

# MAGAZINE®

SUMMER 2000

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## EDITORIAL

Dear Readers,

Welcome to all established readers and those of you who have yet to sample "Fishworld".

This being the show season we are all busy and none more so than those at the garden shows such as Grow, Gardener's World

NEC and Hampton Court. It's a peculiar kind of masochist who enjoys the setting up and breaking down at these events.

This issue is packed with a variety of articles on everything from plants to news, and from selecting fish for your pond to planting it inside and out. In fact, everything you wanted to know and more besides.

"Fishworld" remains one of the best hobbyist magazines and is still only available by subscription, so don't let yours lapse!

Don't forget to post off your entry for the Hagen 'give aways'. If you are one of the lucky winners you will have got your money back on your subscription and have a free magazine for the remainder of the year! How's that for value?

In the next issue we will be celebrating 25 years of Aquarian, so don't miss the chance of obtaining the Autumn issue. Make sure your subscription is still current.

Sue Crew,

Editor

Contributions for the next issue should be posted to me by 25th July, 2000 at the address in the HEAS Year Book (2000) or Sue Crew, Albany Press & Design, see below.  
Federation of British Aquarists 2000  
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## CONTENTS

	Page
Editorial	2
Aquariums & Ponds	3
Phosphate Removers	5
Green-X/Phos-X Offer	6
Homebredfish.com	9
Planting the Garden	
Pond	11
Care of Amphibians	14
Book Review	17
Ferns	18
Coldwater Fish for the Pond	19
A Perfect Show Fish	23
Junior Planting Comp	25
Wildlife in Gardens	29
Introducing Koi	31
Small Acs	36
Brackishwater Bay	37
Fish Ark Mexico	40
Macropodus opercularis	41
Cockroaches	44
Judges Corner	46
Merchandising List	49

## COVER PHOTO

Singapore Arowana (Dragon Fish)

Courtesy  
Roger Crew

Page 2

## THE CLEAR CHOICE FOR AQUARIUMS AND PONDS

by Les Holliday (Hagen)

It seems that no matter how meticulous we are, sooner or later an established aquarium or pond often becomes a fertile environment for unwanted forms of algae. No matter how much attention is given to water changes, filtration and general water quality management, inevitably over time conditions seem to favour such uncontrollable algae growths.

Obviously at such times it is natural to suspect that high nutrient conditions are responsible. Many of the commonly used filtration systems such as trickle filters, fluid-bed filters and undergravel systems are quite efficient at breaking down the organic waste produced by the life forms we keep but usually, because nitrification is the main purpose of the filtration system, there is an end product in the form of nitrates. If your filtration system is lacking in this respect and most are, over time there will be a gradual increase in nitrates until optimal conditions occur to initiate growth in the dormant algae cells in the water.

Some forms of filtration systems are capable of complete denitrification employing anaerobic bacteria in anoxic areas of the filter but for most of us regular water changes are the main means of control to allow the nitrates to be reduced to manageable levels. Fortunately, quite high levels of nitrates can exist in an aquarium or ornamental pond (anything up to 10 to 15 ppm) before the equilibrium is reached that provided the incentive to encourage unwanted algae. So, by carefully adjusting the bio load by maintaining low numbers of animals in the system and avoiding over-feeding, nitrate nutrient levels can, with persistence, be relatively easily managed and growths of unwanted algae controlled.

To ensure the almost algae free tank or pond, however, we should also consider another major plant nutrient, phosphates which can also encourage nuisance forms of algae to reach rampant proportions affecting general water quality and fish health in the system. Persistent or recurring algal blooms are often associated with this by-product of the breakdown of organic waste that first enters the aquarium in items such as foods.

Page 3

Less expensive fish foods usually contain large proportions of crushed fish bones and are very rich in phosphates. Very little of the phosphates in these foods are utilised by the fishes and end up as organic waste products ready converted into a form easily absorbed by algae.

Phosphates therefore can be regarded just as important to control as nitrates and especially so as, unlike nitrates which need to be at quite high concentrations to encourage algal growth, phosphates act as an algal fertiliser at levels of only 1.0 ppm or more. Soluble phosphates may also, in some conditions, combine with calcium ions and precipitate as calcium phosphate, lingering on in the system to be released as conditions change.

Some form of phosphate remover is therefore worthwhile employing at an early stage after first setting up an aquarium or pond to ensure phosphate levels are kept in check from the very start and to avoid any precipitating in the system.

Hagen have just recently developed two new products called Green-X for aquariums and Phos-X for ponds which reduce the compounds that encourage

unsightly forms of algae. These products absorb and trap phosphate, nitrite and nitrate within a resin matrix and are particularly successful at controlling phosphates even at low levels in an aquarium or pond.

The chemical resins used have a special matrix form which ensures high absorbency and makes them effective for use in both fresh and salt-water systems. The method used by these resins is superior to the usual chemical or ion exchangers which when placed in the water usually react immediately and quickly become exhausted. Green-X and Phos-X resins are solids with a large matrix structure and pore volume which will continue to function over up to a three month period. This approach ensures that the resins work at the same pace as incoming nutrients and create more stable nutrient free conditions than other methods.

Safe, easy products to use, Green-X and Phos-X are a welcome addition to the range of Hagen aquarium and pond maintenance aids which provide crystal clear water, a reduction in odours and create ideal conditions both for fish and plant life.

Page 4

## TRY HAGEN'S NEW PHOSPHATE REMOVERS

by Les Holliday (Hagen)

Here's a chance for readers of "Fishworld" magazine to try two new products from Hagen which are designed to reduce many of the compounds that encourage unsightly forms of nuisance algae. Whether you have problems with algae in your pond or aquarium there is a solution in the form of Green-X for aquariums and Phos-X for ponds, products which absorb and trap phosphate, nitrite and nitrate in a highly absorbent matrix.

