a sitter for my wife, Sheila.

## FRY LATEST

If you can cast your mind back a few issues ago, I was going into raptures about my '91 spawning and the new hatching pond. The whole thing was a resounding success and I've finished up with more

than a hundred fingerlings, ranging from about 5 inches (c 12cm) to about 2 inches (5 cm).

Some of these tiddlers are really colourful (no, they're not exhibition quality, but who cares?). All that matters is that they're ours and we've managed to rear them!

One character in particular, which happens to be the largest, is a pale silvery blue with an orange and black head patch. This one is always the first to come up for food and does not hesitate to barge a neighbour out of the way in its eagerness to get to the grub. I can honestly say that I'm as proud of that fish as I would be if it were a £5,000 champion, and that just about sums up Koi keeping, doesn't it?

One thing which has been conclusively proved to my satisfaction, is the fact that fry reared in an indoor environment definitely have a better growth rate and make generally better progress. All I now need to know is how to house hundreds of fry indoors in a hobby-style situation. I don't think I'll bother, thank you very much. Here's to the next batch.

I have not heard from my friend in Port Talbot about how he got on with the batch of fry I sent him and, as I seem to have lost his address, perhaps he would drop me a line?

## ALGARID TESTIMONIALS

I've received a number of testimonial letters from M.M.R., the company which manufactures the Algarid magnetic water treatment system. These devices are recommended to be used in tandem with the company's mains water treatment filters.

The literature certainly makes interesting reading and, without coming to blows with any other stockist of filter media of which ever type, it could be well worth following up some of their claims. If the price of an M.M.R. system had been within my personal reach, I would certainly be tempted to plunge!

M.M.R. International can be reached at 39 Marsden Street, London NW5 3HE. Tel: 071 284 0553.





# KOI KEEPING —

As the fascinating 'addiction' of Koi keeping spreads throughout the world, Nigel Caddock of Nishikigoi International brings us a brief insight into the Koi hobby in the USA.

*Photographs: Nishikigoi International*

**D**uring the summer of 1991, my friends José Gueits and Jim Reilly from the USA took time out from their hectic lives as Koi dealer extraordinaire, and vice president of a major US investment corporation, respectively, to visit the BKKS

national Koi show at Northampton.

They were so enthused by the scale and extent of our hobby, that they were keen to develop links with fellow enthusiasts in the UK further to try to speed up the flow of information to help hobbyists on both sides of the pond. In pursuit of this objective, I was

fortunate enough to be invited by one of the major US Koi clubs, the Mid-Atlantic Koi Club (MAKC), to attend their annual show.

## 'TRANSCENDENTAL' HOBBY

This was just too good an opportunity to miss, so, in October 1991, off I went to Philadelphia PA. Sounds good, eh!

One of the amazing things about aquarists generally, and Koi keepers especially, is their universal ability to transcend continents, cultures and all manners of chasms in their pursuit of information and friendships. The instant camaraderie that emerges, almost instinctively, is one of the most reassuring and consistent elements



Far left, two 'hobby' ponds that I saw during my visit are shown in the accompanying photographs. The one with the bridges belongs to Tom and Diana Burton. The other one is owned by Lester and Rhoda Berkow. In addition to the show I was delighted to see at first-hand, some US Koi ponds. The immediate thing that struck me was that the level of sophistication of the filtration systems was much lower than in the UK. The use of internal filters was widespread and, with some notable exceptions, external filters were surprisingly small. Perhaps the biggest single difference is that no-one, and I mean no-one, heats their ponds. The whole concept of pond boilers is taboo and they strongly feel it appropriate to 'winter' their Koi. The east coast of the USA has a similar, but more extreme, climate to the UK, so this was extremely surprising to me. In addition, many of the ponds were very shallow by our standards, with four feet (120cm) depth being unusual, and two feet (60cm) being the norm!

Near left, the Supreme champion at the MAKC show was a stunning Shusui owned by Jim Reilly and supplied by Jose Gueits. Jose and his company, Gueits Quality Koi, also won the Dealers' Supreme Champion award.

Below left, a final and inspiring aspect to my US trip was to visit my friend Jose Gueits' up-state facilities at Middletown, New York. In addition to retail ponds (one of which appears in the photograph), Jose has superb growing-on ponds to help him develop his growing business and meet the rapidly-increasing demands from his many customers who are beginning to discover the wonders of the higher-grade Koi Jose specialises in. Jose is one of the most gifted Koi people I have ever met, and his infectious enthusiasm and highly developed range of Koi skills make him an 'invaluable' resource. Even though he is undoubtedly a man ahead of his time, the US will, no doubt, ultimately fully recognise the potential Jose can help unlock.

Below right, Jose Gueits with his award for Champion Koi Dealer. Note the car registration plate!



tranquil haven. The gardens and water features at Longwood are quite spectacular.

Unlike many UK Koi shows, this event was quite un-commercialised. Indeed, NO Koi or Koi-related products were on sale at the show ground, as the Longwood charter precludes such activities, so the first

## US-STYLE

that dissolves all international barriers into a haze of goodwill . . . and gin and tonic!

To say that I was made welcome would be an understatement indeed, and the warmth and friendship extended to me is reassuring in such times.

### NON-COMMERCIALISED SHOW

During my stay I was able to visit several superb ponds and the MAKC show which was held at the stunning Longwood Gardens outside Philadelphia. The MAKC are fortunate to be able to use this superb estate which was given to the people of Philadelphia by the Dupont family as a beautiful and

difference between the MAKC show and a major UK event is that its objective is purely to exhibit Koi and provide a spectacle for the public to view and enjoy.

This quiet, almost naive, approach was entirely refreshing and made for a delightful and relaxed air about the show which reminded me of the halcyon days in the UK before anyone had realised there was money to be made at Koi shows. I feel sure that they, too, will be 'seduced by the dark side', as the ugly head of capitalism emerges, but, for the moment at least, their show evades such influences.

Clearly, the interest generated begs the question: "How do people buy Koi and Koi goodies?" The MAKC answer was to have

dealers' stands and sales 'booths' (as they are referred to in the US) in a convention room at the show hotel. This was quite a revelation for me, as I am not sure how driving twenty miles from the show site to another venue to buy Koi and related items would be received in the UK.

### 'MANNA' METHODS

The show format was 'English Style', with each exhibitor having their own vat(s). Another interesting concept they have developed to a state of high precision is that the show master of ceremonies (MC), announces varieties to be judged and exhibitors net and present their Koi in advance of the judges' arrival!

For an overworked UK Koi judge, this revolutionary concept, where the exhibitor, NOT the judge, does most of the work, was manna from heaven. It also neatly avoids the usual scramble for nets and rustling of paperwork that is usually the case at English style shows in the UK.

Here at home, exhibitors at major shows travel, perhaps, a couple of hours at most, and, typically, less than an hour to attend the show; some of the exhibitors at the MAKC show had driven nine hours to bring their Koi! Even the nearest exhibitor had travelled more than an hour. I wonder how many UK exhibitors would travel for nine hours to attend their 'local' show. Not only did many MAKC members travel long distances, but they were delighted to do it!

### THE FUTURE

Numerous British Koi clubs are now twinning with their American counterparts, as a result of which videos, newsletters etc are exchanged, so the future for collaboration between Koi hobbyists on both sides of the Atlantic has never been brighter. By working together we can surely all benefit from this increased flow of information to help push our barriers of knowledge and understanding still further.

Although the show and ponds I saw were most enjoyable, my enduring memories of this super trip are of the warmth and friendship extended by a truly committed bunch of total enthusiasts, and a lasting and certain feeling that, with such people throughout the Koi world, the international future of Koi keeping is assured.

### UNUSUAL PREDATOR PROBLEM

One unusual headache that our US cousins do have but we don't, is a major problem with Raccoons! This may sound hilarious to some, but Raccoons are highly intelligent, tenacious predators that just love Koi and cause many problems, especially for all those hobbyists with shallow, highly-accessible ponds. I saw many Koi scared and damaged and heard many more stories of 'disappearing' Koi.



# OUT AND ABOUT

## HAWKHURST REVISITED

By John Dawes

Photographs: Jon Montgomery



Spring scene at Hawkhurst.

**Y**ou must come back in spring when the flowers are out," Tony Wilkinson, proprietor of Hawkhurst Fish Farm, had said when we visited him for the report we published in our August '91 issue (page 86). "By then, not only will everything look better, but we'll also have carried out a few changes."

Among these "few changes" has been the removal of 70 feet of rock which, at the time, formed the back of what was, in effect, a huge quarry-like hole in the ground. This 'hole', minus the rock, is now green hills and undulating pasture; trees have been planted and four new spring-fed ponds installed, complete with fish, of course.



Harvesting underway in one of the collecting pits that remain when a stocking pond is drained.

The muddy tracks we encountered last year have now been fully Tarmacadamed, while an electrical supply now surrounds the whole site, the ponds (lakes, actually) are even better aerated and the 'Bridge Over the River Koi' has been completed. ... And so it goes on, though Tony would be the first to say that there's still a lot more he would like to do.

There are now ten ponds and lakes at Hawkhurst, each named by the staff after Koi varieties. Therefore, there's Lake Magoi, Chagoi Pond, Sanke Stream, and so on. Within the lakes, there are

islands, complete with ornamental bridges and fountains or waterfalls (there are three of these, one of them with four tiers dropping through 14ft).

Four of the islands have been set aside for a collection of wildfowl to nest on. So far, over 30 different types of ducks, geese and swans have been recorded on these islands. Two Icelandic Whooper Swans, in particular — Sally and Harry — have established home at Hawkhurst. Sally has become especially tame and even follows Tony around!

Since last year, a new building has also been erected. It is



Superb-quality small Koi at Hawkhurst.

bigger than the original shop (which has been re-fitted with extra shelving to take a more extensive range of dry goods) and houses four 2,500-gallon (about 11,400-litre) tanks, with 15 other smaller tanks under construction. This allows Tony and his staff to hold a greater selection of fish of varying sizes and quality.

Meanwhile, the two large tanks that were housed in the shop last year, have been completely re-designed and are now six separate display tanks for the various grades and sizes of Koi, to facilitate customer



selection. In addition, there is a new proper quarantine bay for all incoming fish, whether their source be Japan or the company's own lakes. This quarantine area is located in a purpose-built barn and has its own, completely independent, filtration system.

Included currently in the stocks on show (not counting the 20,000 or so Japanese Koi in the lakes) are about 8,000 small

fish (4-5in — 10-13cm) of four grades: A, B, C and specially-selected C, with the top grade (the specially selected Cs) being of exceptional quality. Also available, of course, are some superb larger fish, ranging in size from around 8in (c 20 cm) to 32in (just over 80cm).

The staff at Hawkhurst consists of **Paul Hilliam** who spends his spare time showing fish ... and winning trophies;



Tony Wilkinson with Sally, his graceful winged admirer!



The larger fish are equally good too.

**John Ruffhead**, who holds an HND in Fish Husbandry from Sparsholt College, as well as ten years of experience in fish rearing (he is also the expert on filters and has actually built Hawkhurst's nine filter systems, plus the re-designed tanks in the shop); and two trainees, **Jim Williams** and **Mark Rhodes** who help the others, and **Tony and Dawn Wilkinson** to run the 31-acre site.

**Opening Hours:** Wednesdays to Sundays — 9 am to 5 pm (closed on Mondays and Tuesdays). For further trade and retail information, contact **Hawkhurst Fish Farm**, Hastings Road, Hawkhurst, Kent TN18 4RT. Tel: 0580 753813; Fax: 0580 754182.



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# Koi Calendar



By David Twigg

## JOBS FOR THE MONTH

**W**ater temperatures should be well on their way up now to levels where regular feeding is taking place. Winter covers, if not already off, will be so very shortly.

Daylight length and intensity are increasing, and the inevitable green water rears its ugly head. Ultra-violet sterilisers have, in recent years, really made an impact in this area. By killing the free-floating algae, they allow us a clear view of our Koi collections at this time of the year.

## BRUNEL TO THE RESCUE

A clear view is also required through a microscope when it is called into use to check upon the presence, or otherwise, of parasites. My monocular 'student' microscope is very good and I can, with the aid of different eyepieces and objective lenses, set up magnification between x40 and x400. The annoying part of its use, however, was the virtually uncontrollable way of moving the slide for closer examination of any particular part of the specimen. I do not possess calibrated fingers and thumbs, so this procedure was very 'Hit and Miss'.

I turned therefore to the Brunel Microscopes *Helpline* for the solution to this problem. Did they stock an adjustable stage for my microscope? The answer was NO, but if I was in the slightest way a "do it yourselfer", they could supply a suitable mechanical stage which

could be very easily adapted to fit.

Now, those of you who know me, also know of my cautionary approach to buying something 'unseen'. This was no problem to Brunel, whose response was superb and I quote (well, paraphrase): "We will send one to you and if it is not what you want, or if the job is beyond your capabilities, then return the stage to us. If it is OK, then send us the money". Well, that was an offer I couldn't turn down, could I?

The day after next, a package arrived and, within 24 hours, my microscope had a wonderful mechanical stage fitted with a minimum of fuss. Thank you, Brunel for your help and guidance on this matter, and long live your *Helpline*.

**Brunel Microscopes Ltd**, who also produce a comprehensive catalogue, can be contacted on 0249 782662 until 10 pm, SEVEN days a week (see also their ads in *A & P*).

## RECENT VISITS Epperstone Park Hatcheries

A very enjoyable day in my calendar occurred recently when I was invited to look round the **Epperstone Park Hatcheries**, located some ten miles north east of Nottingham.

Father and son, Colin and Bill Peat, made me very welcome and spent about three hours of their time explaining to me (including a video) the intricacies of operating a modern fish farm comprising 35 borehole-fed clay ponds, on 22 acres of land, with room for more.

Colin and Bill started their business more than ten years ago and have built up an enormous amount of experience in the field. Early years were devoted to the more popular garden pond species of Goldfish, Golden and Blue Orfe, Golden Tench etc. but, in recent times, they have moved into the production of quality, healthy Koi. Certainly, the 17-month old 9/10in (c22-25cm) Hariwake I saw harvested from one of these clay ponds were in excellent health and had superb skin quality.

I also saw dry limed ponds

## MAY

S	M	T	W	T	F	S
31					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30



ready prepared for the new season's hatchings, a grading and holding facility, hatching tanks, and much more besides.

I have promised to return to Epperstone when the weather has improved so that I may get some better photographs (the ones I took this time round were no good). A much fuller 'picture' can then be given about the success of the British Koi industry, this part of which produced in excess of half a million fish last year.

For further details contact Colin or Bill Peat on 0602 664410.

## Shirley Aquatics Festival of Koi

The event that took place on 8 March was my first Koi 'special' of the year. Unable to make a weekend of it, as many did, I arrived just before the auction began on Sunday afternoon.

My first impression was one of atmosphere. **Shirley Aquatics** is not a small building, but it was literally buzzing with people interested in Koi. The Shirley Minibus was kept busy ferrying the overflow of enthusiasts from the Plough PH car park just along the road.

I said a quick "Hello" to John Cook and his auctioneer Bill McGurk, who were found resting in preparation for the exertion shortly to follow. John and his team were kept busy all afternoon with catching the Koi from one pond, wheeling them in a large container along the length of the auction viewing stands, and back again, and then bagging them up for customers to take away. Some smashing Koi went through the auction at what, in the main, appeared to be very competitive prices.

The auction was not, of course, the only way of selling fish during the weekend. As the photos show, the many Koi ponds at Shirley were continuously surrounded by buyers looking to buy that PERFECT Koi.

An enjoyable photo session with some of the smaller fish that were on offer, with Nigel Caddock of Nishikigoi International, followed next, and then to the Koi Cafe for light refreshment.

Over the weekend, Dr Andrew Worthington of Spirex Aquatic, Fred Slatcher, the fibreglass specialist, and others were on hand to offer advice and assistance, and the



Shirley Aquatics was 'buzzing' on Festival day.





Above, lot No. 23 being wheeled down the aisle in the packed auction area.

Below, intense interest in fish to be auctioned.

Midland Koi Association were recruiting new members. Talks on food and feeding were also given by Tetra. Something for everyone was the successful Shirley Aquatics aim.

A raffle for £1000 worth of Koi was also held. First out of the hat for £500 worth were Jim and Sandra Rennie of Solihull, 2nd (£300) was Mrs G. Carpenter from Banbury and 3rd (£200) was K. Lenden from The Wirral, Merseyside. Well done to them.

An enjoyable and informative weekend was had by the many visitors to the 2nd Shirley Aquatics Festival of Koi and they, with me, are already looking forward to number three next year. For further details contact John Cook on 021 744 1300.

## SHOWS

The show season is upon us this month and opens on 9/10 May with the Merseyside Sec-

tion BKKS English Style Open Show at Crumleigh Heath Farm, Little Leigh, 5 minutes from J10 of M56.

This is the Section's first-ever show and it is sponsored by PWL. I know that they have taken advice from BKKS members with many years of experience in the staging of shows and I therefore know that it should be a huge success if their planning, preparation and enthusiasm are any guide.

I wish them well and congratulate them for coming up with what I believe is another FIRST: a mobile phone will be on the show site to receive incoming calls. So if you are stuck somewhere, delayed by traffic or just plain lost with your fish in the boot of your car, in such an emergency, you can give the organisers a ring on 0836 313589.

Ten-plus dealers are expected and a Craft Fair has been booked. A Children's Fair is also planned. Bags of car parking is available and refreshments can be bought on site. For more information and benching details contact Phil Adamson on 051 220 2970.

Second show of the year is the Peterborough & Cambridge-

shire Section BKKS Annual Show on 31 May at Bretton Wood School, Peterborough. Plenty of Koi dealers and a Craft Fair will help to make this an enjoyable day. The Showground opens at 10 am and closes at 5 pm. Further details on this one can be obtained from the Show Chairman Barry Adams on 0733 341057.

## WHAT'S ON IN MAY

- 3 - Northern Section BKKS. A Section Open Day for pond visits. Contact Tony McCann on 061 794 1958.
- 4 - Kennet Valley Section BKKS. Monthly meeting. 8 pm at Newbury Rugby Club, Pinchington Lane, Newbury, Berks. Contact Bob Thompson on 0734 713640.
- 5 - Yorkshire Section BKKS. Monthly meeting at Holme Leas Inn, Osselt, Nr Wakefield. Contact Fred Harston on 0226 722578.
- 6 - Suffolk & North Essex Section BKKS. Monthly meeting. 7.45 pm at the Prince of Wales PH, London Road, Marks Tey, Colchester, Essex. Contact Dennis Preou on 0371 856450.
- 7 - North Wales Koi Club. Speaker at this recently formed Club is Robin Wardle of Aquaculture. 7.45 pm, David Bryant Bowling Centre, Frith Beach, Prestatyn. Contact Eileen Price on 0745 591730.
- 7 - Middlesex & Surrey Borders Section BKKS. Monthly meeting at Hampton Football Club. Contact Alan Harington on 0932 845608.
- 9/10 - Northern Section BKKS. Weekend trip to visit dealers and ponds in the Essex area. Contact Tony McCann on 061 794 1958.
- 10 - Mid-Somerset Section BKKS. Members' Pond Visit. Contact Alan Purnell on 0458 72132.
- 10 - Mid-Staffs Section BKKS. Visit Birmingham Section pools. Contact Don Dyche on 0543 425178.
- 10 - Lea Valley & Harlow Section BKKS. Monthly meeting. Contact Barry Ford on 0279 419101.
- 10 - Scottish Section BKKS meeting at Bankfoot, near Perth. Contact Alastair Christie on 0738 87476.
- 11 - Northants Section BKKS. Monthly meeting. Contact Keith or Jenny Cross on 0604 765856.
- 13 - South Hants Section BKKS. Roy Westcott talks about *Heating Ponds*. 8 pm. Denmead Church Hall, Hambledon Road, Denmead, Hants. Contact Roy Moody on 0705 450530.
- 13 - Merseyside Section BKKS. AGM at the Millbrook Manor Restaurant, Knowsley Village. Contact Phil Adamson on 051 220 2970.
- 14 - East Pennine Section BKKS. Monthly meeting at The Phoenix, Plaits Common, Barnsley (5 mins from M1 J6). Contact John Timmis on 0226 289507.
- 17 - Essex Section BKKS. Visit to Worthing Section ponds. Contact Bobbie Barton on 0702 611750 or Margaret Bishop on 0702 522388.
- 20 - Mid-Staffs Section BKKS monthly meeting at the RNA Club, Elmore Green Road, Bloxwich. 8 pm start. Contact Don Dyche on 0543 425178.
- 21 - Northern Section BKKS. *Varieties & Judging*. Speaker at St. James Hall, Pendleton is Alan Rogers (Chairman BKKS Judging Standards Committee). Contact Tony McCann on 061 794 1958.
- 21 - Wirral & District Section BKKS monthly meeting at the Lever Sports & Social Club at 8 pm. Contact Jean Moffat on 051 678 1769.
- 24 - South East of England Section BKKS. Auction with refreshments and Raffle. Chelsfield, Kent. Contact Mick Wright on 0634 718943.
- 31 - Northern Section BKKS. "Cream Tea & Auction" at Culcheth. Contact Tony McCann on 061 794 1958.
- 31 - Suffolk & North Essex Section BKKS. Visit to South East England Section ponds. Contact Dennis Preou on 0371 856450.
- 31 - Japanese Water Gardens Koi Auction. Contact JWG on 0602 397926.



is an on-going topic in the Koi world which lends itself to constant improvement. Most of us have our own ideas, based on our own experiences, of how keeping water should be best carried out. Many people are purchasing domestic water purifiers now, through which they are filling and topping up their ponds so that the 'in-system' filtration has only to cope with fish pollution and not the various additives which are currently found in the water supply coming out of the tap.