A constant problem in many aquariums whether they are freshwater or salt is the control of nuisance forms of algae which can easily reach rampant proportions affecting general water quality and fish health in the tank. Green-X is a safe, easy to use product which, in reducing the compounds that encourage unwanted forms of algae, ensures crystal clear water, a reduction in odours and ideal conditions for fish and plant life.

Available in sachets for small aquariums and also in 3 x 100 gram packs, Green-X resin can be placed in any filter or directly in the aquarium. It is ideally placed in the last stage of filtration after all the other filter media where it will continue to reduce phosphate nitrite and nitrate for up to three months before requiring replacing.

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Available in 900 gram twin packs capable of treating 5000 litres of water. Simply place Phos-X in the filter or wherever water will circulate through the mesh bag replacing it after 3 months or when algae starts to reappear.

Page 5

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**HomeBredFish.com**

Have you ever wondered if there is an alternative to the usual way in which we sell or swap the surplus fish generated from our hobby or how or where we can acquire new stock from trustworthy sources?

1st May, 2000 saw the launch of a new website for aquarists called HOME BREDFISH.COM, which provides that alternative. It has been created to help aquarists with a surplus of fish from breeding to be able to offer them to other aquarists directly and at more affordable prices than normally available and where in most cases you can see the parent fish as well!

The main fish database is divided into four sections: coldwater, marine, tropical and British species and can be further sub-divided into specialist groups such as Cichlids, Killifish and Koi. Each entry in the database includes the fish owner's post code, which means that it is easy to search for all local breeders in your area and buy or swap fish with them directly. If you require specialist fish, you can search on a fish name and you can be presented with a UK-wide list. The site has been written to cater for any country, but being a British idea, has been launched with the UK in mind.

Although it will be necessary to make a minimal charge to advertise fish in the future (to cover set up and annual running costs), the service is being offered completely free for two months after the launch to promote the idea and fill up the database with fish for sale. The launch was preceded with a 10,000 leaflet distribution campaign to UK aquatic

clubs and societies to promote awareness and to make sure that fish breeders throughout the UK were ready to use the free period after the launch to fill the fish database.

In due course, for the price of a single fish from a brood, you will be able to advertise all fish of that type, but there will be a minimum charge of £1 per item. A fish ad will remain on the database for one month, although it is possible to include adverts for more than one month with generous discounts for these being offered (this will be a very attractive proposition for the serious hobbyist, breeding the same fish year round). Specimen fish can also be advertised, if you want to sell that Oscar that has outgrown your community tank or that monster Koi that is too large for your pond.

HomeBredFish also contains a completely free Small Ads service. The only rules are that only aquatic related items are advertised and that no fish are placed in this database. This will always be free to advertise and search.

Early feedback is that aquarists are pleased that this service is being provided and surprised that this vehicle did not already exist somewhere on the Net. The site will only really operate to its full potential if it is used and the majority of UK postcodes are represented. Aquarists without a computer can still use the service by sending a SAE for some literature to the HomeBredFish Office at:

45 Felthampton Road  
 New Eltham  
 London SE9 3NT

WWW.HOMEBREDFISH.COM

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Page 10

### PLANTING THE GARDEN POND

Carefully planting a garden pond with a range of different plants will greatly improve its appearance, particularly if flowering species such as water lilies and iris are included. However the benefits of the plants extend far beyond this. During daylight hours they actually produce oxygen and use up potentially dangerous carbon dioxide in a process known as photosynthesis. The production of oxygen is particularly important to the fish on warm, still days. Plants with large or floating leaves provide shade and shelter for the fish, whilst other species may be consumed or provide a spawning medium. Very importantly the plants also use up nutrients and absorb sunlight which would otherwise encourage unsightly growth of algae. Encouraging healthy plant growth will therefore have many benefits for your pond.

#### Planting

The most convenient and best way to grow pond plants is to place them in a suitably sized plastic container. Planting in a container keeps the plants in tidy bunches; allows the plants to be moved or removed during pond cleaning; reduces nutrient leakage into the water where it encourages algae; and prevents the fish stirring up any mud and clouding of the water.

Commercial plastic containers are available in a range of sizes to suit the needs of most pondkeepers. The containers are usually perforated, and should be lined with hessian (provided it has not been treated with

preservatives), fine netting or a piece of lace curtain to prevent the soil being washed away. Given suitable water conditions, aquatic plants will grow in almost any planting medium. Unfertilised garden soil is ideal and should be mixed with fine gravel in the ratio of 3 soil:1 gravel. Heavy loam media are available for lilies and these can also be used for other plants. Using rich soil or manure in the containers will produce healthy plant growth, but the excess nutrients will also encourage algae in the pond.

Special fertiliser tablets are available to encourage healthy growth of lilies and should be placed in the rooting medium close to the base of the plant. These tablets are rich in phosphates and contain few nitrates, consequently they will not encourage algal growth.

The upper surface of the planting container should be covered with one inch (2.5cm) layer of coarse gravel to prevent the fish digging and uprooting the plants or clouding the water. Larger stones can also be used to hold down the root systems of lilies and some marginal plants.

Containers are available in a range of sizes. As a general rule a small basket (8" x 8" with a depth of 4" - 20 x 20 x 10cm) can be planted with 1 pygmy water lily, 4-6 oxygenating plants or 1 marginal plant.

#### Types of Plant

There are four groups of plant which are suitable for the garden pond. The quantities of each plant to add to your pond depends on water depth, water surface area and personal preference.