The hi-tech approach to water keeping can be a wasted expense, though, if the rest of the system is not manufactured to the same degree of excellence. Therefore, this should be considered most carefully before any new pond system is designed and built.

Many other factors have to be taken into account before moving into the 'new pond' environment, some of which I will try to outline here.

### Suspended Matter

The removal of free-floating (suspended) solids is currently taking up a lot of time in the 'clear' water debate. Clarity is, of course, high on the list of requirements in this Koi world of ours, so that the full beauty and detail of these wonderful fish can be seen.

It is, I think, generally accepted that, in order for this state of clarity to exist, a pond must not contain Blanket Weed. If it does, then a certain amount of fish waste will collect in it and when the Koi (as all good healthy Koi will) grub about in it for food, some of these settled solids, together with dead algae, will be released into the water, making it cloudy.

### Through-put

Turnover of water in the pond is a natural follow-up to clarity. The faster the water is pumped through the system, the lower is the chance of those suspended solids settling out onto the bottom of the pond, only to be re-released at a later time.

Water taken from the pond is passed through some form of settlement chamber. These are many and varied in design, all geared up to remove these particles prior to biological filtration.

### 'Conflicting Interests'

The previous two paragraphs highlight the Koi keepers' dilemma. The clinically clean pond which can only be achieved by high (exit from pond) flow rates and no Blanket Weed, is contrary to the requirements of these wonderful fish which we want to keep. The Blanket Weed provides natural food by way of the 'weed' itself, and supports a variety of live food; a delicacy obtained by our Koi grubbing about in it. It also acts as a cushion between wall and Koi when spawning is in progress, as well as being suitable for the female to lay her eggs on.

My personal preference here is to leave a reasonable growth on side walls and keep the bottom of the pond as clean as possible with the aid of a Jabsco vacuum pump.

While Koi love and enjoy swimming and playing in a fast flow of water, they also enjoy the rest which such exercise makes necessary. The continuous effort required to stay stationary in a strong flow while resting, is stressful, as is having 'nowhere to go' at times of stress.

Ensure then that, in any pond design, there is an area of 'quiet' (not stagnant) water and also enough distance between the area where people normally walk or stand and the far side of the pond. Your Koi will be a lot happier just knowing that they can get away quickly should the need ever arise. A pond designed without the afore-mentioned features is likely to lead to an increase in stress-related problems.

These problems, whether they be parasitic, bacterial or viral, will be minimised by a well designed pond in which the Koi are contented. Contentment comes from being in good-quality water, being fed well and regularly, having no projections into the pond on which physical damage can occur, and having a happy shoal of friends and relations around at all times (Japanese-speaking, of course, for the 'elitist').

Most newcomers are eager to improve their stock of Koi and spend many happy hours in the company of fellow Koi keepers at the dealers' pond-side, discussing, selecting and purchasing Koi. I, too, went through this learning curve. It seems to be something we must get out of our system!

### ADEQUATE ACCOMMODATION

Many fish are purchased and brought home to inadequate facilities. Because of this, many of those fish will die and the purchaser will have learned the hard way that the home facilities, including a well established filter, must be in place before large-scale buying starts. Even then, I would limit myself to one or, at most (if severely tempted), two fish at a time.

Existing ponds tend to be extended to cope with this increased volume of fish which are bought in preparation for the 'Grand Opening' of the newly-built pond. The problems occur when, for whatever reason, the new pond does not materialise as quickly as anticipated.



Koi are gentle, beautiful and friendly. These are some of my own fish.





A floating basket is an absolute must for close-up, stress-free viewing.

Before we know where we are, the winter is upon us and our fish, unable to withstand the rigours of cold conditions in their temporary homes, have to be transferred into tanks hurriedly set up in garages etc. What are probably already stressed fish are now placed under even more stress by these confined conditions, and health problems will probably ensue.



A 'baby bath' is useful for medication purposes. Larger fish, obviously, need a more spacious and deeper bowl. The 'pipe' wound around the baby bath is from my Jabsco vacuum pump used regularly to keep the bottom of the pool debris-free.

Aeration of water is another aspect of Koi keeping of which the average pondkeeper is not always aware. Most Koi keepers these days use an air pump or venturi to provide the copious amounts of air required (particularly in the filter system), and that brings me nicely to the next part of this article.

## KOI EQUIPMENT

An extraordinary amount of specialised equipment is used by the Koi keeper. Some examples follow.

**Filtration** is an 'art form' requiring bottom drains, swirl chambers, settling bays, filter media (very controversial, this one!), air pumps, UV filters and skimmers... to mention just a few items.

In your travels around friends' ponds you will see an enormous variety of arrangements, many worthy of much greater attention than most, that are employed to achieve that elusive goal of PERFECT water quality. Flow rate through the filter media is also

important and some sort of controllable filter by-pass for the excess flow should be built into the filter system from day 1 of design.

**Fish Handling** requires special nets to suit size of fish, floating baskets for temporary viewing and sizing of Koi, bowls (large and small) for long-term viewing and medication, etc.

**Treatment boxes** should contain everything except the kitchen sink. Hopefully, if the above-mentioned design points are included in your pond, this box will be seldom used.

It is a fact that we are proud of our new possessions and wish to show them off, but if we avoid netting our Koi, then there is less chance of incurring damage and having to turn to the medicine chest for help in repairing the bumps and bruises.



A range of nets will be necessary... but not to lift fish out of the pool — more to guide them into a bowl or floating basket.

**Miscellaneous requirements.** Useful 'tools of the trade' of the Koi keeper are things like microscopes (for looking at parasites etc.), Hi-Lo thermometers (for keeping an eye on water temperature swings) and water test kits for ensuring that water quality stays within limits. Tests for pH, ammonia and nitrite were the norm, but now there are Nitrate and Dissolved Oxygen kits available which enable the Koi keeper to maintain water quality at its highest.

If you have not got, or are not planning, the perfect pond which carries all the 'debris'

away to pre-filter settlement, you will then undoubtedly require a Jabsco or other vacuum pump. This will enable you to suck up the solids which do settle in the pond itself and which don't get carried out with the flow.

**Winter husbandry** is another important aspect of Koi keeping. You will find that, unlike the ordinary garden pond with its spring and autumn maintenance, the Koi pond requires all-year-round attention.

Keeping fish is no longer a summer pastime; it is an all-year-round pleasure. In order to increase enjoyment levels, many Koi keepers cover their ponds during the winter months; others heat the water with electric heaters or gas boilers.



My electronic thermometer which keeps me well informed of conditions in my pool.

Use of heaters means that the health of one's Koi is improved and the risk of infection from opportunist sources is greatly reduced. Some winter covers, mine included, are designed so that the Koi can be easily attended to should the need arise. Covers vary in design from home-made



I'd be lost without a microscope. If you are serious about Koi keeping, I would urge you to obtain this extremely useful piece of equipment.



frames with greenhouse shading stretched across them, through polytunnels, to sophisticated purpose-built fish houses.

It is a pleasure to stand inside a pond cover viewing Koi when the weather outside is blowing a gale or throwing rain, sleet or snow at you. A seven-month winter can be reduced to next to nothing if covers etc are planned properly before you start building your new pond.

**Plants.** Most, but by no means all, Koi ponds are free of plant life, Blanket Weed excepted! If you like to see lilies and the like, then I guess it will be necessary to have small Koi that will not decimate the plants too quickly.

The problem is that Koi can, given the right conditions, grow very rapidly. Consequently, plant damage can become unacceptable to the point where it is necessary to remove them (the plants, that is) completely, to avoid blocking pumps and drains.

There is also the point that Koi have been bred to be seen. It would be natural, however, for them to shoot under the lily leaves each time you approached the pond... not good from a viewing point of view.

### CHASING PERFECTION

Assuming that you will make the transition without too much difficulty, and your pond system is all geared up to receive its new stock, then you will be off to the dealer.

But what is the difference between a Hariwake and Kikusui, a Yamatonishiki and

a Kin-Ki-Utsuri, a Goromo and Kawarimono? It took me months, years for some varieties, to get my tongue around the names, let alone recognise the varieties when I saw them. If it is any consolation, my sons, 12 and 15 years of age at the time, got their vocabulary all tied up inside a couple of months. So don't give up too soon.

A recommended book which we poured over in those early days, and which still contains a wealth of useful information, is the latest *Manual to Nishikigoi* by Takeo Kuroki. *Koi Varieties* by Dr Herbert R Axelrod — published by TFH — is another book full of colour photographs showing the many and varied coloured patterns of Koi. You will find these books, and many others, stocked by most good aquatic and Koi dealers, many of whom advertise in the pages of *A&P*.

Next to the perfect pond being unattainable, so is the perfect Koi. We do, however, have some specialist Koi dealers in this country who spend many days, weeks and, yes, sometimes months, in Japan looking at all the available fish and hoping to bring back a collection of Koi which will whet our appetite the next time we go along to view.

I say view because, invariably, that is what we always intend doing when we leave home. Even if we leave cheque books behind, there is still the chance to buy. I took a friend to a well known dealer in Yorkshire a couple of years ago and we came away with a fish which was bought 'on tick' so to speak. It is an addictive hobby, without doubt!

It is also a fact that, once you make the transition to 'KOI KEEPER', you will, unless very fortunate, have more Blanket Weed than you thought existed in the universe, more enthusiasm for both bigger and better quality fish in your pond, and experience more pleasure than you could ever have imagined.

These Koi are wonderful, friendly, colourful and thoroughly enjoyable 'Pets' that will feed from your hands. Look after them and they will give you many years of happiness and pleasure. Happy Koi keeping!

### SOME USEFUL CONTACTS

The British Koi Keepers Society. Membership Secretary is Mrs Bobbie Barton. 0702 611750 for further details. BKKS Sections. Contact numbers in Koi Calendar.

The Yorkshire Koi Society. Membership Secretary is Mrs Rita Thompson. 0484 850422 for further details.

The North Wales Koi Club. Contact 0745 591730 for further details.

The Midland Koi Association. Membership Secretary is Graham Parker. 0926 813661 for further details.

The Heart of England Koi Society. I am the Membership Secretary. Please contact me on 0926 495213 for further details.



## ENGLISH WATER GARDENS



### FISH AND POND PROBLEMS?

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# OUT AND ABOUT

## KOI WATER BARN

By Nigel Caddock

Photographs: Nishikigoi International

An exciting initiative has taken Keith Phipps of Koi Water Barn from Kent to the heart of one of the key Koi production regions of Japan. For more than five weeks, Keith lived and worked with Japanese Koi breeders and farmers, experiencing a unique first-hand insight into the rigours of the life of the people of Nishikigoi; all in an effort to learn more of the 'way of Koi' and also to ensure that Koi Water Barn customers have the very best selection of Koi to select from.

Koi Water Barn operates from its base in Chelsfield Village near Orpington in Kent, and has, over the last few years, developed its reputation and customer base to become one of Europe's premier Koi dealerships. In addition to acquiring a significant slice of the UK market, KWB now export Koi to European destinations and Scandinavia.

KWB's reputation for high-grade Koi is well-known throughout the UK and, parti-

cularly over the past two years, a very special relationship has developed between John Pitham and his KWB team and Ishihara San and Itoh Koi farms which has resulted in the availability of some stunning baby Koi, many of which have been awarded major prizes at prestigious Koi shows throughout Britain.

This special relationship was the catalyst for this spring's KWB quest, and Keith Phipps, whose excellent 'eye' for a high-graded Koi is universally acknowledged, was invited to visit Japan and live the life of a Japanese Koi producer.

This fascinating insight into the real world of Japanese Koi production helped Keith immensely, and completely demolished the glamour image often associated with Koi. As Keith points out, there is nothing glamorous about getting up at 4 am from the warmth of a bed into the icy Niigata mountain air and then spending most of an exhausting 14-hour day up to your armpits in

Another champion fish from KWB — this time, a Gin Rin Sanke.



This great young fish is one of many such specimens from KWB to have won prestigious prizes — in this case, Champion Baby Sanke.



Left to right: Nicky Chappel, Keith Phipps Jackie Pitham (all of KWB), happy customer, and John Pitham.

muddy, often smelly, water — but after all, it's tough at the top!

The Koi that Keith selected started arriving late last month and will continue through May, with further regular shipments arriving during the rest of the year. This quest has also captured the imagination of the Japanese media, and Keith returned to England with a Japanese TV crew who wanted to track a Koi from its production source in Japan, through its long journey to the UK, to its point of sale, and, ultimately, through to its final destination in the pond of its proud new owner.

In such difficult times, it's refreshing to recount a story of success and achievement, but

perhaps the KWB success demonstrates that the traditional features of good services, good quality and good value, combined with an extra-large helping of sheer pleasant good manners and helpful attitudes that epitomises 'the barn', may just not be as extinct as some may have feared. One thing is for sure, such values, along with some staggering Koi, are certainly alive and kicking in Chelsfield village.

**Opening hours:** 9 am-5.30 pm Tuesdays to Sundays, closed on Mondays. For further details contact Koi Water Barn, Lillys Farm, Chelsfield Lane, Chelsfield Village, Orpington, Kent BR6 7RP. Tel: 0689 878161; Fax: 0689 877554.



Focus on: *Koi*

# PLUMBING: ARE YOU WELL CONNECTED?

Peter Skinner of Koi Kraft fits together the 'piping' puzzle in his usual easy-to-follow, expert way.

*Photographs by the author*



Mark depth of socket and rotational position.



The pipe and socket can be prepared with abrasive paper.

**B**efore you begin the construction of a new Koi pond, it is vital that a pipework plan is drawn that you can check the feasibility of all the necessary fittings. All too often, customers have approached me with pipework difficulties which could have been solved only by manufacturing fittings specially for the purpose. This is definitely one to be avoided!

The plumbing for Koi ponds is relatively simple, as long as you choose one make of pipe and fittings and stick with it. Problems will arise if you chop and change between different makes and types of system.

## PIPE TYPES

There are two main types of pipe which are useful for plumbing systems in Koi ponds: domestic waste systems and pressure pipe systems. The main advantage of the former is that it is cheaper than the pressure pipe, but the main drawback is that there is a limited range of fittings available. All basic fittings such as elbows, bends and tees are available, but if you want unions, valves, flanges, nipples, adaptors, etc., you will be disappointed, because these fittings are not used in domestic plumbing systems and are therefore not made for waste pipes.

**N.B.** The domestic waste system is sometimes referred to as 'soil pipe system' particularly the large bore pipes.

Since the pressures involved in a pressure pipe system are fairly low, almost any type of pipe is strong enough, but it is the connection of the fittings that sometimes causes difficulties. The large-bore domestic waste pipe such as 3 and 4in (c7.5-10cm) will be connected to their fittings either by solvent cement or by rubber seal. In most cases, the rubber seals will not leak, but they have been known to give problems. The solvent weld version is a little more reliable, but extra care must be taken that enough solvent cement is applied to the joint because any looseness must be taken up by the cement.

This type of plumbing system is cheaply made and therefore the pipe and sockets are slightly in size. Some joints will be tight and some will be loose. If you use these fittings in a permanent installation and the connections are to be buried under concrete, extra care must be taken to get it right the first time, as it cannot be altered.

The pressure pipe system uses solvent weld joints. This system is made to tight tolerances than the waste pipe system, which means that the pipe fits accurately in the socket and a solvent cement is used to bond the mating surfaces. Once the solvent cement has set, the joint will be at least as strong as the parent material, and there is no risk of leakage or the joint coming apart, as long as enough glue has been applied in the joint.

When using any pipe system which





Alternatively, solvent cleaning fluid may be used for preparing the pipe and socket.



Apply solvent cement to pipe and socket.

solvent-weld joints, it is wise first to assemble the pipe and fittings dry and then put a pencil line on each joint to mark the rotational position of the pipe in relation to the socket, so that when you glue the whole thing, no mistakes will be made.

#### PREPARATION

Before the joints are finally glued, it is essential that the pipe and the socket are dry and free from grease and swarf. This can be done either by 'roughing up' the surfaces with abrasive paper, or with a special solvent cleaner fluid applied with a rag. The solvent cement can now be applied.

There are two types of cement. For pressure pipe fittings and for snug-fitting waste pipe joints, the ordinary solvent cement supplied with the fittings is suitable. This normally comes in a tin which has an applicator brush under the screw lid. For any slightly loose joint, the use of gap-filling cement is recommended. This comes in a tube and is much thicker than the ordinary cement.

When you are ready to make a joint, the solvent cement should be applied liberally to the outside of the pipe and to the inside of the socket. Enough should be applied so that you



Push the pipe into the socket and adjust it immediately to correspond with the marks.

can see a little excess ooze out around the joint when the pipe is pushed 'home'. Remember that wasting a little glue is much cheaper than having to cut the fittings off and start again because a joint is leaking.

#### QUICK ACTION IS VITAL

Once the joints are made up with the solvent, you have only a few seconds to

adjust the joint before it is set. For instance, the 1in (2.5cm) fittings will allow you about 40 seconds, but 4in (10cm) joints will be set almost immediately.

With the larger bore sizes, you should also put a mark on the pipe which corresponds with the depth of the socket because some of these fittings are quite difficult to push together and it is not always easy to tell when the pipe is 'home'. However, with a judiciously placed mark, there will be no such uncertainty. This may appear to be a somewhat tedious procedure, but it is well worth the extra effort to ensure a really efficient leak-proof system.

Whenever an item such as an ultra-violet steriliser or a pump is installed, it is a good idea to include a union on each connection. This is simply a connector that screws together with a rubber seal, but which will allow the pipe to be disconnected and reconnected at that point later on without damaging the pipe.

It is not essential to include a union, but if you ever need to remove the relevant appliance for servicing or replacement, you will find that the job is made much simpler if unions have been made. If you have any item which is installed below water level, it is vital that you put a valve in the pipe line so that, if you should need to break the pipe line for any reason, the water flow can be stopped.

#### THREADED JOINTS

Where a joint that uses a thread needs to be made, it is necessary for the joint to be sealed. No threaded joint in plastic fittings will be watertight without the use of a suitable sealant.

The materials most commonly used for this purpose are either P.T.F.E. tape or silicone. Both will give a perfect seal, while allowing the thread to be unscrewed at a later

date. If you use silicone, be sure to apply it liberally and smear it into the thread so that when you assemble the joint, you can see a little excess squeeze out when the thread is 'home'. This is a sure sign that the joint is sealed.

P.T.F.E. tape looks like a very fine white ribbon and is used by plumbers exclusively for sealing threads. The tape is wound tightly around the male thread many times;





Two types of valve: (left) single union ball valve; (right) slide valve.

remember to wind the tape in the right direction, otherwise it will be unwound as the two threads are screwed together. If you have the male thread end pointing towards you, the tape should be applied in a clockwise direction.

## VALVES

There are several types of valve available to the Koi enthusiast.

Metal gate valves are still used by fishkeepers to control the flow of water in their plumbing system. The drawbacks with this type of valve are that corrosion may take place, especially if at sometime you have salt in your pond water. If this occurs, there will be traces of heavy metals deposited in the water and these could be detrimental to the health of the fish.

This corrosion may also mean that the valve will become stuck if it is not operated regularly. For these reasons, it is preferable to use plastic valves.

The manually operated plastic valves most commonly used are slide valves and ball valves. Slide valves are quite cheap to buy and are better used as on/off valves, rather than flow control valves. They are ideal for many applications in filtration plumbing systems, but it is better not to use them where high water pressures are involved.

Ball valves are more expensive than slide valves, but are more durable and reliable. If you need to slow the fluid velocity within a pipe, then a ball valve is ideal for this purpose because it can be shut progressively and will stay at any intermediate setting. Should the ball or valve seats become scored, they're usually replaceable.

Slide valves are much cheaper than ball valves and do not usually have replacement parts, so if they are scored or damaged, the valve should be regarded as disposable. Because of this, it is important, when you fix a slide valve to a pipe, to make sure that there is enough pipe on both sides of the valve so that the old one can be sawn off and a new one fitted.