Page 11

#### Submerged (Oxygenating) Plants

This group of plants includes the Pond Weeds (*Elodea*, *Calitriche* and *Ceratophyllum*), Water Hawthorn (*Aponogeton distachys*) and Water Milfoil (*Myriophyllum*). Each of these plants will form attractive growth under the water, but their main function in the pond is to consume minerals and nutrients which would otherwise allow algal growth.

Submerged plants are usually purchased as a bunch of unrooted cuttings held together with a lead planting weight or elastic band. Before planting check that the cuttings have not been crushed by the planting weight. If they have, remove the damaged portion and carefully replace the weight. The oxygenating cuttings are planted in bunches of 5-10 cuttings by placing them in a hole approximately 2 inches (5cm) deep and firming the media with your fingers.

Alternatively, a bunch can be placed horizontally on the medium and a stone placed in the middle of the cuttings to hold them down. As a rough guide 1 bunch of submerged plants should be added for every 2 square feet (0.25 m<sup>2</sup>) of water surface.

#### Water Lilies

These plants are available in a range of sizes to suit any pond. They have also been selectively bred to produce large flowers which can be red, pink, white, yellow or orange. The more spectacular water lilies are often a little more expensive, but the extra cost is worthwhile, particularly when you consider that they are perennial and will

produce the flowers for many years. The large floating leaves also have a useful function in that they cut off the light at the pond surface, so controlling algae and keeping the water clear. When purchased remove old or dead leaves and cut back white fleshy roots. The lily bulb, or tuber should be planted so that the upper surface protrudes. Long tubers should be planted at an angle of 30° to the horizontal with the sprouting end just clear of the soil.

The maximum depth in which the water lily will grow depends upon the variety concerned, however all but the pygmy varieties will thrive if there is 10-15 inches of water above the soil surface. The water surface covered by the leaves of a single lily differ with variety, but as a general rule allow 20-25 square feet (2m<sup>2</sup>) for each plant. It is better to have one plant growing vigorously rather than 3-4 stunted specimens.

#### Floating Plants

Although there are many species of floating plants which can be added to the pond, many will grow out of control and cause problems in the future (e.g. Duckweed and Azolla). Two suitable plants are the Water Hyacinth (*Eichornia crassipes*) and Frog-bit (*Hydrocharis morsis*). As a general rule allow one plant to every 10 square feet (1m<sup>2</sup>) of water surface when initially stocking. The plants will multiply but can be netted out if they become overcrowded. The Water Hyacinth is not hardy and will not overwinter in Britain. To overcome this, individual plants can be overwintered indoors or new plants bought each Spring.

Page 12

#### Marginal Plants

Marginal plants grow in the shallow water around the edge of the pond, where their roots are submerged but the stems and leaves are above the water. Suitable species for the pond include the Yellow Flag Iris (*Iris pseudacorus*), Sweet Flag Iris (*Acorus calamus*), Flowering Rush (*Batium umbellatum*) and Marsh Marigold (*Caltha palustris*). Marginal plants will remove some nutrients from the pond, but their main function is to provide an attractive

background against which the pond can be viewed. The stocking rate for marginal plants is determined by the pool perimeter and the surroundings. As a rough guide about one third of the pool perimeter should be planted.

The surroundings of the pond should also be thoughtfully planted to ensure that the pond ties in with the rest of the garden. Many of the common, easily grown herbaceous border and rockery plants can be used to add the finishing touches to the pond surroundings.



Page 13

## THE CARE OF AMPHIBIANS

Amphibians such as frogs, toads, newts and salamanders are commonly kept as pets, but should NOT be kept in the same tank as aquatic turtles. Many of the commonly kept turtles are prone to biting at the limbs and tails of slow moving amphibians - and surely your frogs or newts deserve better treatment than that! Also amphibians may also place your fish at risk. The following hints may prove useful.

### Frogs and Toads

Most frogs and toads can be kept quite successfully in a tank with a two or three inch layer of smooth aquarium gravel, one or two caves (e.g. half flowerpots), and perhaps some damp moss. The gravel should be kept just damp but not too wet, and a dish of clean water (large enough for the frog and toad to sit in) available at all times. The tank must be securely covered, as most amphibians are great escape artists, but adequately ventilated. Nylon mesh on a wooden frame or perspex with holes drilled through, are both ideal. Temperate species will do well at room temperature, although extra heating will have to be supplied for tropical species (to maintain them at around 25°C). Amphibians do not like bright light, and are subject to dehydration. Consequently, it is a good idea to spray their tank regularly with fine mist spray. Tree frogs will, of course, require a tall cage, containing some strong, broad-leaved vegetation.

Frogs and toads should be fed several times a week on a selection of live invertebrates, such as earthworms, slugs,

woodlice, mealworms, maggots, crickets, etc. Larger species will take larger foods, including locusts, baby mice, etc.

As with any form of animal keeping, hygiene is important, and with this in mind the gravel in the tank should be removed every few weeks, and rinsed well in running water before being replaced.

### Newts and Salamanders

These amphibians can be maintained in a fashion similar to that described for frogs and toads (above) or, in the case of more aquatic species of newts, in a tank set up as mentioned below for axolotls. Most newts and salamanders thrive at room temperature, and particularly enjoy 'wormy' live foods, and some will even take scraped raw meat and foodsticks (e.g. Reptomin).

### Axolotls and Aquatic Toads

Axolotls are the large tadpole form of the Mexican salamander (*Ambystoma mexicanum*), and aquatic clawed toads (such as *Xenopus laevis*) are also commonly kept as pets. They thrive in an aquarium containing about 15-22.5cm (6-9 inches) of water at about 20°C, but although axolotls can tolerate water cooler than this for a time, clawed toads prefer a fairly stable temperature. An aquarium heater-thermostat is quite useful in this context, as is a power or poly-foam filter for keeping the water clean. Otherwise the tank can be fairly spartan in appearance, although one or two plastic plants may help to make it appear more attractive. Axolotls and clawed toads should not be kept together, as the toads may chew at the

Page 14

legs of the axolotls. A more normal and suitable diet for both consists of lean, raw meat, earthworms and Reptomin

they try to keep too many and, especially with heavy feedings, the water is easily fouled. Unless you have extensive



foodsticks. Feed several times a week but do not allow uneaten food to pollute the water. Even with good filtration, the water will require changing every 10 to 14 days, but these amphibians must never be exposed to sudden temperature changes.

### Tadpoles

Amphibians begin life as an aquatic tadpole. Some amphibians then metamorphose into more a terrestrial adult form, whilst others mature into an aquatic adult. The axolotl is, in fact, unusual - inasmuch as it matures whilst still in the tadpole form, but can also change into an adult terrestrial salamander which is also capable of reproduction.

Most amphibian tadpoles can be reared on a diet of tiny live food (eg. Daphnia, brine shrimp larvae, etc.), finely powdered fish food, lean, scraped raw meat, and flaked fish food. As they grow most will require live food in the form of Tubifex, small earthworms, white worms, fruit flies, etc. This is particularly true of tiny frogs and toads as they emerge onto the land, and very small live food is vital for the rearing of baby axolotls. In the case of frogs and toads which metamorphose into terrestrial adults, easy access to an area of dry land must be provided as soon as their legs begin to appear. The reason why most people fail to rear tadpoles successfully is that

facilities, only aim to keep and rear a dozen or so tadpoles at any one time.

As indicated, some tiny tadpoles require very small live food, and the feeding of a large number of recently emerged frogs or toads can be difficult. The occasional addition of a fresh turf of grass to their vivarium can provide useful live food, but in many situations it is kinder to release most native species of frog or toad into the wild once they have emerged. Further information on the care of amphibians can be found in some of the books you will find at your local library or in good bookshops.



Page 16

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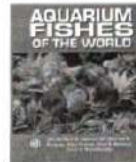
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Page 15



## AQUARIUM FISHES OF THE WORLD

Authors: Dr. HR Axelrod, Dr. WE Burgess, N Pronek, GS Axelrod, DE Boruchowitz

Published by: TFH Publications Inc.  
ISBN No. 0-7938-0493-0

Price: £19.95  
Reviewed by Roger Crew

Aquarists will be familiar with the TFH Publications entitled Dr. Axelrod's Atlas of Freshwater Aquarium Fishes and the smaller Mini Atlas of similar name. There have been many editions of both, and I fully expected this new book to be an updated version of the Mini Atlas. To some extent I suppose it is, and that in itself is no bad thing, but I did find three surprises (for me) within the covers.

Firstly, I was pleased to find that this was not just another 'picture book' of species. Those of you who remember when the Atlas had accompanying text will be pleased to find a return to that familiar format. I am pleased to say that the abbreviations used are simple, logical and quickly assimilated. Unfortunately the authors totally fail to tell us how size is measured and I am not convinced - having compared a range of genera and species - that a uniform approach has been adopted throughout the book.

The second surprise was the volume of pages taken up with supporting sections on classifications, aquarium plants and aquarium management. Perhaps I should have anticipated this as it does follow the Mini Atlas format, but I guess I had in all honesty expected to see an American version of the German Mergus/Baensch series of books, which have over five volumes produced and an extremely large number of 'new' species.

This book is obviously American in origin - who else would be so egotistical as to include conversion factors for litres to US gallons but ignore Imperial measurements!

Some of you may be aware that I once worked for an American petro-chemical conglomerate and in those days it was a standing joke among us Brits that the only reason the US gallon is 0.88 Imperial gallons was so that the Americans could boast that their tankers held a greater gallonage!

So, remember... US galls x 0.88 = Imperial galls

However, I digress... The third surprise was the lack of range in this book. There are 'new' fish inside, of that there is no doubt. What I refer to is the disappointment in finding so few species described of each genera - frequently only one! Also in true TFH style there are 11 pages devoted to Discus.

All things being balanced out, this book at around 1000 pages is reasonably priced, but I cannot help finding myself wondering just who it is aimed at. It is not comprehensive enough to be considered as a reference book for today's demanding hobbyist and is too good, (and probably a little expensive) for the newcomer to the hobby.

It is a great improvement upon the style of the Mini Atlas, but I would not say that it has come close to updating the content, and to coin a phrase - you pay your money and makes your choice.



Page 17

## FERNS

by Sue Crew

Ferns belong to one of the largest sectors of the plant kingdom, that of the Pteridophyta family which encompasses Clubmosses, Horsetails and Quillworts.

The life cycle of ferns demonstrates a phenomena called the 'alternation of generations'. The two generations are known as the sporophyte generation (the neuter plant) and the gametophyte generation (the prothallus). Ferns do not possess sexual organs, but use spores which when germinated do not immediately produce fern plantlets. The spores develop into small scale-like plants (prothallus) approximately 2cm across. On the underside of the fern fronds the microscopic male and female organs are formed and from them a new baby fern is born.

Although most ferns use this method for their propagation, a few are able to reproduce by vegetative means.

One fern can distribute many millions of spores each year which are sent far and wide on the wind. A very small proportion of these will generate new plants. Although this form of reproduction may seem a little haphazard, ferns have been extremely successful in their survival and evolution which has spanned some 300 million years.

During the millions of years in which ferns have evolved, they have adapted to a wide variety of conditions, but generally they prefer damp, shady conditions. Many flourish in the edges of British woodlands and gain wind protection from the high trees. Some ferns do particularly well in boggy conditions or on the perimeter of your pond.