In more advanced pond systems the use of remote controlled valves is becoming more popular. These valves can be activated either by compressed air or by electricity. The purpose of using this system is that you could operate the main drain valve or a

waterfall control valve from your house by flicking a switch, rather than having to venture out into the cold or rain. Also, this type of valve can be controlled by automatic timers or computer if you wanted a fully automatic pond management system.

## FLEXIBLE PIPES

Sometimes, flexible pipes are preferable to rigid pipes for a variety of reasons, and there are many types available. Be careful if you use clear flexible tubing because, if it is bent too tight, it will kink, thus reducing the flow through it. If the flexible pipe is used as a suction pipe for the pump, then it must be of the reinforced variety, otherwise it will crush and prevent water flow.

When using flexible pipes it is inevitable that you will need to connect them to rigid pipes or a socket, such as the outlet from the pump. The connection is best made using the correct hosetail.

but you will also need a threaded/plug socket which will be solvent-welded onto the rigid pipe.

## KEEP IT SIMPLE

In any pipework system, it is important that the design is made as simple as possible, not only for the sake of appearance and ease of assembly, but because every joint and elbow causes an interruption in the flow of the liquid within.

In very simple terms, if every elbow were to reduce the velocity of the liquid by 2% and you have 20 elbows, then you can see that there would be a major restriction in your system.

The end result of this may well mean that a larger pump would be required to give the necessary flow which, in turn, will mean extra expense and greater running costs. This phenomenon becomes more of a problem if acute bends are used and the pressure



Selection of pipe fittings, valves, tank connectors, etc.

Most hosetails are threaded at one end with a serrated barrel at the other. The thread will screw directly into the appliance, while the other end will slide tightly into the end of the hose and be secured by a hose clip.

If you need to connect a flexible pipe to a rigid pipe, you will use the hosetail as usual,

is high, rather than using gradual bends and low pressures.

The plumbing system for some ponds can be quite complicated and can strike fear into the hearts of many fishkeepers, but it need not be so traumatic if you make up a plan of the system before you start and establish a



A selection of three hosetails.





Reference is often made to male and female threads. This picture shows the difference: (left) male thread; (right) female thread.



Applying P.T.F.E. tape to a male thread.

source for all the necessary components. There is nothing worse than starting off with one kind of pipe and then finding out



Plain socket pipe union (assembled).



Union dismantled to show the rubber seal.

that a vital fitting is not available, forcing you to change to another make of pipe to do the job. You will probably get a very blank

look from your local builders' merchant if you ask for an adaptor to connect pressure pipe to domestic waste fittings, as there is no such thing readily available. You may well have to rely on the ingenuity and manufacturing capabilities offered by your specialist Koi dealer should you ever get yourself into this awkward predicament.

Inferior pipe installations are a major source of worry to many Koi keepers, especially if there is a possibility that a 'burst' could result in the emptying of the pond, the flooding of the garden, or damage to the pump. All of these risks can be eliminated with some careful thought and the use of the correct fittings. There are times when you can cut corners and get away with it, but I can assure you that this is quite definitely not one of them.

You can normally spot someone who has been glueing pipe fittings together in a confined space. (S)he is probably a little 'high' from the solvent and is having great fun spending the rest of the day picking the glue off his/her hands!

**WARNING: Keep solvent cements out of the reach of children. The fumes can be lethal.**

## Filtration

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JOHN CUVELIER

Two healthy clumps of Watercress at the top of my vegetable filter channel.

**T**he achievement and maintenance of first-class water quality within the Koi pool represents what is the most frustrating and contentious aspect of our hobby. As you are no doubt aware, the methods adopted in order to arrive at this happy state are legion, ranging from the most basic and primitive forms of filtration, where plant life alone is used to clear the water (very often, with surprisingly effective results), up to super-sophisticated systems costing many hundreds of pounds and a great amount of 'hi-tech' equipment.

#### ECOLOGICAL UPSETS

Even so, one can almost guarantee that, at some time during the seasonal cycle, something will upset the ecological balance within a pool and result in the onset of either green water or, worse still, a partial or complete failure of the nitrification cycle.

The great majority of Koi keepers are simply not aware of just how delicate the ecological balance within a pool can be. Even a simple thing like a sudden change in the weather, particularly during the early weeks of the season, is liable to play havoc with the condition of the water.

Probably the worst culprit in this respect is the enthusiast who, at the first sign of warmer weather, immediately increases the feeding rate out of all proportion to demand and imposes a shock load upon a filter not yet running at its full potential. The inevitable result will be an increase in the biological oxygen demand (BOD), together with a rise in the ammonia content, resulting in a possible case of filter poisoning.

Under such conditions, it is only too easy to obtain a 'merry-go-round' situation where ammonia, nitrite and pH chase each other's tails! All the testing in the world will not resolve such a situation satisfactorily, the only answer being to try and stabilise the system by stopping all feeding and carrying out water changes using either purified or

Right, clump of Watercress showing the extensive root system.

Centre, Papyrus is an excellent and attractive nitrate remover. These plants are shown in their 'winter quarters'.



BERTACCO NIKOJ



# Filtering the

John Cuvelier offers advice on an alternative (supplementary) form of Koi pool water quality control.

aged water. Let's face it, our Koi are not going to waste away for want of a few days feeding.

#### NATURAL FILTRATION

Having, hopefully, got your water more or less to normal, if still a bit green, how about giving some consideration to some natural filtration? However good your biological filtration is, the one thing you can bank upon is a high level of nitrate in the filtered water. Why should this be so... and should you be concerned about it?

#### 'Nitrifying' Thoughts

The short answer is that if your filter is working as it should be, i.e. if full nitrification is taking place, then a high nitrate level is inevitable because nitrate is the end product of the aforementioned nitrification!

As for being concerned about it, well this is a matter for the individual. If you don't mind your pool having a greenish tinge (many people regard this as beneficial), and you don't worry about long strings of Blanketweed

and other species of algae cluttering up the pool, well and good; read no further.

However, do bear in mind that that greenish tinge one can grow fond of can, literally overnight, be transformed into top quality pea soup, particularly if your topping up water is normally rich in nitrate anyway, as is unfortunately becoming more common in the UK.

#### Vegetable Filters

The basic problem with nitrate is the fact that this is food for algae of whichever variety is the particular type you are plagued with (and there are hundreds). Consequently, more and more enthusiasts are resorting to vegetable filter beds in an effort to control nitrates, and it has to be said that they have much to commend them.

It's now some eight years since my stream was installed on my own pool and green water has never been a problem, apart from the merest tinge which I've always left well alone until last year when I introduced some barley straw purely as an experiment. As a





Beautiful, effective . . . but can work out quite expensive: a thick mat of Water Lettuce.



Like Water Lettuce, Water Hyacinth needs to be kept away from hungry Koi!

### Suitable Plants

Anyway, getting down to the nitty-gritty, what about a selection of plants? Without any doubt, the most efficient consumer of nitrate has to be yet again the humble Watercress, easily obtained and simply culled when growth becomes too rampant.

Another excellent nitrate consumer, as well as being a very pretty plant, is the Water Hyacinth (*Eichhornia crassipes*). This plant is actually used in industrial densities for water cleaning purposes in more temperate climates, but suffers from the disadvantages of being both expensive in useful quantities and requiring to be overwintered behind glass. Nonetheless, it's worth mentioning for those whose pockets can cope.

There are also several so-called oxygenating plants which can serve a dual purpose in the vegetable bed. Among these is Swamp Stonecrop (*Ceratophyllum demersum*) but be wary of this very rigorous grower! The common Canadian Pondweed (*Elodea canadensis*) is an old favourite with water gardeners and can serve as a nitrate remover, as can Curled Pondweed (*Potamogeton crispus*).

Some more reasonably priced floating plants for a vegetable bed include Water Lettuce (*Pistia stratiotes*), Water Soldier (*Stratiotes aloides*), Water Chestnut (*Trapa natans*) and Bladderwort (*Utricularia*).

In addition, any of the common reed type plants will flourish when planted into a gravel stream bed and will contribute to the overall control of nitrate levels. Let me reiterate, if it has a root system with wet feet, it will feed upon nitrate!

Another most attractive plant, though more suited to a moderately sized stream is the Papyrus, often mistakenly referred to as the Umbrella Plant. This vigorous grower is best planted in large pots with holes in their base and, again, the only medium required is some fine gravel. Within a short time the root system will be seen to be spreading rapidly and doing its job of feeding upon the nitrates.

At the end of the growing season, each plant should be split, repotted and stored in a conservatory STANDING WITH WET FEET! If they are allowed to dry out, you'll lose them. These plants are not hardy and they don't like frost, but they are quite our favourite plants and have provided our friends with countless offshoots. Our own examples regularly drink up to 2 gallons (c 9 litres) of water a week through the winter!

So, to sum up. Give a vegetable filter a try. It need not cost a fortune and you can console yourself with the thought that, however small your 'green' filter is, you must be reducing the amount of nitrates in your pool and, with it, some of the dreaded green water.

You may even finish up like I did last year when I found my Watercress reluctant to grow because the nitrate level had fallen well below the 10mg/l mark. A little touch of technological overkill?

# 'Green' Way

result, my water is actually too clear, as can often be seen in photographs which we've published in *A & P* from time to time. Of course, this could well be a one-off situation which I shall be keeping an eye on but, nevertheless, it is interesting.

### Watercress Solution

My own stream consists of 20 metres (c 65ft) of channel, varying in width from half a metre to one metre (c 20-39in), heavily planted with Watercress, obtained from the supermarket and merely placed into the gravel bed. A further Watercress bed is formed by the header tank which feeds the cascades.

I've always been a staunch supporter of Watercress, mainly because it is cheap and one can use it for salads. Believe me, once it's growing, it takes some stopping!

Watercress is not unlike an iceberg because, for every inch of visible growth, there are ten inches of unseen growth in the form of roots, as can be seen by the picture. It is, of course, these roots which do the business of nitrate removal, no media as such being required, merely a gravel bed to hold the roots in position.

Every now and again, I lift a large bunch and throw it into the main pool where the

Koi queue up to remove all those lovely beasties like shrimps and tiny worms.

While favouring Watercress, I should stress that ANY plant which has its feet in the water will take up nitrates coming into contact with them! This fact really leaves the field wide open for those of a decorative bent but (there's always a but), it's quite pointless to introduce nitrate removal plants into a pool where Koi can get at them, as they (the plants) won't last five minutes.

### Add-on Vegetable Filtration

Neither is it a good idea to integrate a vegetable filter with a biological filter because of the 'channelling' which will take place within whichever type of medium is used. Ideally, the vegetable bed should be an 'add on' device which need only be a tank, although I'm fully aware that aesthetics will play a large part in the decision to build.

Failing that, one can always partition off a small part of the pool using some stout plastic netting which, once planted, could be virtually invisible. The proportions of such an enclosure need not be vast because you should bear in mind that nitrate is being continuously produced by filtration and that the filtrate is being circulated 24 hours a day by the action of your pump.



# Books & videos

## Fancy Goldfish Culture (Second Edition)

By: Frank W. Orme

Published by: Nimrod Press  
ISBN: 1-85259-007-6

Available by mail order direct from Jamesway Publishers, Units 18 & 19, Hanson Close, Middleton, Manchester M24 2HD.  
Price: £18.00 post-free

Reviewing this book is rather like attempting to review The Bible: the fount of all knowledge being contained within its revered pages, and always a source of inspiration at any and every time in one's life.

Such can be said about *Fancy Goldfish Culture*. When it was first produced in 1979, *Fancy Goldfish Culture* immediately became 'The Bible' for Fancy Goldfish keepers and fishkeeping hobbyists throughout the UK and, despite some splendid pretenders to the throne in the ensuing years, it has still retained its deservedly lofty position.

Technological advances over the past 13 years might, one would assume, begin to date this book. Far from it — the principles of Goldfish keeping remain the same, even if some of the accessories, and even the Goldfish varieties themselves, have become somewhat more sophisticated.

Thus, don't expect *Fancy Goldfish Culture* to be a re-written, edited, or even updated version of the original. This is, virtually, the original. True, today's fishkeepers are themselves rather more sophisticated than their counterparts of twenty and, even ten years ago, but it is a testimony to the authoritative nature of its late author that, like the Goldfish itself, *Fancy Goldfish Culture* is hardy enough to withstand the rigours of time and 'progress'.

Having opened this review with such general praises, I hesitate to highlight the book's few faults. Notably, there are no colour illustrations of Fancy Goldfish! I would agree that the colour photographs in the original version were not exactly up to the high standards seen in today's publications (not least, *A&P*), but a poor photograph of a good fish is better than none at all (and, after all, there are some darned good photographs available of some darned good Fancy Goldfish!).

So, the only pictorial references to Fancy Goldfish varieties are in the form of Frank Orme's own outline drawings, excellent though they are.

A further gripe, minor but significant, is that the address details of the publications (and the societies . . .) are horrendously out of date. I do feel that the book would have benefited from being cast under the eyes of a knowledgeable editor who is aware of the

Goldfish scene and knows the intricacies of the hobby, in order to smooth some of the rough edges.

Perhaps some of these same 'rough edges' form part of the appeal of *Fancy Goldfish Culture*, having been written by a devoted hobbyist for devoted hobbyists.

Major 'plusses', though, are that the book has been produced in a slightly smaller page size and with an 'easier' typeface than the original; and the dust-jacket has, thankfully, been re-designed, not only to make it more attractive, but also to provide some indication to anyone unfamiliar with the hobby, of what *Fancy Goldfish* really are.

Now the contents. How can anyone choose mere highlights from a book which has virtually everything you could ever need to know about the hobby? The simplest way would be to reproduce the contents page but, including the illustrations guide, there are no less than eight of them!

Full consideration is given to every aspect of the Goldfish keeping hobby, beginning with an intriguing self-penned insight into the author's introduction to, and development of, his own hobby. The body of the book commences with instruction on building a pond and to the use of the aquarium; while pond maintenance is also given detailed consideration.

Subsequent chapters comprehensively analyse Goldfish anatomy, its history and art, and some of the main varieties of Fancy Goldfish. Detailed advice on selecting and transporting Goldfish, foods and feeding, and pests and diseases, are complemented by two chapters devoted to providing authoritative guidance on breeding Goldfish and on rearing set-ups.

And it doesn't end there. When you've bought or bred your fish, you may well want to show them, so advice on showing is provided in a further chapter.

Goldfish societies and literature are referenced in their own section while, for hobbyists who also wish to record their prize specimens on film, advice on photography is also incorporated.

The book is concluded with a glossary and a series of charts (even including a scale-counting diagram); while the author has not failed to include that essential device of any authoritative reference: the index.

When I acquired my first (and now well thumbed!) copy of Frank Orme's *Fancy Goldfish Culture*, he personally inscribed on its fly-sheet: "Hope that this book will add to your enjoyment and understanding of the Goldfish." That inscription should be printed on every copy, as *Fancy Goldfish Culture* will continue to be The Bible of Goldfish keeping for every aquatic hobbyist.

Frank, we are all indebted to your knowledge. I, for one, am delighted that the publisher has seen fit to produce the second edition, which should be at least as successful as the first. Here's to the third . . .!

Stephen J. Smith

## Hobbyist Guide to Successful Koi Keeping

By: Dr. David Pool

Published by: Tetra-Press (as part of their series: Aquarium Digest International — Collector's Edition)

ISBN: 3-89356-134-X  
Price: £7.95

I have been looking forward to a book by regular *A&P* contributor and head of the Tetra Information Centre, Dr David Pool, for a long time. His extensive experience, knowledge and downright sensible approach to aquatics have 'demanded' an outlet in book form for several years now, so it was with great pleasure that I received the news of the publication of *Hobbyist Guide to Successful Koi Keeping*.

Having had an opportunity to go through this well-bound, quite attractive book, I think David has done his bit really well, producing a text that is readable, informative and one of great use to anyone who may either be contemplating taking up Koi keeping, or is already immersed in it. Even established Koi Keepers will find good use for this superbly priced book.

The contents list (as dictated by the subject matter) covers all the main topics, like water quality, filtration, nutrition, health, breeding, pond maintenance, seasonal care, buying and handling Koi and — an unusual, but most welcome, addition — Koi in aquaria. There is also a page entitled Further Information, which newcomers to the hobby will find very useful.

The section on water is entitled: The Importance of Water Quality, and, in accordance with its 'importance', constitutes the first chapter in the book. This, I think, is a sound move. Like David Pool, we often say in *A&P* that, "If you look after the water, the water will look after your fish". Space is afforded in this chapter to temperature, pH, hardness, the Nitrogen Cycle, chlorine, chloramine, oxygen and pollutants — all vital, in their own ways, in helping us maintain healthy living conditions for our fish.

Jumping from the opening to the closing chapter, I was very pleased to see the inclusion of Koi Keeping in Aquaria. If anything, this aspect of the Koi hobby is likely to expand, so any sensible treatment of the subject is to be welcomed.

In between, the other chapters provide a wealth of information, as well as some very useful and illuminating pictures not seen before, particularly regarding Koi health. It was also good to see a selection of Roger Cleaver's excellent photographs (some of



which we've reproduced in past issues of *AGP* make an appearance in this (mostly) well-illustrated book.

The one thing, in my opinion, that mars the quality of an otherwise praiseworthy publication is the editing which, quite frankly, is pretty poor. Commas, hyphens, full stops, semi-colons and other equally useful 'textual' tools are, in my view, very badly exploited in places. The first of the slip-ups appears as early as on the Credits page (facing the Contents page), where the omission of a comma, allied to a missed typesetting error, results in Tetra's UK address being at Bastleigh, Hampshire, instead of at Eastleigh, Hampshire. I took this as an early omen . . . and I was right.

The editorial decision to adhere rigidly (well, almost rigidly) to metric units is probably unwise. Despite the need/desire for universal metrification, there's little point ignoring the fact that, at least in the UK and the US — the two biggest markets for this book — inches, feet, gallons (Imperial or US), degrees Fahrenheit and other equally non-metric units are relied upon by large numbers of hobbyists.

A further irritation is the incorrect captioning of illustrations. For example, on page 27, 'above left' should read 'above', and 'above right' should read 'below', while on page 43, 'above left' should read 'above right'. And, while on the matter of illustrations, should the picture on page 56 appear as it does, or should it be upright?

Odd typesetting errors here and there are usually of little consequence, with the possible exceptions of those concerning scientific names, e.g. of the White Spot parasite. Yet, taken in conjunction with the other production / editing shortcomings mentioned above, they do tend to detract from an enthusiastic, underlying effort on the part of the author who has, in my view, made a very commendable attempt at producing a sensible, competent, thorough and very accessible book for Koi keepers.

I extend my warmest congratulations to David Pool for his part in this project. I also sincerely hope that he will follow up the *Hobbyist Guide* with further equivalent ventures into aquatics.

John Dawes

## The Cichlids Yearbook (Volume 2)

Edited by: Ad Konings  
Published by: Cichlid Press, St Leon-Rot, Germany  
ISBN: 3-928457-05-5  
Price: £19.95

**A** new book from Ad Konings is always something for the cichlid enthusiast to relish, even if he is 'only' the Editor, as with this, the second in the *Cichlid Yearbook* series. As with the first volume, much of the material, both text and photos, is provided by Ad himself, although the number of guest authors has now increased from 10 to 18,

leading to an even greater variety of subject matter than before. The text is a goldmine of useful information about cichlids from all over the world, and, as we have come to expect, the photography is out of this world.

The emphasis is, once more, on the new and unusual; and this means not only cichlids themselves (including several in-depth studies of various groups, as well as short pieces on individual species), but also evolution and behaviour. Thus, we have Konings' latest ideas on speciation in Lake Tanganyika, and a piece on mouthbrooder spawning techniques in which he collaborates with Dr Ethelwynn Trewavas, well known to scientists and hobbyists alike for her lifetime work on African cichlids.

The book is divided into sections devoted to the various geographical areas where cichlids are found: the East African Lakes (the three main Lakes having a section apiece); West Africa; and both Central and South America. Many of the species included have never been seen here in Britain, but it is to be hoped that this will soon be remedied, and, obviously, it will be most useful to have some information about them available when they do arrive. There are also sections on maintenance and "*Cichlid Literatim*" (literature and theory).

Some aquarists were, I know, disappointed that the first *Yearbook* was available only as a paperback; I have only an unbound copy for this review, but Ad has assured me that Volume 2 will be produced as a hardback, and will therefore be an even more attractive addition to the cichlid keeper's library.

The *Cichlid Yearbook* should be available from retail outlets, as well as by post from the British Cichlid Association (Dept AP), 7 Delamere Avenue, Sale, Cheshire (non-members please add 10% to the retail price to cover P&P and insurance) or direct from main distributor, **Animal House** (see advertisement in this issue of *AGP*)

Mary Bailey

## A Complete Volume of Successful Koi Keeping

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Kent BR6 7RP.  
Tel: 0689 878161.**

Price: £19.95

**T**his latest three-part Koi video runs for approximately two hours, and seeks to cover most aspects of Koi keeping which the newcomer to Koi may wish to know about.