Other ferns have adapted to life in rock crevices, stone walls or as epiphytes on the mossy bark of trees. A very few ferns

have adapted to life in the open - particularly in mountainous areas.

Today there are approximately 10,000 different species, most of which exist in semi-tropical climates. Of these approximately 50 are native British species, but a number of the species found in temperate zones will also survive in our climate.

Ferns vary in habit between the species, but the majority form a 'trunk' from the old fronds. The new fronds generally grow from the centre of this 'trunk' which serves to protect new growth against extremes in weather conditions.

Fronds are not the same as leaves in that their sole aim is to transpire water vapour and build up food material by utilising the sun's energy. Fronds also bear spores on the back in groups which are characteristic to the species. Spores are contained in tiny cases (sporangia) which are grouped in clusters called sori. Some sori are protected by a membrane (indusium). The shape of the sori is variable according to the species and therefore forms a useful aid to identification.

Some ferns grow from rhizomes under the soil and those of the Polypodium species grow on the surface.

Site your fern where it will thrive in your garden. If necessary you must create the conditions for it to thrive. For most species you will need a corner where the sun does not reach (or at least not until late in the day). This will usually be on the north side of the garden, although a tree may provide such conditions elsewhere. The soil conditions must be suitable to the selected species. The most important aspect is to provide a humus-forming mulch - decaying leafmould is ideal, especially from Oak or Beech trees - or well soaked peat, well rotted garden compost or shredded bark can also be utilised. Do not use manure unless it has been rotted for at least two years.

Page 18

Bone meal can be added to give the fern a good start. Heavy and clay soils are generally not suitable for ferns unless they have been extensively prepared to provide good drainage, etc.

Hardy ferns are low maintenance plants except an autumn mulch (although it should partly do this itself when its fronds die down each year).

In spring remove any dead fronds. Evergreen species should be cut to ground level, but the dead fronds from deciduous species should come away easily. Apply a dressing of bonemeal and lightly fork it in and apply a 2" mulch.

With crown forming ferns, the simplest way to propagate them is by division. To divide the clump, lift it (preferably in autumn), remove as much soil as possible, separate the crowns by using

two forks back to back between the crowns. Do not pierce the crown with the forks, however. When the crowns have been separated, remove old or dead fronds so that the rootlets can establish easily in the soil and replant to the required depth.

Ferns that grow from rhizomes should be lifted and cleaned in autumn and then split the rhizomes apart ensuring each has a small cluster of new fronds around the outside. If the rhizome does not have tiny budding fronds it is likely to be sterile and should be discarded.

These are the two most common methods of vegetative propagation, but there is also the method of collecting spores to propagate the ferns.

More about that in a future issue, however.

## UNUSUAL COLDWATER FISH FOR THE GARDEN POND

The majority of ponds are stocked with some of the many varieties of goldfish or, to a lesser extent, with koi. There is no doubt that such displays can look very impressive and be very interesting, but there is no need to restrict yourself to the fish already mentioned. There is, in fact a very wide range of fish originating from temperate conditions, which would be suitable for ornamental purposes. Some such as the red shiner (*Cyprinella lutrensis*) or blue spotted sunfish (*Enneacanthus chaetodon*) can match the vivid colouration of any tropical fish; others have unusual and

interesting behaviours (e.g. 3-spined stickleback - *Gasterosteus aculeatus*); while others such as channel catfish (*Ictalurus punctatus*) and grass carp (*Ctenopharyngodon idella*) grow very big and very friendly.

I will introduce some of the many available species here, but a trip to your local aquarist shop would allow you to view other specimens which would add to the variety and interest in your pond or aquarium.

The 'coldwater' fish which are available can, for the sake of convenience, be divided into those species originating from Britain and Europe, North America and the Far East.

Page 19

### British & European Species

Most of the native British fish can be kept in aquaria in their juvenile stages, if care is taken with the water conditions. Most of the suitable species for captivity are commonly available from aquarist shops and include carp (*Cyprinus carpio*), tench (*Tinca tinca*), rudd (*Scardinius erythrophthalmus*), minnows (*Phoxinus phoxinus*) and bitterling (*Rhodeus sericeus*).

Bitterling (*Rhodeus sericeus*) are worthy of a special mention because of their very unusual reproductive behaviour. These beautiful little fish protect their eggs by laying them in the gill cavities of freshwater mussels. To do this the female develops a long ovipositor when ready to spawn. This is inserted into the excurrent siphon of the mussel and the eggs are released. The brilliantly coloured male hovers over the incumbent siphon and releases his milt. The respiratory action of the mussel carries the sperm into the gill chamber where fertilisation occurs. The fry remain in the mussel until they are free swimming, when they pass out through the excurrent siphon.

Keeping bitterling is very simple as they are tolerant of all but the extremes of pH and water hardness and will readily accept flaked foods such as TetraFin Goldfish food. In a pond they tend to be surface feeders and so will be seen even in the unfortunate event of the water going green with algae. The breeding described above occurs throughout the summer months. During this time the male is very brightly coloured and easily distinguished from the female. The fish will breed readily

in captivity providing a mussel is present.

### North American Species

There are in excess of 100 species of American fish which are suitable for pond and aquarium life. Amongst the most popular and widely available are the red shiner (*Cyprinella lutrensis*) and the sunfishes (*Lepomis* and *Enneacanthus* species).

#### Red Shiner (*Cyprinella lutrensis*)

This species occurs naturally in the south and south west of the USA. Because of its popularity as a bait for larger piscivorous fishes, the red shiner is bred commercially in large numbers and so it is often available within the aquarist trade.