**Part 1** runs for 46 minutes. This sets out, by showing a selection of different ponds, to help you decide if a formal or informal style suits your taste best. Pumps, UV sterilisers and multi-chamber filter construction are covered, as is the building of a new pool that

graphically illustrates why it can be a bad idea to build under a tree! While the builder is fitting the liner to the bottom drain, leaves from the tree behind the pool are falling all around him.


The types of materials available to the Koi keeper for pond building are mentioned, as are the various filter media in use around the country today.

**Part 2** runs for 41 minutes. Koi varieties are described in this part. A good selection of Koi are shown, and these will certainly help the beginner get to know the basic varieties.

*Many cost-saving ideas*


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SCENES FROM JAPANESE FISH FARMS AND SHOWS

AN ACCUMULATION OF EXPERIENCE OF SUCCESSFUL KOI ENTHUSIASTS AND PROFESSIONALS

SEEKING IS BELIEVING

SEE CHAMPION FISH

The last 7 minutes of this part are dedicated to the buying of Koi: how to select good, well-proportioned and healthy Koi.

**Part 3** runs for 33 minutes and, with the aid of drawings, sets out to describe the parasites which may appear in your pond and the treatments which should be used to control them.

**Bernice Brewster**, a Koi Consultant, demonstrates how to anaesthetise Koi for treatment. She also demonstrates how to tend external wounds with the aid of cotton-wool sticks, Tamodine and Orabase cream.

Bernice also shows how to remove dead scales and Anchor Worms with the aid of tweezers. Use of a second 'close-up' camera would, I feel, have been beneficial to the viewer at this point so that the Anchor Worms etc., could have been seen more clearly.

In summary then, this video is a good beginner's guide to Koi keeping, with some excellent shots of lovely ponds and beautiful fish. It was only spoilt for me (I'm half deaf) by the background music which, in **Part 2**, was a piano reminiscent of the silent movie era!

David Twigg



Fully mature male  
Red Hump  
Earth-eater.





# Spotlight

## THE RED HUMP EARTH-EATER

Steve Dent focuses his attention on a splendid and peaceful South American mouthbrooder.

Main photograph: Bill Tomey

**T**he Red Hump Earth-eater, *Geophagus steindachneri*, is an interesting, mid-sized mouthbrooding cichlid from northern South America, often seen for sale under the name *Geophagus hondae*. However, *Geophagus hondae* is now considered a junior synonym (non-valid name) of *G. steindachneri*.

### VARIABLE COLOURS

The Red-hump *Geophagus* (its alternative 'label') derives its common name from the most prominent feature of the adult male fish, namely a distinctive cephalic growth that shows a varying degree of red coloration. As these fish grow, the hump of the male develops and the other coloration intensifies.

Young fish of both sexes, and mature females, have an overall base colour of pale yellow or light brown with dark brown bars coming and going with the fishes' mood and condition. There is also a blue-green spot on all the scales on the fishes' flanks.

In large males this iridescence covers almost all of the scale, and is a dark shade. In mature females it is less evident and of a paler coloration.

In their breeding colours, males often show dark, almost black, patches on their bodies, which mask the other colours.

### BREEDING Obtaining a Pair

When attempting to breed this species, it is a good idea to follow a standard procedure

for cichlids and buy two or three youngsters from, if possible, different suppliers. You then end up with half a dozen young fish with different parentage. This helps maintain a good strain of fish from future spawns.

This technique should also ensure that you get a compatible pair of adult fish who have 'self-selected' themselves. With this species, however, pair bonding is not a long-term relationship. Males court all available females and mate with any that are ready to spawn.

### Aquarium Requirements

If you have a large enough tank, say 4ft (120cm) in length, these fish can be maintained in groups. In my 48 x 24 x 18in (120 x 60 x 45cm) display tank I maintained a group of two males and four females. The females were removed to separate brooding tanks when carrying eggs or fry.

On occasions, the females would spit out young fish or eggs, but always picked them up again when left undisturbed in the margarine tub I used to transfer the brooding females without taking them out of the water (see below). On other occasions, I have kept pairs of these fish in smaller tanks: (24 x 15 x 15in — 60 x 38 x 38cm). When kept as pairs, the males were removed when the females were brooding.

In the artificial conditions of the fishtank, where there is no shortage of food, mature adult males are constantly on the look-out for ripe females to spawn with.

**The female does not possess the head growth of the mature male.**

With small tanks, the need to separate the sexes post-spawning is quite pressing, as the males will continue to chase the females, even when they are brooding. The constant harassment of the female by the male can lead to her eating the eggs or fry. Close observations should be made to ensure no mishaps occur during and after the spawning takes place.

In the wild, these fish come from fairly fast-flowing rivers, and so, good filtration and water movement are appreciated. However, tank-raised specimens seem not to require such attention to detail. As long as good-quality water is maintained, these fish do not seem too concerned about its chemical composition. I have kept the Red Hump *Geophagus* in both acid and alkaline conditions and have had successful spawnings in both situations.

### Tankmates

Although these earth-eaters grow fairly large; males up to 4.5in (11.4cm); females to 3in (7.6cm), they are very peaceful with other species, and are quite at home in a community aquarium.

Small Tetras such as the Black Neon, *Hyphessobrycon herbertaxelrothi*, and Roberts' Tetra, *Hyphessobrycon roberti*, swim unmolested in the company of a group of eight maturing *Geophagus* in one of my 3ft (90cm) tanks at the moment.

### Brood Size

I have read that female *Geophagus steindachneri* can have broods of up to 100 young, but my fish have never had more than 26 fry at a time, and most broods were smaller than that.

Even with such a small number of young fish being produced by each female, a large collection of fry will be acquired when three or four females are breeding regularly. There is usually a ready market for the offspring.

### Spawning

Spawning takes place when a ripe female is courted by the displaying male. He quivers above smooth stones, cleaning the surface with his protruding lips. When ready to spawn, the female will also clean the surface of the stone. Three or four sites may be prepared in this way before actual laying takes place.

Eventually, however, actual spawning begins. The female lays one or more eggs on the preferred stone and quickly spins around and takes them into her mouth. At the same time the male appears to release his sperm into the water. The female may also mouth the male's ventral area to ensure fertilisation, but I am not sure if this is a deliberate action, or simply the result of the close proximity of the male at the spawning.

As mentioned earlier, about 20 eggs are



STEVE DENT



laid before spawning is complete, and the female retreats from the attentions of the male. If the pair are not separated, then the male will continue to pursue the female.

### Removing the Female

If the female is to be removed, it is best not to chase her too much, but carefully observe her movements and determine her favourite resting places. If she is harassed by the male she may well tend to hide in the back corner of the tank, from where she can easily be caught in a net. Do not take the net out of the water, however, but use a clean margarine

tub, or the like, to dip in the water and lift the brooding female out of the tank without ever taking her out of the water.

Even with great care, the female will sometimes spit out the eggs she is carrying, but I have found that in this species, unlike some Malawi mouthbrooders, a female invariably picks up the eggs if left undisturbed, in the tub, while floating in the brood tank.

### Rearing the Fry

Females will continue to brood eggs and fry for between 16 and 21 days, but will continue to take the young fish back into

their mouth at times of danger for up to another ten days or so.

The young fish immediately start picking over the substrate for small particles of food. They also actively chase live brine shrimp in the lower levels of the tank, but it is usually a few days before they come to the water surface for food.

When fed plenty of live food, the young grow quite rapidly at first, but unless you provide frequent water changes, growth rates appear to slow down. Within six months, the young males are starting to develop the red coloration, but it may be another six months before they reach sexual maturity.



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# OUT AND ABOUT

## A DAY AT THE RACES

By Alex Stephenson

Photographs by John Dawes

I always thought the only reason people went to Doncaster was to see the St Leger. However, on 28 and 29 March, the racecourse, or to be more exact, the Tote building, was the location for the Yorkshire Aquarists' Festival.

morning pictures when I was a lad. Eventually, the doors opened and the conga began to disappear. We joined it.

Entrance fee was £2, OAPs and children half that; very reasonable, I thought.

Once inside, a quick glance

for lunch, at which time, Jill commented on the happy, friendly attitude of the catering staff, surely a novelty these days.

Suitably refreshed, some serious viewing of the exhibition took place. This was suspended abruptly so as not to miss *A Trip up the Rio Negro*, a lecture by *A & P* Editor John

Stephen Smith, whose subject was *The Singapore Experience*, dealing mainly with Fancy Goldfish — wonderful photographs of exceptional fish. Other lectures followed by *Dr David Ford* ('Aquarian'), *Dr David Pool* (Tetra) and *Otto Roth* from Germany, but I was anxious to get back to the exhibition proper.

Most of the stands were well laid out with plenty of space between them. Lots of fish for sale as you would expect, plus plants, tanks, equipment, and all the sundries fishkeepers find essential. The day passed quickly. A chat with the gentlemen on the stand selling my favourite aquarium filters produced a bargain, while time spent foraging on the bookstand produced another. I was tempted to fill my fish buckets many times over. In fact, I could easily have spent a fortune!

One thing bothered me: although most of the fish for sale were gorgeous and well presented, some were so tightly packed into the tanks they were climbing over each other. I realise that vendors must pro-

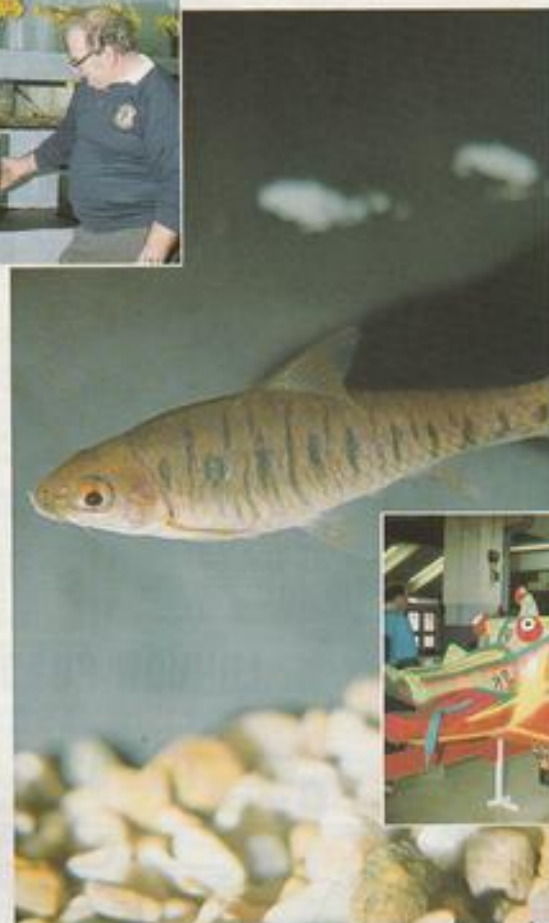


Father and son team, Tony and Karl Spencer with their Fish of Fishes champion.

I had been told that YAF was one of the best exhibitions of its kind and so made a special effort to go and see for myself. This effort was so special that it involved getting up at 5.30 on Saturday morning. My wife, Jill, being uncertain of my sanity, decided she ought to accompany me, so off we went with fish buckets in the car, just in case.

I had not been to Doncaster Racecourse for a very long time and thought it prudent to allow plenty of time for the journey. We arrived at nine o'clock. The doors didn't open until ten. . . . Well, four minutes past, actually!

The car parking facilities are very good, being just across the road from the main entrance; absolutely ideal. The next hour was spent sitting in the car observing the other early attendees. Fishkeepers are every bit as varied as their fish, you know. A queue of approximately 200 formed before opening time, proof indeed that this was a popular event. It reminded me of Saturday



The Best Fish in Show . . . great fish but is it *Barbus barriloides*?

around, a trip to the loo, then straight to the restaurant for coffee — very good coffee! We returned to the restaurant later

Dawes — great stuff, full of insight. As a goldfish enthusiast, I stayed on for the next speaker, 'Coldwater Jotter'



Ken and Barbara Robinson by Scorpio's winning tableau.

vide enough stock to satisfy purchasers and that space is often limited. But, I feel a solution to prevent 'overpacking' is required. This same problem occurs at some retail outlets, of course.

A fish on exhibition that





A first-time exhibitor at YAF — K K Chiu of Eurochill — with top-quality Fancy Goldfish.

wasn't crowded, was a Wells Catfish. It's a long time since I've seen one of these. It was only a tiddler at about a foot long, but these giants are among the largest of the freshwater fishes and are therefore unsuitable for the average aquarist. The owner of this particular specimen was very proud of his fish, and rightly so.

Discus are always impressive, and some of the colour varieties on sale were superb. Money was definitely changing hands in this area. Likewise, many of the other tropical species were about to travel far and wide. At times you couldn't get near the tanks for prospective buyers. Fancy Goldfish of varying qual-

ity were in abundance, the best of these being very tempting to people like me. One stand had some of the largest Ranchu I've ever seen, while another displayed some very worthwhile Orandas. All in all, plenty of fish to suit all tastes.

The tableaux were interesting. My particular favourite was in the form of a dragon (the winner, in fact, of the Tableaux Trophy). Many people criticise these creations, saying they often have nothing to do with fish. This is probably true, but the time and effort which goes into them has to be admired. For those who do like them, the ones at YAF were imaginative and very clever.

Finally, at a quarter to five, my wife and I ran out of steam, so we took our leave. Going home, the conversation consisted of, "Do you think we should have bought that fish?" and "Did you see that so and so?" One thing puzzled us both:

why didn't the escalators work? To sum up, we had a great day. I saw a lot of familiar faces, some well-known in fishy circles, others I couldn't put names to. YAF turned out to be everything they claimed. If you couldn't make it this time, do make an effort next year.

### YAF MAJOR AWARDS

#### TABLEAUX

- 1st — Scorpion
- 2nd — The Travel Club
- 3rd — Otley
- 4th — Bridlington
- 5th — Select

#### BEST FISH IN SHOW

*Barbus barriloides*\* owned by Mr and Mrs Moore.

#### BEST EXHIBIT

Congo Tetras (*Phenocogrammus interruptus*) owned by Mr and Mrs K J Brand

#### HIGHEST POINTED SOCIETY

Workington A.S.

#### FISH OF FISHES

- 1st *Cichlasoma hartwegi* (T & K Spencer)
- 2nd *Cichlasoma bifasciatum* (Mr & Mrs Byrom)
- 3rd *Pseudopomoxis zungaro* zungaro (B & S Crich)
- 4th *Channa striata* (Mr & Mrs Nelson)
- 5th *Acrossocheilus desmanus*\* (M & P Jordan)

[\*I have tried to track both these fish down but without fully conclusive success in the limited time at our disposal before we had to go to press. In the case of the first of these two species, the specimens on show looked very much like *Barbus* (*Barbodes*) *fasciolatus* — the Barred Barb. Ed.]



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Dissolve 1 lb of dishwasher salt into 1 gallon of water. Syphon water through unit over a period of 1½ hours. Connect unit to water supply and rinse through with 2 gallons of water before collecting for the aquarium again.

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All letters must be accompanied by an S.A.E. and addressed to:

**Your Questions Answered, The Aquarist & Pondkeeper, 9 Tufton Street, Ashford, Kent TN23 1QN.**

**Herpetology, Julian Sims. Koi, John Cuvelier. Tropical, Dr. David Ford. Coldwater, Pauline Hodgkinson. Plants, Barry James. Discus, Eberhard Schulze. Marine, Graham Cox.**

## DISCUS

### SIX FOR A PAIR

*I wish to buy six young Discus in the hope that a pair will bond so that I can breed from them. Would it be best to buy the fish from a variety of suppliers, so that I don't end up with a brother x sister pair?*

I feel it would be rather unusual for anyone who wants to start to keep Discus to buy six young fish from various suppliers, especially if one aims to find a suitable pair and breed from them. Someone, somewhere once worked out that there

will be a certainty of having both sexes if at least six fish are bought at the same time out of the same tank.

If, on the other hand, one were to buy Discus from various suppliers, even if they were all from the same strain, the offspring could easily be far from what one expected. Also, it is common to pick out the slightly larger, more colourful ones out of a shoal of youngsters and one could end up with a tank full of males. (Hobbyists who do buy single fish or a couple at the

time, will confirm this).

I would not worry too much



Many Discus crosses are between closely related fish exhibiting desirable characteristics.

at this stage about a brother and sister pair. It will be easier to raise them up to sexual maturity and let them have a go. All fixed colour strains are obtained like that, or back crossing with one of the parents, and deformities etc will only happen if one carries on for too long with such offspring.

When the six fish have reached sexual maturity, it will be much easier to buy a suitable Discus from another parentage to provide a different blood strain to improve future broods.

## KOI

### 'STRAW-CLEAR' WATER

*I've heard that straw will clear green water from my pool. Is this so?*

The use of barley straw in alleviating the problem of green water was the result of several bales of straw falling into a farmer's lake. Having noticed that algal growth appeared to be retarded in the area of the straw, he mentioned the fact to someone and the theory snowballed from there, ending up by being researched with positive results by a university.

The theory is that, as the straw rots down in contact with water, some kind of chemical compound which retards algal growth leaches into the water. The exact form of this material is, as yet, unidentified, and so, is a bit of a mystery. However, I have received word from several sources as to the effectiveness of the treatment, and it certainly

worked for me.

Only a small quantity of straw is required: circa. 100 grammes weight per 1,000 gal-

lons (4,500 litres), which should be placed in a netting container and lowered into the pool. The time taken for any effect to be

noticed apparently depends on different factors such as pH, filtration, temperature etc, so some patience is called for.



An ideal picture: beautiful Koi in crystal-clear water. Straw may help to achieve this... but we don't know how.



## HERPETOLOGY

### AQUATIC 'FROGS'

*I would like to learn about aquatic frogs, in particular how to keep and breed them. Can you help?*

The species of totally aquatic 'frog' which are most frequently offered for sale and, therefore, most commonly maintained in captivity are all naturally found in Africa. The species are as follows:

African Clawed Toads (*Xenopus laevis*), Kenyan Clawed Toads (*X. borealis*), Dwarf *Xenopus* (*X. tropicalis*) and Dwarf Clawed Toads (*Hymenochirus boettgeri*).

Clawed Toads should be maintained in water at a depth in which they can stand upright so that their nostrils can protrude above the surface.

Gravel on the floor of the aquarium might improve the appearance of the tank but this will make regular cleaning much more difficult. However, half an earthenware flower-pot can be added as a useful piece of aquarium 'furniture'. Clawed Toads hide in the curved tunnel that this provides.

There is one important precaution which must be taken

when keeping *Hymenochirus* and *Xenopus* — aquatic 'frogs' are real escape artists. Therefore, an overhang or, preferably, a ventilated lid (not made of perforated zinc) must be fitted over the tank.

Clawed Toads need to be kept in fairly warm water, thus a submersible heater and aquarium thermostat will be necessary. The suggested temperature range to promote active feeding, digestion and breeding is 20° to 22°C (68-71.6°F) for *X. laevis* and *X. borealis*, 24° to 27°C (75-80.5°F) for *X. tropicalis* and 20° to 25°C (60-77°F) for *H. boettgeri*.

Adult Clawed Toads are relatively easy to sex. Female toads have three small projections called *labial flaps* in the cloacal region between their back legs.



JALIAN SIMS

*Xenopus laevis* — the most popular of the various aquatic 'frogs' on offer.

Such labia cannot easily be seen between the hind legs of male toads.

If spawning occurs, then the adult amphibians should be separated into another tank to avoid cannibalism of the eggs and offspring. Hatching *Xenopus* tadpoles are herbivorous, feeding on microscopic algae suspended in the water and growing on the glass of the tank. As the tadpoles grow, they become carnivorous, feeding on rinsed Brine Shrimp (*Artemia*), then Water Fleas (*Daphnia*), mosquito larvae and *Chironomus* larvae.

*Hymenochirus* tadpoles are carnivorous from their first meal, when they feed on tiny invertebrates.

Adult Clawed Toads feed on small (moving) earthworms but

should not be offered the red worms from compost heaps. These worms contain poisonous body fluids. These amphibians will also eat small pieces of lean beef, but uneaten meat must be quickly removed from the water to prevent contamination.

Aquatic 'frogs' are stimulated primarily by MOVEMENT when they feed, and not necessarily by the suitability of the live creatures they try to catch.

Adult *Xenopus laevis* are relatively large amphibians and readily take moving prey such as earthworms. They also grab the legs of other similar-sized toads if these move nearby. Therefore, I would recommend that you only keep aquatic 'frogs' of the same species and of the same size in any one tank — a small *Xenopus* could easily be swallowed by a bigger amphibian.

For the same reason, I would not recommend keeping large aquatic 'frogs' and fish in the same aquarium. You never know when the stimulus of movement by a fish will trigger a feeding response by an amphibian!