The intense red colouration which occur on the flanks of the male during the breeding season, give rise to its common name together with more misleading names such as Asian or African fire barb.

The red shiners prefer neutral to slightly alkaline water with a medium to moderate hardness. They will survive in softer more acidic water, but tend to be more susceptible to parasiting infection. A wide range of temperatures can be tolerated but those over 22°C should be avoided if possible as such conditions will shorten the lifespan (normally around 5 years). Feeding is straightforward, with them readily accepting flaked and stick foods.

As with the bitterling, red shiners will spawn over a prolonged period of time given suitable conditions (clean water and a temperature of 18-22°C). During the breeding season males are highly

coloured. Spawning occurs over an area of coarse gravel. The male defends a small territory over the gravel, but following spawning he rapidly loses interest and moves away.

Sunfishes (*Lepomis* spp. and *Enneacanthus* spp.)

The most commonly available sunfishes are the pumpkinseed sunfish (*Lepomis gibbosus*), the black banded sunfish (*Enneacanthus chaetodon*), the banded sunfish (*E. obesus*) and the blue spotted sunfish (*E. gloriosus*).

The pumpkinseed sunfish is more aggressive than the other three, and should be kept with members of its own kind or with other large fish. Given suitable conditions they can reach a length of 24cm, and at this size they will consume any small fish in the aquarium or pond. Despite these problems, the pumpkinseed sunfish are popular because of their bright colouration (particularly during spawning) and interesting breeding activity.

They breed in a cichlid like fashion, with the male excavating a shallow hollow in sand or fine gravel into which the eggs are laid. The male then guards the eggs and fry until they become free swimming. Because of this territorial behaviour at spawning time, care should be taken not to overstock the pond or aquarium. One male for every one square metre of the pond or an aquarium should prevent any fighting or damage.

The *Enneacanthus* species are often found together in the same habitats in Florida and the Atlantic coast of

America. In captivity they are also peaceful, although some aggression occurs between the males at breeding time. As with the pumpkinseed sunfish, they are tolerant of a wide range of water conditions (i.e. pH and hardness) but are badly affected by raised ammonia, nitrite or nitrate levels. Therefore, avoid overfeeding and overstocking and ensure good filtration. Apart from this they are very hardy and are rarely affected by parasites.

The aquarium or pond should contain areas of dense plant growth into which they will retreat when threatened, or to breed. When first obtained it may be necessary to give live foods in order to tempt the sunfishes to feed. However once they start feeding, they will quickly learn to accept dried foods.

#### Channel Catfish (*Ictalurus punctatus*)

Although not suitable for the majority of aquaria and ponds, this species is widely available in its normal, brown colour or as an albino form. Channel catfish are bred in massive numbers in America, where they are an important food fish. In aquarist shops they are usually available as appealing youngsters of 5-10cm in length. But beware they can reach a length of 1 metre in the wild and commonly reach 45cm in ponds and aquaria. At this size they will feed on anything that will fit inside their mouths, including other fish, consequently they should be kept with members of their own kind or other large fish. The juvenile catfish can also pose problems if kept with fancy varieties of goldfish as they will damage the eyes and fins.

Page 20

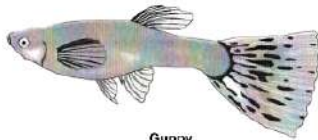
Page 21

Having painted a rather black picture of the channel catfish, it is only fair to add that they are interesting and intelligent fish which quickly learn to recognise their owner. Water quality is not a problem, as they will tolerate a wide range of pH, hardness and oxygen values. In addition, they are able to resist the majority of parasites which can affect other coldwater fish.

#### Far Eastern Species

Two notable examples of fish originating from the Far East are the goldfish and koi. However there are also a number of other species. Included in these is the grass carp (*Ctenopharyngodon idella*). This species feeds to a large extent on aquatic plants and algae, and is often introduced into the pond to control unwanted vegetation. The grass carp is also an interesting fish in its own right. In the wild it can grow to 1.25m and weigh 35kg, however it is unlikely to reach one twentieth of that in most ponds. Because of their large size and longevity, grass carp can become very tame and will readily feed from their

owner's hand. They are also very peaceful, making them ideal companions for koi and large goldfish. In a pond they will help to reduce the algal and plant growth, however to achieve complete control they need to be stocked in reasonable numbers (which would restrict the numbers of other fish which could be kept). In most ponds the diet should be supplemented with a pelleted or stick diet (such as TetraPond Sticks).



Guppy  
*Poecilia reticulata*

As you can see the choice of fish for your pond is not limited to goldfish, koi or orfe. In this article I have included the more unusual species of coldwater fish which are commonly available in aquarist shops. Many other species are suitable and are occasionally available commercially including tropical species such as paradise fish, (*Macropodus opercularis*), white cloud mountain minnows (*Tanichthys albanus*), guppies (*Poecilia reticulata*) and some Killifish.

Hopefully you will now give these species a chance and add more interest to your pond or aquarium.

#### A PERFECT SHOW FISH

by Tarquin Kisser

I must tell you about this little Harlequin fish we have in our tank. I think he's quite old because he seems to have lived with me for ever. However, I have come to the conclusion that he's a 'perfect show fish'. Now, you may be asking yourselves, "How can someone who doesn't enter into the spirit of showing himself, claim to have knowledge of what a perfect show specimen is?" The answer to that, of course, is "Because I'm Tarquin Kisser" and without appearing too big-headed, I have to say that I'm far more intelligent than most - if not all - fish!