## COLDWATER

### 'ENGLISH' COMMON GOLDFISH

*I have an in-built ambition to breed 'English' Common Goldfish. Do you think that the label 'English-bred' is a myth, bearing mind that so many fish are imported these days?*

*How should I go about fulfilling my aim?*

I am happy to reassure you that the Common Goldfish still holds dear to a few amateur breeders' hearts. In fact, a few years ago at the N.G.P.S. show, a team of Common Goldfish bred by father and son members of the N.G.P.S. won the Aquarium Trophy for the overall Best Breeders Class. These two gentlemen have been line-breeding their strain for several years.

Should you wish to make contact with these two aquarists you can get in touch by writing

to the N.G.P.S. Secretary, David Padfield, "Broadlands", Westfield, Ossett, W Yorks, WF5 8JH.

Your efforts at establishing your own strain of fish are to be applauded. Whether you have the best of foundations in your present stock or not can be answered by asking these questions:

① Have you an 'ideal' shape in mind for your fish, ie body and finnage; and does this shape occur or come anywhere near the shape that exists in your

present stock?

② Do your fish change colour quickly from 'olive green' to the traditional colour variations of the particular fish, (ie Common Goldfish change to 'self-orange' or red), or are there large numbers of fish within the spawning which remain at their infant colour 'olive green', even when they are kept in water with a temperature around 60-70°F (15.5-21°C)?

③ Is there a high percentage of red and silver fish among the brood, and is the colour good in

the 'self-orange' fish?

Even slight changes in body and finnage shape take many generations to complete. It is time-consuming to attempt to change things, enthusiasm and patience often running out if the task set is too ambitious. Therefore, it is better to start off with good-quality stock than to struggle with inferior fish.

It might be easier to continue to wait until the better fish comes along if you have any doubts about your present stock.



LASHBANCE F. PIPERSON

Two really good 'English' Common Goldfish.



## TROPICAL

### ALL-TIME CICHLID FAN

*I am an all-time fish fan and love looking at African Cichlids. Would you please recommend some books which would help me in my search for information on these fish?\**

There are two major groups of cichlids: the African fish, which are territorial and often aggressive, and the South American fish, which can also be territorial and aggressive but are usually more peaceful and easy to keep. The African fish require hard, alkaline waters, and the American species want soft, acid waters.

There are so many species, some of which are very special, that one letter could not cope with the subject. Borrow or buy

(some are paperbacks) the following books:

*All About Cichlids* by Braz Walker, TFH No. PS-751, ISBN 0-87666-472-9.

*Introduction to the Cichlids* by R J Goldstein, TFH No. PS-662, ISBN 0-87666-019-7.

*Dwarf Cichlids* by J Vierke, TFH No. KW-005, ISBN 0-87666-509-1.

*Oscars* by N Pronek, TFH No. PS-687.

*The Cichlid Aquarium* by P V Loiselle, Tetra, ISBN 3-923880-20-0.

*A Fishkeeper's (or An Interpet) Guide to Central American Cichlids* by David Sands, Salamander Books (Interpet Ltd catalogue) ISBN 0-86101-208-9 (1986).

*[\*This letter from reader Donell L. Gibson Sr arrived with no*

*address. We therefore hope that you are reading this Donell, and that you find Dr David Ford's response helpful. Ed]*

### SHY TIGERS

*I have recently purchased a six-inch (15cm) Tiger Fish (Hoplias malabaricus) which I am housing in a 36 x 20 x 15in (90 x 50 x 38cm) tank. I would appreciate any information you may be able to supply on this species.*



*Hoplias malabaricus* — the highly predatory but 'shy' Tiger Fish.

The Tiger Fish, *Hoplias malabaricus* (sometimes referred to as *Hydrocynus vittatus*) is a predatory fish, but actually has a very shy nature . . . hence it is not considered a suitable fish for the aquarium. This is why it is not generally listed in hobby literature.

The fish originates from the Amazon and has similar habits to the Piranha, so if you treat it like this species it will thrive. The fish has no external sex differences and there are no records of captive breeding. A few Zoo Aquaria have kept this species (or the similar *H. maculatus* and *H. caviro*) which have grown to about 18in (45cm) on a diet of meat and fish chunks. Many specimens, however, would rather starve than eat anything other than live fish.

## PLANTS

### 'KOI' PLANTS

*I have just finished building a Koi pool which I would like to plant (I've provided shelves for this purpose). What sort of plants would be suitable?*

On the ledge (provided that the plants are in large heavy containers) you could plant up to half a dozen marginal plants



A vigorous marginal suitable for ledges in Koi pools is the Marsh Marigold or King Cup, *Caltha palustris*.

of a vigorous nature. *Carex*, *Typha*, Yellow Iris, *Sagittaria*, *Caltha*, *Acorus* and *Orontium* would be suitable.

If you wish to plant water lilies, choose lily tubs for planters and top the surface with pebbles or heavy rocks. Choose vigorous varieties such as 'Tuberosa Rosea', 'M Chromatella', 'Attraction' or 'Alba'.

## MARINE

### PROTEIN SKIMMING EXPLAINED

*Would you please explain the operation and benefits of a protein skimmer in a marine aquarium?*

The protein skimmer is a device which removes large-molecule organic compounds from seawater. Freshwater aquarists should note that these devices only work in seawater owing to the differences in surface tension characteristics between seawater and freshwater which prevent stable air bubbles from forming at the surface of polluted freshwater.

A protein skimmer is, in its simplest form, a tubular device consisting of at least two distinct chambers as follows:—

#### ① THE FOAM CHAMBER.

This chamber is submerged throughout most of its length vertically within the aquarium water. Aquarium water is drawn in through holes near the surface and travels downwards through the foam chamber, to be expelled back into the aquarium from the base after removal of protein wastes.

At the base of the foam chamber is located a wooden block microdiffuser which, in seawater (but not in freshwater), releases minute bubbles of air from a normal air pump. This smoke-like cloud of air travels upwards within the foam chamber creating a counter-current against the downward move-

ment of the seawater.

Protein/albumen molecules, ie fish excretion within the seawater, are attracted towards the surface of the tiny air bubbles, to which they attach themselves. As the air bubbles slowly rise within the foam chamber, they attract more and more organic excretion molecules which attach themselves to the surface of every bubble. When the excretion-laden bubbles reach the surface of the water within the foam chamber, they do not burst but form a stable, slow-to-collapse foamate which is very rich in organic wastes.

② THE FOAM CUP. The foamate from the foam chamber now rises up into a foam-

collecting cup, in which it gradually and slowly collapses to produce a dark brown, foul-smelling liquid. This is concentrated fish/invertebrate excretion which is periodically discarded to waste as the cup fills.

The benefit of the protein skimmer, or air-stripper, is that the animals' excretion is concentrated in an easily removable way, thus minimising damage to the seawater. Nitrogenous toxins in the seawater are also reduced to a lower level.

### REMINDER

PLEASE DON'T FORGET TO ENCLOSE A STAMPED ADDRESSED ENVELOPE WITH YOUR QUERY



# PRODUCT ROUND-UP

BY DICK MILLS

## Spirex Aquatec

1991 saw SPIREX AQUATEC add another unique filtration product to their range with the launch of SPRINGFLO filter medium. Initially, this thin plastic/mineral-composite ribbon medium was only available in 16.5 square metre surface area pack size. Now Spirex Aquatec have increased the range with 5.5 and 2.5 square metre sizes (the latter is currently being incorporated into small, plastic-box type pond filters).

Dr Andrew Worthington conceived the idea of a plastic ribbon filter medium some four years ago, and has since applied for international patent protection. However, manufacturing a thin plastic ribbon economically in large quantities posed many problems. That is, until contact was made with a company which made a superficially similar product: plastic

parcel strapping.

The existing factory production lines were adapted to make a very thin ribbon of polypropylene with 30% calcium carbonate added to make the Springflo sink in water. The ribbon is then embossed very deeply (until it is nearly perforated) which increases the surface area by over 50% — vital for a biological filter medium. The result is a very versatile filter

medium ideal for biological and fine-particle settlement duties, while being virtually impossible to clog, yet easy to clean.

Initially, Springflo was white, but now it is made in green to proclaim its environment-friendliness! Popular plastic tubular media typically occupy more than twenty times the storage volume of Springflo because they have a fixed void space

between the surfaces. In the case of Springflo, this void space is variable and introduced as it is dispensed from the compact reel directly into the filter. This dramatically reduces the costs of warehousing and distribution (from the factory to the filter) thus saving energy.

The compact sizes belie the contents as Dr Worthington confirms: "Demonstrating the dispensing of a reel of Springflo never fails to amaze people, and impress them with the amount they get for their money".

The pack sizes are sold according to the surface areas: 16.5 and 5.5 square metres, with suggested retail prices of £19.99 and £9.99. With one commercial fish farm alone using nearly 14,000 square metres, the unique advantages of Springflo are catching on!

Full details from: SPIREX AQUATEC, Bradley Green, Redditch, Worcestershire B96 6TE (Tel: 0527 821601; Fax: 0527 821 704).



The new, green, 'environment-friendly' Springflo.

## Purity On Tap

One of the more indefinables when purchasing any form of treatment devices is: How long will they last? Not in finite life terms necessarily, but, say, just how long will that carbon/resin/UV lamp etc, last?

Well, now one manufacturer, PURITY ON TAP, has taken a little time and effort to help fill in some of these inponderable gaps in information. The HI-FLOW range of filters obviate guesswork and can be matched to your own particular system's needs; all the company needs are details of your water average chlorine or chloramine content, water flow rates and filterbed

depth and an 'expiry date' for the Carbon Block medium used can be given to within a few gallons.

The units are ideal for 'in-line' use with ball-valve control, and have impressive filter area figures — 11.5 million sq feet in the Hi-Flow 1 and double that in Hi-Flow 2 and 3! A re-usable 1 micron PRE-FILTER is incorporated, and a PRESSURE GAUGE gives warning of back-pressure, indicating the Pre-Filter needs cleaning.

Extra flow is provided in the Hi-Flow 3 by commissioning a 'Reverse Double Header' Unit to run the filter pods in parallel, while at the same time keeping the unit down to an overall compact size. Units are

presently at special LAUNCH OFFER prices.

How about a portable REVERSE OSMOSIS UNIT? This is ideal for use where mains pressure is low, or even away from mains supply, wherever you need pure water. Beats carting bucketfuls anytime!

NO FREE sounds like a disappointment but, in fact, it stands for NITRATE FREE! This unit is at present under evaluation, but should prove to be a boon to marine aquarists, providing suitable water in a convenient and economic way. Incidentally, it doesn't limit itself to removing nitrates, it also shifts phosphates, chloramines, pesticides, etc, and

almost everything else likely to be found in water, with the exception of rusty bikes and old sofas and mattresses(!), but then you'd see them for yourself, wouldn't you?

Lastly, the HALCYON POLISHING FILTERS (HAL 1 to 3) add the final sparkle to the water, so now there's no excuse for not being able, either to keep your fish in ideal water conditions, or being unable to see them!

Full details of all products from: PURITY ON TAP LTD, Wickfield Farmhouse, Shefford Woodlands, Newbury, Berkshire RG16 7AL (Tel: 0488 39319; Fax: 0488 398997).

## Bach

At the risk of upsetting pondkeepers, I have to admit that I've always thought that the 'lowest-tech' part of things was the square of hessian you had to put into planting baskets to prevent soil-spillage.

Now, from BACH, comes news of hessian-free PLANT-



Small, medium and large 'hessian-free' planting baskets from Bach.

ING BASKETS. The sides of each basket are designed in such a way that lining is no longer necessary.

Details from: BACHAQUATICS LTD, Stoke Place Farm, Stoke Road, Stoke Poges SL2 4NL.



## A-Tech Water Management Systems

Following the successful launch of their AQUASTAT Digital Thermostat, A-TECH have added further modular products to the AQUARANGE. There are now three AQUASWITCHES and the AQUASURGE.

As their name implies, the Aquaswitches provide a safe and sure way of distributing (and controlling) mains electrical power to aquariums and ponds. The Aquaswitch 0 is the basic mains distribution model, having only a 'power on' indicator, yet providing three fused circuits allowing resistive and inductive loads up to 750 watts.

Aquaswitch 3 is, again, a fully fused module but has 4 'power on', 'mains on' and 3 'circuits on' indicators. Power handling is 750 watts (resistive load) or pumps (inductive load) up to 250 watts.

Top of the range Aquaswitch 3000 is the heavy-duty module and is similarly equipped to Aquaswitch 3, but it can handle 1,000 watts (resistive or inductive) per circuit and is suitable for pumps up to 3/4 h.p. Marine hobbyists will appreciate

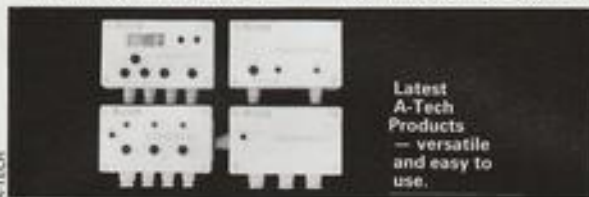
the introduction of the Aquasurge. This unit allows intermittent action of powerheads and pumps to create varying water currents. Operating periods range from a minimum of 2 minutes, on or off, to a maximum of 20 minutes, on or off.

Features common to all modules include splash-proof housing, switches (if fitted) are hooded, easy installation and clearly-visible indicators.

Returning to the Aquastat,

this now has an integral power supply which makes it more suitable for use in cold or heavy duty environments, where battery life could be reduced. This releases the battery from having to operate the High-Temperature Alarm; all the battery does is back up the memory settings should the mains power fail. The good news is that these improvements to the Aquastat have been made without a price increase.

By the time we go to press, new products will have been launched by A-tech at the Petindex Trade Show. For further details, write to: A-TECH WATER MANAGEMENT SYSTEMS, PO Box 18, Aylesbury, Buckinghamshire HP18 0UG (Tel: 0296 770034; Fax: 0296 770038).



Latest A-Tech Products — versatile and easy to use.

## Remanoid Ltd

Developed in association with both the Ministry of Agriculture, Fisheries and Food, and with top carp breeders, PHOENIX 2000 offers two foods for the pond-owning fishkeeper. QUALITY FLOATING POND FOOD

and QUALITY FLOATING KOI FOOD will both ensure your fish remain fit and healthy throughout their lives.

Containing the right balance of protein and other vital ingredients, Phoenix offers quality and value for money. It is claimed that it will feed more fish per kilo than any other fish

food, promoting growth and enhancing colour and conformation. It will not cloud the pond water and its low ash content, good wetting properties and new re-sealable, stay-fresh pack, ensures wastage is kept to a minimum. Sizes start at 500g packs and 1kg, and 2kg packs are also available.

Details of Phoenix 2000 foods, together with information on the full range of Remanoid Pond Equipment and Fish Care products, can be obtained from: REMANOID LTD, Unit 44, Number One Industrial Estate, Medomsley Road, Consett, Co Durham DH8 6SZ (Tel: 0207 591089).

## Identiplug

By now, the FREE OFFER from IDENTIPLUG may well have become exhausted (such is the problem of writing these columns well in advance of publication dates). However, there is more news from the same stable.

Everyone is rightly scathing

about the practice of using overloaded adaptor-plugs in one poor 13 amp socket. If the actual electrical current load itself is not exceeded, the sheer weight of all those plugs hanging on the three pins doesn't make for a safe connection anyway.

Two new offers from Identiplug offer a three-way fused

POWER STRIP (complete with 3 metres of flex and plug, indicator light and wall mounting brackets), plus 3 FREE IDENTIPLUGS of titles of your own choice; the similarly-featured '4-holer' comes with 4 free Identiplugs. Prices are £9.99 and £10.99, respectively, and both include postage and

packing. Around 40 'titles' are available (and you can double up on these, if necessary, by reversing the Identiplug and writing your own legend on the blank side).

Details from: IDENTIPLUG UK, 18 Kirklands, Strensall, York YO32 5WX (Tel: 0904 490282).

## King British

Look out for the Flying Guppy! This eye-catching red-tailed specimen on a dark blue background is bound to stand out on its special display trays. What better way to attract the attention of the fishkeeper than by featuring one of the world's most favourite fishes?

Keith Barraclough, KING BRITISH MD, is positive that the multi-coloured flake food inside more than matches the



Watch out for the 'Flying Guppy' on the label of King British's newest tropical flake food.

colourful image shown on the

lid: "Customers can be assured

that the quality is better than ever now, guaranteeing satisfying results for their fish. This improved blend gives the food additional benefits as befitting the ideal diet for all types of tropical fish."

Details of all King British Aquarium products from: KING BRITISH AQUARIUM ACCESSORIES CO LTD, Haycliffe Lane, Bradford, West Yorkshire BD5 9ET (Tel: 0274 573551; Fax: 0274 521245).

## Anglo-Crimean Aquarium Plastics

Alas, it seemed too good to last. Owing to manufacturing

difficulties faced within the countries concerned, the AQUARIUM AIR VALVES marketed so enthusiastically by ANGLO-CRIMEAN have been withdrawn.

Long-term testing of a large

number of valves has revealed that around 30% crack or perish after 8 months or so of continuous service. This is due to inconsistency of quality in the materials used. Once overall product quality is restored to its

hoped-for high levels, then supplies will be resumed.

ANGLO-CRIMEAN AQUARIUM PLASTICS, 118 Sheffield Road, Glossop SK13 8QU.



# Breeding:

New Series

## MYSTERIOUS APPLES

Variouly known as Infusoria, Mystery or Apple Snails, these large freshwater molluscs have a great deal to recommend them. Derek Rowley reports.



My 'wild-type' male. The long inhalant siphon and the operculum are both visible in this shot.



Albino female with offspring.

I have been a fishkeeper for 13 years and have three fish tanks. In my 36 x 10 x 15in (90 x 25 x 38cm) tank I have African Clawed Frogs (*Xenopus Laevis*). I also have a large Apple Snail (*Pomacea canaliculata* D'Orbigny, 1835). The tank is only half full of water, with curio wood above water level creating islands for frogs.

My second tank is a 36 x 18 x 12in (90 x 45 x 30cm) and is a planted community tank, with Harlequins, Glowlights, Arched Corydoras, Red-eyed Tetras and Dwarf Otocinclus. Plants consist of Straight Vallisneria (*V. spiralis*), *Microsorium pteropus* and *Cryptocorynes*. I also have some very unwelcome dark hair algae around the edges of the plant leaves. The third tank is a small Hagen Hawaii 15 x 9 x 9in (38 x 23 x 23cm) kept for emergencies.

While visiting a tropical fish shop, I noticed they were selling Apple Snails in tanks that also contained fish. This, I believe, is very cruel because most fish are naturally tempted by the snails' long slender feelers, with the result that the snails will end up crouching inside their shell from fear, thus not being able to feed or show a potential buyer their true beauty!

### REPEATED SUCCESS

I bought the largest Apple Snail; it had a dark brown shell. After placing it in my tank with my other Apple Snail, they seemed to pair up and, eight days later, I suddenly noticed a bright coral red cluster of eggs. They had been laid eight inches above the water level in the top left hand corner of the first-mentioned tank.

The water was kept at 77°F (25°C) and the lid on the tank kept the air space very humid. These eggs were laid on Monday, 4 March 1991, and started to hatch 18 days later. I am including dates just in case there is a seasonal aspect to this activity. Within the 18 days it took the first cluster of eggs to hatch, more were being laid (Thursday, 14 March 1991), this time a smaller cluster. On Tuesday, 26 March 1991, the third cluster was laid. By this time, baby snails from the first cluster were dropping into the water at a regular rate and eating lots of lettuce.

On Thursday, 28 March 1991 at 8.15 pm the female Apple Snail started, yet again, to pull herself slowly up out of the water, extending her foot forward and creating a channel from the underside of the mantle border to the end of the extended foot. Eggs soon emerged and moved slowly along the channel, coated in adhesive mucus and flowing *apwards* all the time, one after the other, to be eventually laid on the tank glass. The method of formation of the cluster still remains a mystery to me as far as egg positioning is concerned. Clusters vary in size and thickness.

At 8.50 pm the female loosened her suction-like grip on the glass and returned to





There are several colour varieties of Apple Snail. This 'Golden Snail' was bred at Gardenville Aquatics in Florida.



One of the most recent introductions is the Ivory Snail. This particular specimen, produced by Sanchez Brothers Tropical Fish, was photographed at the 1991 Florida Tropical Fish Farms Association show.

the water, leaving behind the fourth cluster of eggs that measured  $1\frac{1}{2}$ in long by  $\frac{3}{8}$ in at the widest part (3.8 x 1.6cm), tapering at both ends.

### REARING BABY APPLES

Realising that more space was needed, I set up the Hawaii tank to cater for the baby snails.

A small box filter was used, packed only

with filter floss, and the temperature kept at 75°F (24°C), not forgetting lettuce!

On Wednesday, 3 April 1991, the fifth cluster was laid directly under the first cluster. I then decided to remove the female from the male and place her in the Hawaii tank with the young.

In an effort to stop the battery farm look of the Hawaii tank, I decided to select about 30 of the smallest snails and place them in the community planted tank without any lettuce to eat.

The next day I was amazed to see all these little snails eating the dark hair algae from the leaves of my plants. Within two days, the plants were clear of it and then, to stop them eating my plants, I gave them lettuce. When the lettuce was gone, they cleaned my plants and, again, were rewarded with lettuce.

This only seems to work with the small snails, though. All Apple Snails have sharply



Egg laying under way (see text for details).



The first-ever batch of eggs produced by my Apple Snails. They took 18 days to hatch.



Young apple snails have a ravenous appetite!

serrated teeth on their radula ('tongue') which enables them to eat even the smallest threads of algae, but larger snails want larger food as well.

### BIOLOGY AND MATING

The class Gastropoda includes slugs and snails (both marine/freshwater) and land snails. Apple Snails belong to the genus *Pomacea* and the family Ampullariidae.

The snails are *dioecious*, i.e. having the sexes on separate individuals (in contrast to hermaphrodites), so until you know you have a pair, sexing them is difficult. The male's copulatory organ is on the right side of the body and is formed by a modified part of the mantle border.

When mating begins, the male positions himself on top of the female's shell, extending the penis over and under the female's mantle border. Mating can take from fifteen minutes to an hour or more.

The wild-type male Apple Snail (there are other varieties available) is brown with dark brown stripes on his shell and a gold/brown colouring on his flesh. It also has brown eyes.



My female is an all-gold albino with pinky/gold flesh; she has pink eyes.

Now that most of the young snails have grown to 'penny size', their colouring and markings are a yellow and light brown striped shell with black peppered marks on their yellow flesh and black eyes. Each shell is transparent enough to see their hearts beating.

Snails of the genus *Pomacea* have a *dorsal* shell opening, i.e. right-handed. Some Asian and African snails have *sinistral* shell openings, i.e. left-handed. These snails have a lifespan of five to ten years; with regular water changes, maybe even longer.

Apple Snails come from South and Central America, where there are several species, e.g. *P. paludosa* and *P. canaliculata*. The generic name, *Pomacea* means 'apple-like' but these molluscs are also known as Mystery and Infusoria Snails, the latter name in recognition of their role in the aquarium culture of infusoria for very young fry:

*"Some aquarists use them in infusoria cultures, where they devour the lettuce and produce faeces on which colonies of bacteria and infusoria can thrive."*

F. N. Gadially 1969.

In one of the photographs, the snail's inhalant breathing tube can be seen. This tube is used to take in air at the surface of the water by a series of pumping actions. On the opposite side there is a small exhalant tube. Apple Snails have a gill in the right hand side of the mantle cavity, and a 'lung' in the left

... almost amphibious!

In their natural habitat, when the dry seasons threaten, the snails can pull themselves inside their shells and seal the opening with their operculum ('lid'). The operculum of the genus *Pomacea* is thin, flexible, opaque and corneous (horny), rather like our fingernails.

The value of this operculum was brought home to me while doing a partial water change. I failed to notice the escape of a small snail and, three hours later, found it on the floor with its operculum pulled up tight. I quickly placed it back in the tank and, after five minutes, it emerged from its shell making a straight line for the lettuce!

#### AQUARIUM CARE

In my area, the water hardness is 17 GH with a pH of 7.5. This is beneficial to the snails because they are constantly taking the calcium out of the water in order to grow their shells which are mainly made up of calcium carbonate.

Small amounts of chalk placed in the water helps, i.e. white blackboard chalk (the non-toxic kind); soft acid water will gradually erode their shells.

Apple Snails will eat almost anything, even the hairs on the back of your hand! They do, however, particularly seem to relish lettuce, fish/flake and Reptomin sticks. Lettuce can only provide a certain amount of vitamins and minerals, though,

and, since the snails must have calcium in their diet for shell building, I provide uncooked washed pieces of green cabbage leaves for them. If calcium is lacking in the diet, one snail will often attack another snail's shell or operculum to gain its supply.

I have found temperatures of 70-78°F (21-25.5°C) suitable.

One other point I would like to add is that I found the small box filter I used in setting up the Hawaii tank quite inadequate for the number of snails that were in the tank. They need good water, so the filter was taken out, the water aerated, and the bottom mulm siphoned out. This, plus frequent water changes, eliminate the need for filtration, but it is a point worth considering if you are planning to rear these large attractive snails in any quantity.

A final 'bonus' of keeping Apple Snails is that if you grow house plants, you can bottle your old 'Apple Snail' tank water and use it on them!

#### ACKNOWLEDGEMENTS

I would like to thank A & P editor John Dawes for his advice and encouragement, and Fred Naggs of the Molluscs Department at the Natural History Museum, Kensington, for his time and expertise.

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Left, some of the turtle volunteers, plus guest (me — standing at extreme right). The team (left to right): Guy Clegg, Joanna Bearstow, 'Miss A. N. Other' (sorry!), Peter Richardson (Project Leader), Lindsay Harvey and Celia Nicholls (Project Co-ordinator). TRACEY KAY

Right, close-up of a female Loggerhead Turtle (*Caretta caretta*)

# TURTLE SAVIOURS OF KEFALONIA

Gordon Kay visits a dedicated team engaged in the vitally important battle to save some of the Mediterranean's threatened sea turtle populations that nest on Greece's tourist beaches.

*Photographs — unless otherwise stated — by James Sutherland*



Covering up the nest after laying. Note the tag on the back leg. This was attached by the volunteers on a previous years' 'laying' visit.

If living conditions which would politely be described as "difficult" (but in reality were nothing short of squalid!) for months on end, sleeping on the beach and spending every waking hour dedicated to the cause are signs of dedication, then I met some very dedicated people indeed last summer, in the heat of the Greek island of Kefalonia.

It all started with the looming of my fortieth birthday. Tracey (my wife) had said I could choose anywhere I wanted for our

summer holiday by way of a present, and I was totally lost. You try deciding where to go when given such Carte Blanche! Anyway, I chose the Maldives, in the Indian Ocean, and we started to make plans. However, not long into those plans, redundancy struck and so we had to choose again. We plumped this time for Yugoslavia, but we all know what happened there last year!

And so there I was, in front of the travel agent, trying to find an alternative that would suit us both. We had heard good

things about Kefalonia, so when I heard that there was a turtle conservation project happening on the island, and that Thomson's donated money and other help to the volunteers, well — that decided it. Kefalonia it would be, so I immediately wrote to Celia Nicholls, the project co-ordinator and fixed up a meeting.

## TURTLE CONSERVATION SUPPORT

The Kefalonian Marine Turtle Conservation Project was started in 1985 by James Sutherland, a marine biologist based at Southampton University, and Russell Parkes, who had spent years on the island, working with seals for the Sea Mammal Research Unit of Britain and the World Wide Fund for Nature. The project was started on a research basis, with Russell, James and a couple of volunteers counting and measuring eggs etc but, as the thing grew, more volunteers were taken from universities and similar institutions in Britain.

In 1989 James came into contact with Care for the Wild, who agreed to support the project, provided that an educational angle was placed upon it. Nowadays, for instance, many people who attend the talks given by the volunteers in local hotels go down to the beach to help out.

At around the time that Care for the Wild became involved, tour operator Thomson's became interested — not only donating



money and cheap flights to Kefalonia, but also providing advertising. For instance, you read about the project in their brochure and get told about it by the company's representatives at their welcome parties for incoming tourists.

Still further support comes from the Friends of the Ionian, a wildlife conservation group made up of Greek ex-patriots, living mostly in Britain, and from the Kefalonian Nature Project Society (mostly through a local called Damion), who have offered help in signposting the beach. These signposts will be invaluable for educating tourists about driving over nests, lighting fires and camping at the back of the beach. On hatching, baby turtles head instinctively for the faint light between the sky and sea and any artificial lights at the back of the beach totally disorientate them and they go in the wrong direction, become stranded and die.

### TURTLE PEOPLE

We arranged our meeting with the volunteers for the first Wednesday after our arrival on the island, and so it was that we came to be sitting outside a taverna in the main street of Scala — on the south eastern tip of the island — talking to Celia Nicholls, project leader Peter Richardson and volunteers Lyndsay Harvey, Guy Clegg and Joanna Bearstow. We spent hours with these beautifully crazy people, eating wonderful food and drinking gallons of cool drinks, while they told us about their lives as the "Turtle People".

The volunteers work mostly at night, from June to mid/late August patrolling the beach. A base camp is established at the centre of the beach, from which two couples walk in opposite directions to the end of the beach and back every hour or so, the beach being approximately 2 miles (3.2km) in length.

Any nest which is 'laid' is monitored and protected until it hatches. This protection is apparently rather primitive — it consists of a plastic bowl with twigs around. The twigs are used to identify the nest site and a back-up system using geometry is used to cover the eventuality of the sticks being moved.

In the daytime, the sticks are pushed into the ground very carefully so that the tips are just showing, so as to alert all and sundry to the location of the nest, for obvious reasons. The plastic washing up bowls are only used at night and are placed over the nests so that, when the eggs hatch, the baby turtles can be counted and measured etc before they battle to the sea. Anyway, like all simple ideas, they are extremely effective.

By the time we arrived on Kefalonia (late August) adult turtles had stopped coming ashore to lay, and so all of the work done involved looking after the nests. During the day there was always someone on the beach to monitor people coming onto it and in case of anything happening. A good proportion of time is also spent simply talking to people and handing out leaflets in different languages.

The project was hoping to extend its educational work this year to take in local



Her job completed, a female Loggerhead returns to the sea.



A hatchling peers out into a dangerous new world.

schools — a sort of "get 'em as kids and they are yours for life" rationale. This is very important when, in this modern commercial world, the locals have learned that there is more money to be made from tourism than from traditional activities like fishing.

Another tremendously important activity that occupied the volunteers is the delivering of talks to holidaymakers at selected hotels around Scala and other local resorts. The talks outline the natural history of Loggerhead Turtles and also the work of the project and its aims. These entertaining talks are liberally illustrated with some terrific slides.

From the taverna, we went with the volunteers to their camp, just behind the beach. Conditions in the camp are squalid to



Loggerhead hatchlings photographed in a nest.

say the least, and I definitely couldn't stand to be there for more than an hour or two at a time. The volunteers have to make use of holes in the ground in the scrubland for toilets and are regularly visited by rats. These rats have a tendency to run up and down the sides of the tents, keeping everyone awake at night and also sneaking into the tents to feed on anything they can get their teeth into. We were told that they particularly liked shampoo, conditioner and the like. However, we were assured that they were "very friendly!"

### GROWING CONCERN

Turtles are found throughout the world. Over the years, man's activities at sea and



around the nesting beaches have gradually reduced their numbers, with the result that they have become rare and, in some cases, close to extinction. The situation in the Mediterranean is less well understood than in other parts of the world, but it seems certain that turtles no longer nest in many places where they used to, for instance, in Italy, Southern France or Spain. It is probable that the major nest sites are now in Turkey and Greece. Little is known, however, about their nesting habits on the Greek mainland.

The Loggerhead Turtle (*Caretta caretta*) is the only marine turtle species known to nest in Greece. It can be distinguished from the six other species of turtle by its large head and slightly elongated reddish-brown shell. Loggerheads which nest in Greece (and their hatchlings) are slightly smaller and lay fewer eggs per season than those found in other parts of the world.

The importance of the turtles which nest on the Ionian Islands has gradually been recognised since the early 1970's. The 2500 nests laid annually on the seven nesting beaches of Laganas Bay, Zakynthos, are produced by the largest breeding population in the Mediterranean. However, tourism on that island is putting more and more pressures on the turtles, because the type of beach the turtles need — sandy, gently-sloping and south-facing — is also the kind of setting that attracts tourists.

In fact, turtles are all but unique in the area around Kefalonia and Zakynthos. For-

tunately, the Kefalonians seem well aware that they need turtles as a source of attraction onto the island (thus bringing revenue) and also as a source of pride.

Hunting is traditional throughout Greece — the Greeks live among wildlife and tend to take it for granted. However, with the help of the project, the Kefalonians are aware that their wildlife — turtles especially — will not be there forever, unless they are protected. For instance, it is now illegal to catch turtles and land them on Kefalonian shores. The volunteers have also been very successful at educating the locals that injured turtles are no longer disposed of or, worse still, just left, but are reported to the project volunteers instead.

## TURTLE TALKS

We left the volunteers in their camp and went for a swim, arranging to see them that evening at a local hotel for one of their talks — this time to be given by Lyndsay. The room was packed with holidaymakers, all eager to hear a fascinating hour or so of "Turtle Talk" and buy a tee-shirt. I did take photos during the talk but, tragically, I am no Patrick Lichfield.

Anyway, we left enthusing about an enormously satisfying day and arranging to return to camp in a couple of nights for a meal and to spend the night on the beach(!).

Unfortunately, although the meal was smashing, we spent the whole night without seeing a single baby turtle, even though we

established base camp next to a nest which had produced fifteen hatchlings the night before.

In fact, the night before, quite unexpectedly, an adult female had come up onto the beach and laid another nest right in front of one group of the volunteers. Once she had settled down to lay the eggs, the volunteers had been able to crawl about on their stomachs (over the clumps of sea holly!) and take a close look at the whole procedure. It is perfectly safe for them to be in such close contact at such a delicate time, as, once the female starts to lay the eggs, nothing keeps her from her goal. So there WE were, walking in the pitch black, falling down holes, sleeping on hard sand . . . all for nothing!

Despite our disappointment at spending a fruitless night on a hard beach, we both truly enjoyed our time with the Turtle Project and I, for one, feel infinitely more complete for having known this bunch of wonderful people.

## FURTHER INFORMATION

If you would like to know more about the project (and I sincerely hope that you will), you can write to: **Turtle Project, c/o Care for the Wild, 1 Ashfolds, Ruspur, West Sussex RH12 4QX.** Please tell them where you read about the project.

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1 x Needle Leaf Ludwigia, 1 x Water Wisteria,  
1 x Wheat Plant

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(Suitable for a 36" Aquarium)

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x Starburst Ivy, 1 x Vallis Torta, 2 x Elodea Densa,  
1 x Hairgrass, 1 x Amazon Sword (big),  
1 x Red Ludwigia, 1 x Bacopa, 1 x Indian Fern,  
1 x Yellow Cabomba, 1 x Ech Tenellus,  
1 x H Polysperma, 1 x Needle Leaf Ludwigia,  
1 x Water Wisteria

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Fern, 1 x C Cordata, 2 x Red Bacopa, 1 x  
Starburst Ivy, 1 x Vallis Torta, 2 x Elodea  
Densa, 1 x Hairgrass, 1 x Amazon Swords  
(big), 1 x Red Ludwigia, 1 x Bacopa, 1 x  
Indian Fern, 1 x Yellow Cabomba, 1 x  
Ech Tenellus, 1 x H Polysperma,  
1 x Needle Leaf Ludwigia, 1 x Water  
Wisteria

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# Naturalist's notebook

By Eric Hardy



## SAFE CLAM INTRODUCTIONS

Marine aquarists have long known the sea fish research station by the riverside above Conway Castle for pioneering the introduction of new species to Britain's seaside. Its latest is the black and white Manila Clam, *Tapes philippinarum*, from the Philippines (via the US), known from native clams by its orange flesh and foot, and the two siphons being joined at the base.

It has been introduced to Anglesey's Menai Strait, Walton-on-the-Naze in Essex, Osea on the Essex Blackwater, the River Beaulieu in Hampshire, the Exe in Devon and the Helford in Cornwall. The lab is breeding sterile triploid specimens so they will not be a breeding danger to native clams.

The Ministry sent me its new 30-page Laboratory Leaflet 65 on the cultivation of these Manila Clams, by Spencer, Edwards and Millican. It details their introduction of hatchery 'seed', as the clams do not breed successfully in British waters, and their growth in plastic trays before introduction to muddy shores, protected from crabs under rolls of plastic netting.

## MICRO-FOOD CULTURE

Aquarists breeding marine species know the most difficult and costly part is breeding enough diatoms and other minute algae to feed the larval stages.

Here, two further new Laboratory Leaflets — 67, *Cultivation of Marine Unicellular Algae*, and 68, *Hatchery Culture of Bivalve Mollusc Larvae and Juveniles* — have considerable practical

advice. They list the commonly used food diatoms and flagellates. For instance, *Chaetoceros calcitrans* may be one of the most useful, but it is not so easy to culture in such large quantities as *Skeletonema costatum* and *Thalassiosira pseudonana*.

The Leaflets (obtainable from MAFF's Lowestoft Research Laboratory) deal with their requirements of heat, light and nutrients (salt-solutions), with chemical formulae for the nutrients.

I recall wartime experiments to introduce American hard clams, for chowder for American troops here, failing in the Irish Sea because of pollution. In cultivating clams, a mixture of at least one species of diatom and one flagellate gives much better growth. Small *Isochrysis* and *Pseudocryptosira* are very good flagellate foods but difficult to culture compared with *Tetraselmis suecica* which is much used to feed larger animals.

In the Conway rearings referred to in the opening section, fluorescent lamps were used to speed division of the algal cells as the use of other lamps made the culture too hot (ie, above 27°C — c 80.5°F). Carbon dioxide gas also gave quicker growth. Seawater was diluted to 25/30 psu with tapwater for flagellates and 20/25 psu for diatoms. The cultures and nutrients were mixed by bubbling air through them. Whatever method is used, it is rather expensive and complicated, but continued research may reduce this for aquaculture.

## DIVING HERONS

The usual Ministry advice to counter herons attacking fish pools is to lower the water level and have a vertical, not sloping bank so that the birds aren't able to fish from the edge.

When herons from a nearby heronry recently began raiding the fish farm at Fiddlers Ferry Power Station, the water level in the trout tanks was lowered 3ft (c 90cm). The water was still 5ft (c 150cm) deep, but 10 herons were found drowned, having tried plunge-diving for the fish. The problem was met by netting the pools.

Heronry soon get used to the

bankside models unless they are moved regularly. Incidentally, late tadpoles were still in a local pond in January. Delayed development or late spawning have previously produced autumn and winter specimens in mild Wirral. Herons, of course, come for frogs, too, and kingfishers take tadpoles.

## FLORA UPDATES

Botanists who paid £65 for Cambridge University's authoritative 688-page *Flora of the British Isles*, by Profs Clapham, Tutin and Moore in 1987, then (in 1989) £25 for the paperback edition correcting its numerous errors, now need to be up to date in modern classification, of microspecies, aliens and hybrids with the 1,226-page *New Flora of the British Isles*, by Prof C Stace, published recently by Cambridge University at £24.95. Such is the rapid advance of modern botany.

Distribution is not nearly so detailed as in the previous *Flora*, but it is a more convenient size with a pliable cover and the use of camera-ready copy for the typescript reduced its cost.

The confusion over the Lizard Orchid's northernmost range is further confused by stating "formerly in S Lanes" when it has never been found wild in south Lancashire. A specimen collected in southern England and shown in the wild flower section of Formby Show in 1954 was wrongly recorded as found on the local dunes. None has ever been found wild in Lancashire.

As well as the native Wharfedale site above Dibscar Beck, Lady's Slipper has been naturalised 50 years on the Lancashire limestone by Silverdale golf course and a site in Derbyshire. Ivy Broomrape, however, established for 10 years at a

Liverpool site, is not recorded north of Wales. It is useful to keep up to date with water plants increasing in the wild, *Egerias*, *Elodeas*, etc, and to 'key' out their differences as many are confusingly similar, like *Elodea nuttallii* now rapidly replacing *E. canadensis*, with *Esthwaite Waterweed* which is so much like it.

Some species have declined like Rannoch Rush, now with only two sites in north Perthshire and one in Ireland. One can't get far with the 29 British Potamogetons without the good three-page identification key, which includes hybrids too, published in the *New Flora*.

Our 74 sedges couldn't be sorted out without their 9-page key, and 28 rushes have to be 'keyed' out in the field. It is said that the reason why a botanist always walks ahead of the students (s)he leads in the field is in case (s)he sees a plant (s)he doesn't know and can put his or her foot on it before someone asks what it is!

The author of *New Flora*, from Leicester University, supports the use of English as well as Latin names, thank goodness.

Illegitimate and promiscuous willows and sallows which hybridise as often as if they lived in a plant brothel, are perhaps our most difficult identifications! The book gives 35 species and hybrids of their genus *Salix*, with a 5-page key. I am glad it mentions how rare the true Weeping Willow, *S. babylonica*, is in our gardens and much mis-recorded it is for its mistaken hybrids with White and Crack Willows.