I have recommended to Mum that she should be entering him in shows. Then we have the problem of catching him. I cannot stress enough just how useless she is with a net. Just because when she puts our Bloodworm in the net all the other fish dive at it whenever it appears, she has the naive idea that if she stands there with an empty net, eventually whichever fish she wants to catch will jump into it! What she doesn't realise is that fish aren't as stupid as she thinks they are. Oh, they're quite happy to jump into the net when it's full of Bloodworm and scatter them all over the tank: that's something else she still hasn't managed to cotton on to. She will insist on putting just a couple of worms at a time into the tank, which is full of little fish. Therefore,

rather than a dozen or so fish fighting over two worms - usually one of the Hoplos - will jump in and thrash about and out come all the worms. She gets wet, the wallpaper gets splashed and Dad starts shouting at Her because water is dripping down on to the video and that Sky thing.

I don't know why they put it beneath our tank to start with. You must admit it's not a very good place to keep something that has to be kept dry, particularly as She does the water changes and regularly pours water all over everywhere. Once She starts to syphon out the water She drifts into another world. She's so busy gazing either into our tank or into space. She moves her arm slightly and instead of the water going into the bucket, it goes everywhere. She then puts the heating on full blast to dry the carpet before Dad comes home and find out what She's done.

Anyway, as I was saying, She won't let Dad near the tank with the net because in the past He would charge around and around and uproot all the plants. Now, with plastic plants that doesn't matter. However, we have gone all 'posh' and She is in the process of removing all the plastic plants from the tank and replacing them with real live ones. Yes folks, She's decided to turn our tank into something She calls a 'Furnished Aquarium'. When it's finished (if ever) it will be the most expensive tank in the World. Honestly, this isn't me boasting. You see, apart from a few plants, the

majority She buys die within a few weeks of Her putting them in. That's if they're lucky enough to live that long.

She planted three nice little ones at the front of our 'holy' rock last week. I inadvertently (That's a big word isn't it, I don't know what it means, but it looks good!) caught one with my tail and it floated to the top. But... that's not all. The other two are right in front of the hole which Plec uses to get behind the rock. Consequently, (wow another long one) he flattened the other two a few times and they died. What does She do, though? She buys more and puts them in the same place. Silly old sod. I know I've remarked in the past how I get really worried about Her sometimes. She really does do some strange things. The other week She was in the kitchen and suddenly started screaming for HELP. Dad rushed in, then came back into the living room again laughing and left Her screaming. It appears She was putting a plastic top on to a bottle of wine and holding the top with one hand She banged it into the bottle with the other hand and trapped the fleshy part of Her finger. Dad stuck a knife between the bottle and the cork on the opposite side but that just made Her scream louder because it put more pressure on Her finger. She spent the next week showing everyone Her bruise.

You know, I'm getting nearly as daft as Her. I keep forgetting what I'm talking about and ramble on to something else.

I was telling you about our 'Perfect Show Fish', wasn't I? The reason this old Harlequin should win is because it don't have a tail no more. Don't quite know what happened to it. She says the water is alright. How She can tell when She's colour blind I've no idea. And... apart from me, there isn't anyone else in the tank big enough to bite it off. I, of course, wouldn't do such a thing. Apart from anything else, I have a delicate constitution, so eating a tail would only give me indigestion. Although I have to say that since She took that big Hoplo out, the two little ones remaining are getting really big and pushy now and instead of one big one sitting on my head at feeding time, I now have two little ones.

We've also lost that stupid big Rasbora. He's gone into another tank and apparently is quite happy there. Instead of sitting in the corner crying and having the occasional fit like he used to do in our tank, he now swims all over the place. So that Mr. Doctor Ford was right when he said it was fear of being in a tank with me that was causing it to try and jump out of the water. Silly old fool - the fish I mean not nice Mr. Doctor Ford!! Why couldn't it see that all the other fish - which are much smaller than he - were swimming around me safely?

I've done it again. I've clean forgotten what I was talking about.

Continued p29...



your living environment you must take care with your use of pesticides. For example, if you spray to rid yourself of unwanted aphids, any birds that eat the aphids will be poisoned too. You must accept that the attraction of wildlife into your space is also a great responsibility and you must be aware that you can also do more harm than good sometimes.

There are a huge web of interactions and interdependencies between living things (plants, animals, humans, insects, etc.) and their living environment. Humans can totally wreck this fine balance by their interference.

If you have the room it is generally accepted that the biggest single contribution that you can make to the wildlife in your area is to install a garden pond. Without water there is no breeding environment for frogs, toads, newts, dragonflies, mayflies, damselflies and all the other aquatic life that inhabits the world of water.

Ponds with shallow margins also allow birds and animals to find a safe place to drink from. It also allows amphibians to enter and leave the water according to their seasonal needs.

Your garden pond should ideally be placed in a sunny place, but one which is in partial shade. If you are able, plan a boggy area adjacent to your pond which supports a bog garden habitat. If you do not have a natural damp area in

your garden, one can be created by burying a butyl liner to retain the moisture.

Remember to plant the pond margins so that emerging dragonflies and other similar insects can leave their aquatic habitat when the time is right.

A mixture of submerged and floating plants should be planted to create an aesthetically pleasing and environmentally friendly habitat.

Remove excess plants in small quantities so as not to cause a biological imbalance.

Even an urban garden can provide a habitat able to support a wide variety of insects and other invertebrates, animals, reptiles, amphibians and birds.

Such an environment provides a wealth of learning experiences for children and adults alike. This learning - unlike our schooldays - is enjoyable with each new day providing some small wonderment.

Remember, though, the health and safety issues involved. A pond is still a hazard to young children or the elderly. Ensure your pond is safe to all its users so that your enjoyment is not spoiled.

Enjoy planning, building and watching your pond grow.