This extremely useful book also states that only female Water Soldiers occur in Britain, but hermaphrodites have been found. Useful illustrations cover pondweed leaves and leaf-tips, sections of rush leaves, seeds of sedges, orchid-lips, etc.



Water Soldier (*Stratiotes aloides*): the vast majority of UK specimens are female.



# News from the societies

## Marine, Coldwater, Tropical Aquarist Society

The newly formed Marine, Coldwater, Tropical Aquarist Society (situated "in Cumbernauld, just outside Glasgow") is one of the few Scottish aquatic societies that combine all aspects of fishkeeping.

Meetings are held on the first and third Wednesday of each month at the Muirfield Centre, Brown Road, Seafar, Cumbernauld, starting at 7.30 pm.

For further details, please contact the M.C.T. Aquarist

Society Publicity Officer, Fred Chambers, 16 Hillcrest Avenue, North Carbrain, Cumbernauld G67 1ES, Scotland.

## Reigate and Redhill Aquarist Society

The main officers of the above society are:

**Chairman:** Sid Fewtrell —  
Tel: 0293 786078  
**Secretary:** Ivor Stemp —  
Tel: 0293 783249  
**Treasurer:** Dick Gush —  
Tel: 0737 765152  
**P.R.O.:** Jeremy Spence —  
Tel: 0293 512932

Further details about the society are available from Jeremy Spence at the above number or from 60 Railey Road, Northgate, Crawley, West Sussex RH10 2BZ.

## South Park Aquatic (Study) Group

The committee for S.P.A.S.S.'s 25th anniversary year is as follows:

**President:** William Leach  
(Re-elected for three-year term)  
**Chairman:** Ray Spanswick  
**Secretary:** Mrs Norma

Brown, 4 Combe Lane, Whiteley Village, Walton-on-Thames, Surrey KT12 4EL.

**Treasurer:** David Buddin  
**Show Secretary:** Eric Franklin, 105 Hassocks Road, London, SW16.

**Assistant Show Secretary:** Andrew Powell  
**P.R.O.:** Larry Brown  
**Lay Member:** Ken Seaton

For details of the full programme of events planned for the year (including the society's Open Show scheduled for 13 June), please contact either the Secretary or the Show Secretary at the above addresses.

## Diary dates

### Tongham Aquarists

Tongham Aquarists now meet on the 3rd Wednesday of every month at the Mytchett Community Centre, Mytchett Road, Mytchett, Surrey. Meetings start at 8 pm. Further details from the Public Relations Officer, Mrs Pru Spencer, on 0276 61112.

### The Select Aquarist Society

The 3rd S.A.S. Charity Open Fish Show will be held on Sunday 10 May at the Hobbies Centre in Scunthorpe. Full details available from E A Moore, Secretary, 47 Manby Road, Immingham DN40 2LF.

### Gateshead Aquarist Society

The 1992 G.A.S. Open Show will be staged on Sunday 17 May. For full details contact the Chairman, Brian Hannah, Flat 9, 199/209 Stanton Street, Newcastle upon Tyne NE4 5LH. Tel: 091 272 4220.

### Portsmouth Aquarist Society

The 1992 Portsmouth Aquarist Society Interclub Show is to be held at the Deverell Hall,

Purbrook, near Waterloo, Hants, on Sunday 17 May. Further information is available from the Show Secretary, Vernon B Hunt, "Caeglas", 120 London Road, Widley, Near Portsmouth, Hants PO7 5EW. Tel: 0705 250160.

### Corby and District Aquarist Society

The 40th anniversary show of the Corby and District Aquarist Society will be held on Sunday 17 May. See the News Desk pages in the April issue of *A & P* for further background information, including Corby's 'twinning' arrangement with French and German societies.

For schedules and full details, contact A Henderson, 5 The Nook, Corby, Northants NN17 1XA.

### Reigate and Redhill Aquarist Society

The next Bring-and-Buy sale of Reigate and Redhill A.S. will be held on 18 May at Strawson Hall, Albert Road, Hooley, Surrey. Doors open: 7.30 pm. Start of sale: 8 pm. Refreshments will be served at 9.30 pm. Non-club members welcome. For further details contact Jeremy Spence,

P.R.O., 60 Railey Road, Northgate, Crawley, West Sussex RH10 2BZ. Tel: 0293 512932.

### Association of Aquarists

The quarterly meeting of the A of A will be held on 23 May at the Graham Court Hotel, Anglesea Road, Ipswich, starting at 1 pm. All are welcome. Please contact Adrian Cooper, 82 Quebec Drive, Kesgrave, Ipswich, Suffolk IP5 7HU.

### Bridlington and District Aquarist Society

The 19th Annual Bridlington Open Show will take place on Sunday 24 May at the Hilderthorpe Junior School, Shaftesbury Road, Bridlington. Benching: 12 noon-1.45 pm. Judging: 2 pm prompt. Further information available from Mick Jordan (Show Manager), 12 Greenfield Road, Bridlington, East Yorks YO16 4TE. Tel: 0262 674109.

### Eastleigh and District Aquarist Society

The annual Open Show of Eastleigh and District Aquarist Society will be held on 31 May.

Full details from A Stevens, 256 Market Street, Eastleigh, Hants SO5 5QB.

### Scottish Toothcarps Society

The first S.T.S. Livebearer and Killifish Open Show will be held on 31 May at the Y.M.C.A. Hall, North Street, Glenrothes, Fife. For further details, ring 0592 754618.

### Stockton Aquarist Society

Stockton Aquarist Society are holding an Open Show and Auction on Sunday 7 June at The Masonic Hall, Wellington Street, Stockton. Benching and booking in: 10 am to 12.30 pm. For further details contact Geoff and Jane Bell, 16 Leafield Road, Darlington DL1 5DE. Tel: 0325 466630.

### Redcar Fishkeepers Society

Owing to an unfortunate double booking, Redcar Fishkeepers Society have had to alter the date of the 1992 Open Show. The NEW DATE is Sunday 14 June and the venue: West Redcar School, Kirkleatham Lane, Redcar. For further information, contact J Duffill, 4 Maxwell Place, Dormanstown, Redcar, Cleveland TS10 5LE. Tel: 0642 478836.



# Herpetology matters By Julian Sims



## LETTERS FROM AMERICA

One of the many interesting aspects of writing for a magazine which has an international circulation is that you never know what will be delivered in the next post. In very quick succession, I have received four letters from North America which relate to recent editions of *A&P*:

### ① Inventory of Captive Reptiles and Amphibians

In the November 1990 edition of *Herpetology Matters* I outlined the importance of the publication *Reptiles and Amphibians in Captivity* — an *Inventory*. The *Inventory* is compiled by Frank and Kate Slavens every year from the first day of January.

One of the first questions anyone who keeps reptiles or amphibians should ask is, "Will this species breed in captivity?" It can be helpful to know whether or not other herpetologists have bred a particular species because you can build on their achievements (and learn from their mistakes). For example, details of the medium used to incubate eggs, together with the temperature range resulting in successful incubation, would be useful.

A second question which is frequently asked is, "How long are the species that I keep likely to live for?"

Information pertaining to these and many other questions

can be found in the 1991 edition of the annual *Inventory*. This useful reference book contains details of 278 public and private collections found throughout the world, including the location of 46,865 specimens.

The *Inventory* not only contains the names of the species maintained, but also the number of animals, their sex and age (adult or juvenile), whether or not they bred in the previous year (with notes about incubation), whether or not they were allowed to hibernate and how long they have lived in captivity. References to information about captive breeding published in other sources, including lesser known museum bulletins, journals and magazines, are also listed.

As the names and addresses of contributors to the *Inventory* are listed, it is possible to contact other herpetologists who keep the same species as you do. More information and hints can then be exchanged by letter or telephone.

Copies of the 1991 *Inventory* (506 pages) are available at \$40 (US) hardback, or \$30 (US) paperback, plus \$4 overseas postage, direct from:

Frank L. Slavens,  
PO Box 30744,  
Seattle,  
Washington 98103,  
USA.

If you want details of your reptiles and amphibians to be included in the 1992 *Inventory*, then send these to Frank Slavens at the above address.

### ② Freshwater Turtle Conservation in Ontario, Canada

On the Letters page of the September '91 edition of *A&P*, Ted Teachout from Port Franks, Ontario, requested information about the importation of the European Pond Tortoise (*Emys orbicularis*) into Canada, with the intention of setting up a captive breeding project.

I provided relevant information about CITES legislation — the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Canada signed CITES in July 1974 and ratified the Con-

vention in April 1975. Therefore, as in Britain, Canada enforces strict regulations about the importation of endangered reptiles (and amphibians).

In reply to my letter, Ted kindly sent details of some of his very successful population studies and reptile breeding projects undertaken to date.

In 1990, he hatched 100 eggs from Snapping Turtles (*Chelydra serpentina*). The hatchlings were released into a nearby creek. Currently, he is monitoring a 'wild' population of more than 50 adult North American Wood Turtles (*Glémmys insculpta*). This species is not common, being limited to isolated pockets with clear water. It is strictly protected by Canadian wildlife legislation.

Ted's conservation facilities have been inspected by Agriculture Canada and he has been granted the necessary permit to keep ten adult Wood Turtles as

the start of a captive breeding project. The aim — to reintroduce this beautiful species back into areas where they have become seriously depleted.

Ted Teachout is also studying populations of Blanding's Turtle (*Emysdoidea blandingii*) which inhabit a feeder creek of Lake Huron, and Spotted Turtles (*Glémmys guttata*) found in a clear water stream which runs through bogland at Port Franks. Both species are protected by wildlife legislation, but even so, Ted reports that these freshwater turtles are in decline — probably as a result of deteriorating water quality.

### ③ Turtle Bowls and Turtle Diet

Following on from my review of the Universities Federation for Animal Welfare (UFAW) leaflet about the maintenance of Red-eared Sliders (*Trachemys scripta elegans*) in the November



Two types of nutritious pelleted food (available in a range of tub sizes) suitable for freshwater turtles.



'91 edition of **Herpetology Matters**, I received a letter from Alan Mintz, General Manager of Tetra USA.

Tetra USA produce a leaflet illustrated with colour photographs of freshwater turtles and Tetra products. Unfortunately, this leaflet is not available in Britain, and therefore, Alan wanted to draw attention to the fact that Tetra does not recommend the use of 'turtle bowls' to accommodate these active freshwater reptiles.

In addition to providing suitable accommodation, another point which was emphasised in the UFAW leaflet was the importance of providing a balanced diet in the maintenance of good health. In particular, the use of dried, flaked food is insufficient in providing the necessary protein, minerals and vitamins.

In the October '91 edition of **Your Questions Answered**, I drew attention to several different types of nutritious pelleted foods which are suitable for freshwater turtles. These include Tetra ReptoMin Food-sticks (pellets eaten by many species of freshwater reptile, aquatic newts and *Xenopus* toads) and Sera Raffy P Turtle and Cichlid Food.

Although the colour leaflet produced by Tetra USA is not available in Britain, Dr David Pool of Tetra UK has prepared a four-page information sheet about the care of freshwater turtles in captivity. This information sheet provides details about housing, heating and filtration of water and the supply of a balanced diet.

Details of Tetra products include Brilliant Filters, digital thermometers and the Tetra Hydro-Clean. This can be used regularly to remove much of the 'organic debris' — flakes of skin, faecal waste and fragments of uneaten food from the tank. Further details about Tetra Fish & Tips information sheets and products are available from:

**Tetra Information Centre,**  
Lambert Court,  
Chestnut Avenue,  
Eastleigh,  
Hampshire SO5 3ZQ.  
Tel: 0703 620500.

Sera has also produced details about maintaining turtles in captivity: *Sera Guide No 6 — "How to Feed and Look After Turtles and Other Reptiles"*.

This eight-page colour leaflet gives information about a range of Sera products including Sera

**Reptilin**. This is a vitamin preparation for turtles, lizards and snakes to help prevent diseases caused by dietary deficiency. For example, vitamin D is especially important in the prevention of 'soft-shell' — a weakening of the carapace and plastron of freshwater turtles.

Further details about Sera products are available from:

**Sera (UK) Ltd.,**  
6-8 Muswell Hill Broadway,  
Muswell Hill,  
London N10 3RT.  
Tel: 081 444 2900.

#### ④ New Publication by John Iverson

In the February '92 edition of **Herpetology Matters**, I referred to the important guide, *A Checklist with Distribution Maps of the Turtles of the World* — a spiral-bound book published in 1986.

Within two weeks of the February edition of *A&P* appearing on the display shelves of newsagents, John Iverson of Indiana had sent pre-publication details of a substantial revision to his earlier guide: the *Revised Checklist*.

Containing 370 pages, it is approximately 33% longer than the first edition, and includes updated distribution maps, together with information on the original description of a species and where it was discovered. Relevant literature for all recognised species and subspecies is also listed. Important additions to the text include identification 'keys' so that unfamiliar "tortoises, terrapins or turtles" can be named right down to the species level.

Due to this wealth of carefully researched material, John Iverson claims that his *Revised Checklist* is now "the most comprehensive guide available to the scientific naming of the turtles of the world."

Copies of the *Revised Checklist of Turtles of the World* cost \$25 (US) each. This price includes surface postal charges. Pre-paid orders should be sent with INTERNATIONAL MONEY ORDER to:

**Dr John B Iverson,**  
Dept of Biology,  
Earlham College,  
Richmond IN 47374  
USA.

Many thanks to all those readers who have taken the time to write in, especially from overseas. Letters are always much appreciated.

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The spectacular Gullfoss or Golden Falls.



Flowers of the Vatnajökull glacier (probably a Saxifrage).

# THE ICELAND CONNECTION

As Gordon Churchill prepares to fly out to Iceland this month for a return visit to his fishkeeping friends, he recalls his last hugely enjoyable 'expedition' to the land of geysers and glaciers. *Photographs by the author*

In May last year, I travelled to Iceland to visit The Icelandic Fishkeepers Society, FISK (Félag Íslenskra Skrautfiska Áhugamanna), who have their base in Reykjavik, the capital. They first made contact with fishkeepers in the UK through the aquatic media, asking for information about the hobby in this country. After exchanging a few letters, we arranged for me to visit Iceland and present a slide lecture on 'Home Aquaria', following this with a full week of fishy visits and sightseeing.

My lecture was well received and attended at a local youth club, and despite finishing in the early hours, somehow overflowed into the Chairman's house, continuing with slides of Killifishes until 4.00 in the morning. It was light enough to read outdoors, and workmen were painting road lines at this hour, as I returned to my guest house.

## THE HOBBY

Of the fishkeepers I visited in their homes, the vast majority had large aquaria, many with Discus. Their water is really soft to neutral, so some members who specialise in Malawi and Tanganyika Cichlids use hardeners to render conditions suitable.

All aquarists have tropical freshwater fish,

with African Rift Lake Cichlids fairly strong favourites. Very few goldfish are kept.

Koi are talked about in Iceland — only one or two small ones are offered for sale — and ponds are not generally kept, as these could not easily be made deep enough to prevent them from freezing all the way to the bottom. One college we visited had a heated greenhouse with 10in (25cm) Koi in a planted tropical type environment; this was the day I never took my camera!

Marines are not readily available, and none of the society members keep saltwater aquaria. All are very interested in marines, of



One of Reykjavik's three shops. This one is Dyrarkio (Animal Kingdom).

course, from TV programmes, but all seem to be waiting for someone else to be the first. The price of these set-ups would be very high and since FISK members pay slightly more than we do for what we would call 'bread-and-butter' fish in any case, the cost of marine aquarium keeping would be likely to be prohibitive for most hobbyists.

Surprising (to me, at least) was the large number and types of Arowana offered for sale in Iceland, while where I live in the UK (Bristol) we see none.

Rockwood, driftwood and the like is readily available on the beaches and, with the island being mostly volcanic, there are amazing shapes and colour varieties from Mother Nature, free for collection around Iceland.

## THE SOCIETY

The society in its present form was founded in 1981 with Olafur Vigfusson being declared Foreman (Chairman). Olafur is interested in trying marine set-ups (as well as freshwater tropical aquariums) so this could lead to the development of the marine hobby in the future.

FISK means 'fish' in Icelandic. It is the only society on the island and is based in Reykjavik which has a population



numbering just over a quarter of a million. Half the people in Iceland live in the capital. The highland interior is uninhabited, so most centres of population are found on the coast.

There are no aquatic magazines produced in Iceland itself and FISK does not produce a newsletter as such. The meetings of the society are therefore advertised monthly in the three pet shops. Prior to my visit a reminder letter was put out, but this is not normally the case.

As yet, there has not been an aquatic show open to the public. However, at club evenings around May, a jar bowl show and general chat takes place on the fish benches. Around the time of the August - September meeting, it has already become too cold to carry fish around.

There are no inter-club events in Iceland, of course, as there is but one society. So far FISK is not affiliated to FBAS or anyone, but this is something that I am aiming for when I visit this month. This summer, FISK hope to hold a show as a public relations exercise — and to attract new members — in an under-cover garden centre.

During the winter months (we are talking six months), 'phones are used a lot! Members also visit each other's fish-rooms, or collection, while again, the three shops act as the 'news media-gathering contact point', for news of breeding, spawnings etc. So, even in the depths of a cold winter, things are still very 'fish active' in Iceland.

#### AQUATIC SHOPS

Within Reykjavik, there are three dealerships which I visited. All purchased their stocks from Holland and their cleanliness was excellent.

Although a visitor, I was shown all the quarantine vats, the filtration systems, fish being treated and held over fourteen (14) days, none being sold until in 'A1' condition and feeding well on all foods.

Newest of the aquatic shops, and the largest, is Dyrarikió (Animal Kingdom). The dry goods section is massive, with all foods and books we have available here, plus pet foods, birds and rabbits. Guinea pigs and the like are housed in an aviary area, and there's a children's corner which is bright and clean.

The owner is Gunnar Vilhelmsson, who also owns the second, and oldest, pet shop in town (Amazon). Though small, it has a lot to offer. Its back room is the fish room; typical of small villages here.

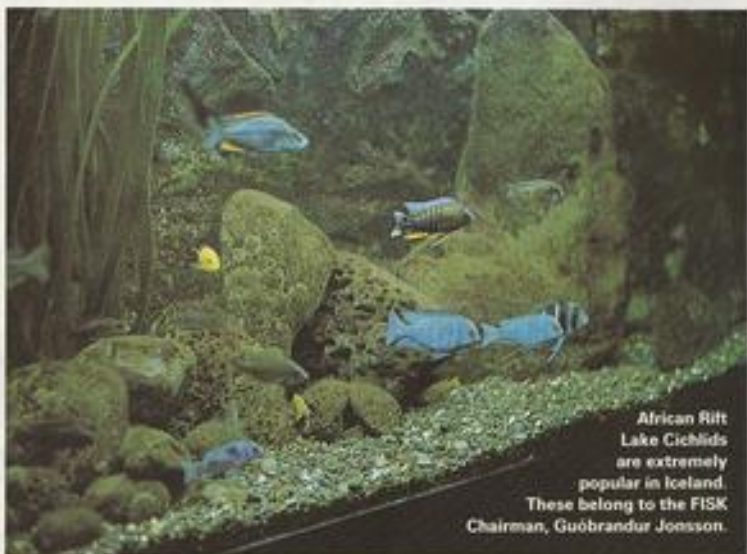
The third shop is Gullfiskabúðin (Goldfish Shop) owned by Vióar Johannsson. Again, it is spotless and well stocked, with all things aquatic, as well as small pets and budgies. Another old-type village set-up (ie) small, and with small fish!

#### SOME ICELANDIC AQUARIA AND AQUARISTS

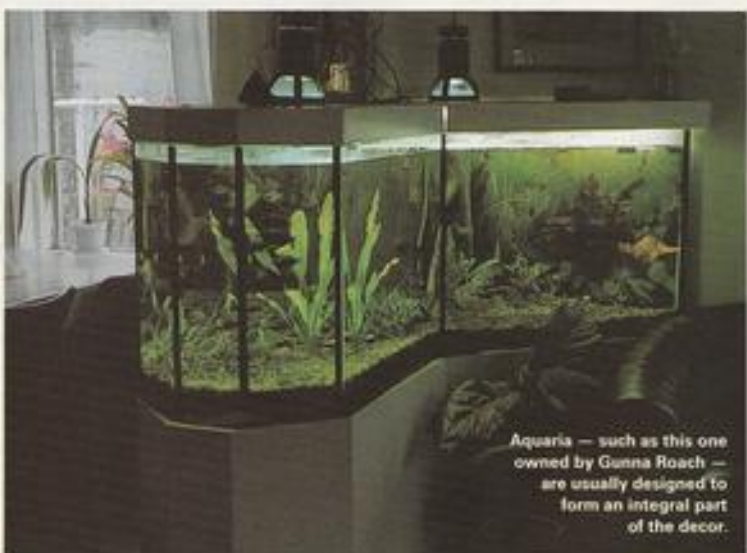
The present Chairman of FISK, Guóbrandur Jonsson, has a large corner aquarium unit (all-glass) housing a fine display of African Cichlids. At the time of my visit,



The FISK Chairman's large multi-sided aquarium takes up a large corner of the living room.



African Rift Lake Cichlids are extremely popular in Iceland. These belong to the FISK Chairman, Guóbrandur Jonsson.



Aquaria — such as this one owned by Gunna Roach — are usually designed to form an integral part of the decor.



these were still young fish with plenty of space and rockwork, and changing colours that made the correct identification of these Mbuna (rock-dwelling cichlids) a real challenge.

Guóbrandur is also keen on lizards, skinks and the like, so in the breakfast room, there is a 4-foot tank aquarium-vivarium 3/4 of which is above water level. It's a jungle of trees and other plants and houses two or three 'green lizard' types. The section below water represents an Amazon riverbed complete with Congo Salmon and a mixture of characins, including Cardinal Tetras.

Another society member, a policeman called Jon Otti Gíslason, also has a large collection of Rift Valley Cichlids taking over their small flat. The quality and quantity could not be bettered and a through-wall community aquarium in the children's bedroom completed the family hobby.

The American/English-speaking Bank Manager, Gunnar Roach, has divided his living room with an all-glass 6 x 2 x 2ft (180 x 60 x 60cm) aquarium with floodlights and house plants, making it a very modern apartment. Small fish, not a lot of internal plants, and obviously newly set up, the tetras and livebearers will still leave plenty of room for further additions.

The tanks I have mentioned above all have external filtration systems built in cupboards underneath the aquarium bases. A nice collection of Discus owned by Arnar Arinbjarnar really took my breath away. Four were very large Cobalt Blue Wartley

types, four more were 2in (5cm) in diameter, and all were in excellent condition and colour.

Their owner had spawned them but now thought that the male had become infertile as eggs were white and failing. He was therefore borrowing another Discus from a club member to repeat his efforts, and was determined, no matter what, to be successful.

I wished him luck and a large bank account, as Discus in Iceland are approximately double the price we pay in the UK. The tank size was approximately 5ft (150cm) long x 3ft (90cm) deep and 2ft (60cm) in width.

#### NON-AQUATIC ICELAND

For the second part of my visit I became a tourist. The Public Relations Officer of FISK, Halldor O Arinbjarnar, my companion and friend, drove me around sight-seeing. I had expected scenery like Scotland and a lot colder conditions, but what a very pleasant experience it turned out to be... sunshine and even more hospitality; everyone is very friendly and keen to ask questions... so many questions, and so little time.

My most memorable visit was, first to the Gullfoss Waterfall — often called 'The Golden Falls' for its permanent rainbow — and then to the nearby geyser, or geothermal area of hot water erupting every few minutes; then on to fishy Grindavik, the Myrdals Jökull — a small glacier, the black volcanic

beach at Vik (a birdwater's paradise), passing various waterfalls to Skaftafell, Svinafell, and the Blue Glacier — Vatnajökull — the largest in Europe, where the last James Bond film with Roger Moore was made, finally returning via fjords and glaciers to Kúpavogur and my fishy friends.

Did I have a good time? You bet I did! Am I going back? You bet I am — this month! On this occasion, Joyce, my wife, is coming with me to savour the clean land, clean air and wonderful people of Iceland. We've got a good excuse... there's one more aquatic shop to visit in the north of the island, another slide lecture to present, another Arctic experience to go after...

#### HOW TO GET THERE

Iceland Travel Club,  
PO Box 434,  
Harrow,  
Middlesex HA1 3HY.

#### ACKNOWLEDGEMENTS

My sincere thanks go to all the FISK members for their warm welcome, and in particular, to:

Guóbrandur Jonsson and family for their hospitality, and to Halldor Arinbjarnar (PRO for FISK) whose help made my trip possible.



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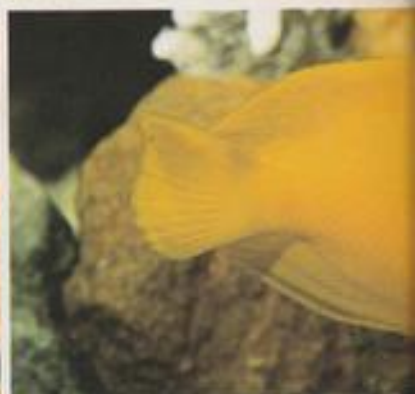
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# PYGMY ANGELS *Part 2*

Max Gibbs of The Goldfish Bowl, Oxford, rounds off his 'tour' of these delightful tropical marines.

Photographs by the author



**F**ollowing on from my first article (last month) in which I introduced the Pygmy Angels and outlined their main aquarium requirements and compatibility characteristics, here is a summary of what I believe are the best, or most interesting, of the species that I've come across. Some are beautiful, some are difficult, some are both — all are interesting and worth thinking about in one way or other.

## RANGE OF SPECIES

One of the most beautiful *Centropyges* is the **Flame Angel** (*Centropyge loriculus*). It is also one of the most expensive species. The commercial source for this intensely fire-red

fish is Hawaii and, when available, it is likely to be fairly plentiful.

There are few, if any, problems likely to be encountered in feeding the Flame Angel, as it usually takes anything offered. It also settles into captivity quite readily. With a top size of about 4in (10cm), it is most suitable for the home marine aquarium and is usually about half-grown when shipped.

(Note: This species was illustrated in Part 1).

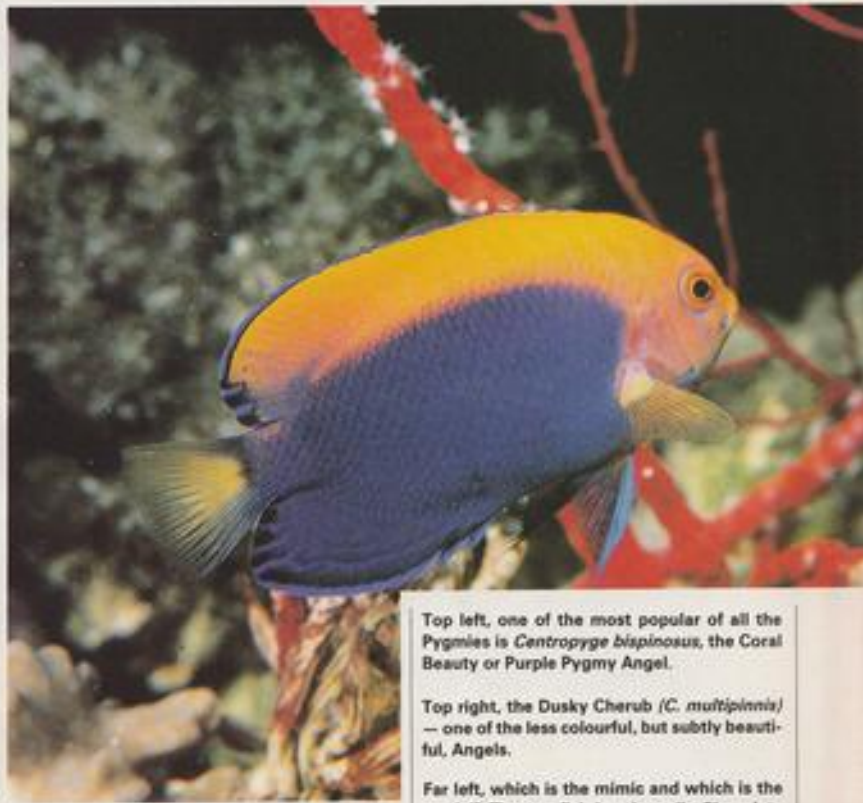
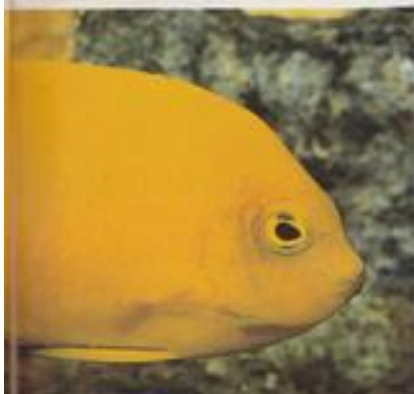
The **Coral Beauty** (*Centropyge bispinosa*) is imported in comparatively large numbers and is a beautiful fish which is predominantly purple, but a red-flushed breast, golden-barred flanks, orange-tinged pectoral fins, blue mouth, opercle spine, and fin embellishment, all go to make up the total beauty of this delightful Pygmy Angel fish.

Colouring and markings can be very variable. It is usual for Coral Beauties to settle down to captive life quite readily, although they might be a little shy at first. They will mostly take prepared foods without any problem from the start. The fully adult size is about 4in (10cm) and they are usually little more than half-grown when shipped.

The **Oriole Angel** or **Bicolor Angel** (*Centropyge bicolor*) frequently accompanies Coral Beauties in imports from the Philippines and its striking colouring makes it a most attractive species.

However, this fish is not for the unadventurous! It is often a fussy feeder, and many of those that do eventually appear to feed reasonably in the aquarium, nevertheless fail to flourish. Quite a few actually never do get





to feed anywhere near adequately.

If you contemplate buying this beautiful fish, be sure that your dealer has had it in stock for some time and that it is seen to be feeding freely. Even then, when moved to your aquarium it is likely to behave quite differently. The rich canary-yellow of the front half of the body and tail, contrasting with the royal blue back of the body and 'headset', makes this one of the most beautiful Centropyges . . . but be cautious!

(Note: This species was illustrated in Part 1).

The Cherub Angel (*Centropyge argi*) is one of the smallest Angels and comes from the Western Atlantic/Caribbean areas. The main colouring is a deep purple, with the head area usually a deep orange flush colour.

If seen paired with a mate, do try to

purchase both, as they will be very contented in each other's company and will reward you for your extra spending. They might even lay eggs from time to time in suitably appointed tanks. Top size for this busy little fish is about 3in (7.5cm) but probably not much more than 2in (5cm) in the aquarium.

(Note: This species was illustrated in Part 1).

Two species of *Centropyge* are bright yellow and are sometimes confused. However, the Lemon Peel Angelfish (*Centropyge flavissimus*) is distinguished by the electric-blue ring around the eye and edging to the operculum. The fins are edged with a darker blue and the lower lip is likely to be mauve. Otherwise, the fish is entirely a rich golden yellow. Juveniles may have a prominent black spot edged with blue on the flanks.

Top left, one of the most popular of all the Pygmies is *Centropyge bispinosus*, the Coral Beauty or Purple Pygmy Angel.

Top right, the Dusky Cherub (*C. multipinna*) — one of the less colourful, but subtly beautiful, Angels.

Far left, which is the mimic and which is the model? The top fish is a juvenile Chocolate Surgeon Fish (*Acanthurus pyroferus*). The lower one is the uncannily similar Eibl's Angel (*C. eibbi*).

Centre, in Herald's Angel (*C. heraldi*) the deep yellow of the body is only relieved by indistinct markings in the anal fin.

Left, easily confused with Herald's Angel, the Lemon Peel (*C. flavissimus*) has a blue eye ring, a lighter 'flash' on the edge of the gill cover and blue edging on the dorsal, caudal and anal fins.

Above, the Fireball Angel (*C. acanthops*) — often confused with the rarely seen Flame Backed Angel (*C. suranotus*).



The Lemon Peel requires a good proportion of green food in its diet and will not do well without it. Once settled down to aquarium life, it is quite an accommodating species and, at a top size of 4in (10cm), it is suitable for all but the smallest marine tanks.

The other yellow Pygmy Angelfish is **Herald's Angelfish** (*Centropyge heraldi*) which, in many respects, is similar to the Oriole Angel mentioned above regarding its temperament for adapting to aquarium life. Accordingly, it should be purchased by experienced and adventurous marine aquarists only. It is most likely to do well in an aquarium with plenty of algae growth and peaceful, even diminutive, tankmates.

**Eibl's Angelfish** (*Centropyge eibli*) is quite often available, coming from Indonesia and Sri Lanka with regularity. Although lacking the punchy colouring which many other Centropyges display, the beauty of this fish should not be overlooked. The colouring is a little variable but is mostly a pale green base colour set off with wavy vertical lines of red/orange/black along the flanks; the caudal area is jet-black with a sky-blue edge to the caudal fin. The anal fin is moss-green with orange or yellow spotting.

It is a good aquarium fish, as it feeds readily in most cases and takes a variety of foods. It grows a little larger than any of the previously mentioned species at 5.5in (c.14cm) and therefore needs rather more space to do well.

An interesting example of mimicry occurs with this species and a tang. The juvenile Chocolate Surgeon Fish (*Acanthurus pyroferus*) has almost identical markings to those of the Eibl's Angelfish. Who mimics who? I do not know the answer to that, but the excellence of the copy is undeniable!

Even less colourful, but an attractive fish nevertheless, is the **Pearl Scaled Angelfish** (*Centropyge erofiki*). This species relies on the subtle shading of the light-coloured body from the head end through to the jet-black tail end, with that black extending into the dorsal and anal fins. Each scale in the lighter area is defined like those of the Pearlscale Goldfish. The eye is ringed with a dark orange and this same colour is mirrored in the edging to the operculum and base of the pectoral fin.

A good varied diet, with the inevitable green food element, is essential to the well-being of this species.

(Note: This species was illustrated in Part 1).

The **Fireball Angelfish** (*Centropyge acanabops*) is reminiscent in many ways of the Cherub Angelfish but it comes from the Indian Ocean and is rather more colourful. The adult size is about the same.

The **Fireball Angel** has a fiery-orange head area extending along the upper part of the body and dorsal area. The eye is ringed with a deep blue and the opercle spine has the same colour. The rest of the body and the anal fin are a deep midnight-to-royal blue. The pelvic (ventral) fins and the anal fin are edged and patterned in a brighter blue.

This species usually settles to aquarium life quite happily and feels freely. A similar species is occasionally shipped in from the Caribbean and it is easy to confuse the two.



*C. colini*, the Blue Backed Pygmy Angel is one of the smallest species currently available.

This is the **Flame Backed Angelfish** (*Centropyge aurantonotus*).

Occasionally, the **Rusty Pygmy Angelfish** (*Centropyge ferruginea*) is offered from Pacific collections. This species has a rust-red lower body colour, shading to a darker colour through the upper part of the body into the dorsal fin. When adult at about 3.5in (8.9cm) the dorsal and anal fins assume an edging of electric-blue, with wedges of the same colour also adorning the trailing edges of both fins. This species usually settles into aquarium conditions readily and is undemanding.

(Note: This species was illustrated in Part 1).

**Potter's Pygmy Angelfish** (*Centropyge potteri*) arrives frequently with Hawaiian collections and tends to be quite well grown when shipped. Its full size is about 4in (10cm). The base colour is generally a rich rust-red, often enhanced with an area of purple shading from the anal and caudal fins into the lower back half of the body. The whole fish is overlaid with vertical markings which are variably arranged so that in some specimens they will appear as 'stripes', while in others, they will form a vermiculated pattern.

This species takes to aquarium life very well and is easily pleased regarding diet. A few hiding bolt-holes to give a sense of security are necessary to allow it to settle in completely.

(Note: This species was illustrated in Part 1).

The **Black Pygmy Angel** (*Centropyge tibicen*) occasionally makes an appearance in dealers' tanks and is mostly received from Philippine shipments. The juveniles usually have a dense black body with a prominent white splash on the flanks, while the anal fin has a distinctive broad yellow lower edge. This yellow coloration is mirrored less vividly in the spiny area of the dorsal fin.

A brilliant white band edging the tail is continued into the anal fin separating the wedge of yellow from the black of the rest of the fin. The paired pelvic (ventral) fins are a

primrose yellow with a bright canary-yellow wedge, set off by a black leading edge. As the fish grows from the usual import size of about 2in (5cm) towards its full size of about 5in (12.5cm), the white 'splash' turns to yellow.

Individuals vary with regard to how easy or otherwise they are to keep in captivity, but once settled and feeding freely, they will usually make good progress.

(Note: This species was illustrated in Part 1).

The **Dusky Cherub Angel** (*Centropyge multipectus*) arrives very often with Sri Lankan shipments, usually unsolicited in view of its subdued colouring and consequent lack of ready takers. However, the subtle, intricate markings almost hidden in the dark shading of the body in this Angelfish are most ornate, and the brilliant electric-blue of the edge of the anal fin, mirrored by a toned down blue preopercle spine, is quite striking.

As a 'contrast' fish to more brightly coloured fish in the marine aquarium, the Dusky Cherub Angel certainly has its place.

An example of the less readily available species is the **Blue Backed Pygmy Angel** (*Centropyge colini*) which grows to about 2.5in (c.6.4cm) and is, therefore, an ideal candidate for introducing an Angelfish into the smaller marine aquarium.

It would seem that the readiness of this species to settle down to successful aquarium life largely depends on where it has been collected. It is said that those specimens arriving with Fijian collections are usually found to be the best in this respect.

The strength of colouring can be variable, with the main body colour of yellow, being anything from primrose to canary, and the blue 'saddle' from a dusky powder blue to a clear mid-blue. Pricy because of its rarity, this fish cannot compete for striking colours with several of the cheaper and more readily available species, but is highly desirable nevertheless.



# OUT AND ABOUT

## THE ART OF FISHKEEPING

By John Dawes

Photographs by the author

**E**stablishing a viable retail outlet these days presents a daunting challenge that requires, not just ability, determination, finance and all the other vital qualities that go to make the successful entrepreneur, but also an unshakeable belief that what you are doing is right — no matter what anybody else thinks. Add a liberal supply of self-confidence to this belief and you end up with **Stephen Lee-Son**, proprietor of **The Art of Fishkeeping Ltd.**

Take the name of the shop for a start. It's light years removed from the sort of name we are used to, isn't it? Then, walk through the front door, and the shop, too, looks 'different'.

For instance, there's hardly any hardware in sight. What you get in the immaculately clean top retail area, instead, are some excellent freshwater and marine aquaria containing equally excellent fish. Stephen and partner **Elsa Hart** really do know how to look after their fish, and it shows.

Despite the absence of tanks, stands, filters, pumps and other aquatic equipment from the 'shop floor', this doesn't mean that you can't buy any of these essentials at The Art of Fishkeeping — far from it. It's just that the substantial stocks of dry goods are kept in a storeroom behind the counter.

By backing up this approach with sound advice, Stephen ensures that people only buy products that are suited to their needs. He doesn't believe in customers buying blindly or badly informed, thus not getting the best return for their money.

The design of the building is such that it cannot, unfortunately, provide wheelchair access to the lower sales area. This is a shame because the larger number of tanks and fish are located downstairs, rather than on the ground floor. And what's more, some of these tanks and fish are very interesting indeed.

For example, there's a tank



Some of the immaculately maintained aquaria in the top sales floor area.



Delightful and 'rudely' healthy Mudskippers — supplied with comprehensive advice on their upkeep.

of six aquaria dedicated to brackish fish. One that particularly caught my eye was a most attractive display of very healthy and lively Mudskippers, but there were Monos, Rainbows, Archers, Colombian Cats and other such delights as well.

Not everything is of a specialised nature, of course. 'Bread-and-butter' species such as Guppies, Mollies, Angels, Cardinals, etc. are also all available. What's different about them though, is that owing to Stephen's strongly-held opinions about who is a good importer/breeder of a particular type of fish and who is not, he obtains his stocks from many different sources.

In addition, he quarantines everything he buys for a

minimum of a fortnight. At the time of my visit, this procedure was still being carried out in the shop tanks themselves, those containing fish that were undergoing quarantine and acclimatisation being labelled with the date on which the fish would be expected to be put on sale. By the time we go to press, a brand new, spacious quarantine/acclimatisation room that was being kitted out should be fully operational, thus 'releasing' some thirty or so aquaria in the retail areas.

Stephen could easily have adopted a much more lenient approach and not stuck rigidly to his high standards, but, so strong is his belief and determination to do things his way, that he just wouldn't be open to

himself if he adopted any strategy other than the one he follows. He may well be depriving himself of some sales at the moment, but from the customers' and — most importantly of all — the fishes' point of view, things could hardly be better.

**Opening hours:** Sunday — 12 noon to 5 pm; Monday — closed (at the moment — but this may change to Tuesday, so check first); Tuesday, 12 noon to 6 pm (see comments for Monday); Wednesday to Friday — 12 noon to 6 pm; Saturday — 11 am to 6 pm.

Contact **Stephen Lee-Son** or **Elsa Hart** at **The Art of Fishkeeping**, 9 Shaw Road, **Heaton Moor**, **Stockport**, **Cheshire**, **SK4 4AG**. Tel/Fax: 0161 433 2000.

Large Firs Eel. Note the sandy bottom thoughtfully provided for this burrowing species. This attention to detail is typical of Stephen Lee-Son's approach.



The 'brackish corner' in the lower ground floor.