## INTRODUCING KOI

### Extracted from the FBAS Koi Show Fish Guide

The name "Koi" is the written word in English that represents the phonetic sound made when pronouncing the Japanese character which means "Carp". The Carp referred to is the Common Carp (*Cyprinus carpio*) of Europe and Asia. The full name "Koi" is actually "Nishiki Koi". The nearest translation of the Japanese is "brocade coloured Carp", but there is no exact translation. Koi are fish for the ornamental pond. They have been produced by the Japanese over many years as pool fish and it is here that one begins to appreciate that the primary feature of Koi - their colour - was bred into them to be viewed from above. Let us be quite clear. We are not saying that Koi cannot be kept in aquaria. This is merely a statement of our opinion that they are better kept in ponds. To go further with this opinion: Koi should be kept in pools that possess firm bases, preferably concrete. This is because Koi continuously root around and stir up the bottom of the pool. This activity makes it difficult to maintain a pool with plants other than the more hardy types - reeds and rushes. Soft leaved plants are either consumed or subjected to severe battering until they are destroyed.

Some means of filtration or water changing should be built into any Koi set-up for unless this is done, the water will remain like pea soup throughout its life.

The value of Carp as a food source had been recognised by humans for some

considerable time and they have been farmed extensively not only in Asia, but also in Europe. Whilst engaged in the farming of these fish, variations appeared from time to time, and these were put to one side by the Japanese fish farmers to utilise in selective breeding programmes which have produced the many and varied forms available to the aquarist today.

Although variations also appeared on the European fish farms, they were not recognised there as a commercial prospect in the way that the Japanese farmers did. It must be accepted by the reader that the commercial viability of these fish at this time to the Europeans was purely in terms of enhancing the food value of the fish. The Europeans were primarily concerned, therefore, in scale formations which eased the preparation of the fish for the dinner table!

The Leather and Mirror Carp were produced by selective breeding as it was easier to remove a few large scales when cleaning it for the pot than the many hundreds of "normal" sized scales. The Japanese imported Mirror Carp from Germany at the turn of the 20th Century and introduced them into their commercial and fancy stock thereby adding this scale variety to their existing colour varieties. Because the Mirror scaling was introduced by using German fish, the Japanese called the feature "Doitsu" ("German").

Koi colour varieties occur in several combinations. The first being a single colour known as "self-coloured": red, yellow, orange, black and white. There are also two-coloured and three-



coloured combinations, each colour type having its own specific name. Many of these types also possess the Doitsui or Matsuba (a subtle blend of dark and light colouring) features giving rise to even further varieties.

Finally, there is the silver and/or gold speckled effect known as Kin-Gin-Rin (Kin for gold, Gin for silver).

Koi breeding gives rise to many fish which are not of any set variety. There is a great deal of culling to be undertaken to maintain those varieties that enjoy general acceptance. Also breeders inter-cross varieties of Koi when attempting to develop new varieties. There are two ways of disposing of these culls or intermediate varieties: either destroy them or dream up a picturesque name and market them! The breeding of Koi is a commercial enterprise. Therefore Koi appear for sale bearing a vast assortment of names. Listed below is a selection of some of the more common names with a brief description:

**Aigoromo** A Kohaku with blue coloured scales scattered within the red patches.  
**Aigoromo Sanshoku** A Sanke coloured as above.  
**Aka Bekko** Black markings on a red ground.  
**Aka Hajiro** Red fish with white fins.  
**Aka Matsuba** Red fish showing the Matsuba pattern.  
**Aka Muji** A matt red fish.  
**Aka Sanshoku** A Taisho Sanke with a preponderance of red.

Page 32

**Asagi** Upper half of the body blue with a reticulated pattern, the top of the head white, the remainder of the fish including the fins red.

**Beni Koi** As an Aka Muji.

**Beni Kujaku** Five colours, mainly red.

**Boke Showa** A Showa Sanke with blue in place of the black.

**Budo Sanshoku** Similar to Aigoromo, where the red patches are almost covered with purple coloured scales.

**Bunko Sanshoku** A Shusui type without the Doitsu scaling, the upper body is dark blue or black, not light blue as with the true Shusui.

**Cha Koi** A light brown fish.

**Enyu** Light blue upper body, lower body white with white finnage. The whole body has orange patches with the orange sometimes spreading onto the fins.

**Ensu no Hisoku** Yellow green with Doitsu scales along the dorsal contour which are several shades darker.

**Ginbo** A silver variety of Cha Koi.

**Gin Kabuto** A Ginbo with a silver metallic head.

**Gin-Rin** Speckled with silver scales.

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Page 33

**Goshiki** A five coloured fish mainly blue or purple.  
**Hariwake** A term either prefixing or added to a fish's name, usually a Silver or Platinum Ogon. The effect is of either, light yellow, gold or orange patterns. The colours are not mixed.  
**Hage Shiro** A black fish with a white head.  
**Hagoromo** An Aigoromo with very little blue scaling.  
**Hakushu** A Nezu Ogon with a hint of light blue.  
**Hana Shusui** A Shusui with red spreading into the upper body and on top of the head.  
**Hi Shusui** An all red Shusui.  
**Hi Utsuri** Red markings on a black ground.  
**Kagami Koi** A common Mirror Carp.  
**Kage Hi Utsuri** Red markings on a black fish with the black dominating the fish.  
**Kage Showa** A Showa Sanke with large areas of black.  
**Kawa Koi** A Leather Carp.  
**Ki Bekko** Black markings on a yellow ground.  
**Ki Koi** Matt yellow finish.  
**Kiku Sui** A Shusui exhibiting metallic sheen.  
**Kin-Rin** Speckled with gold scales.

Page 34

**Kin-Gin-Rin** Speckled with gold and silver scales.  
**Ki Utsuri** Yellow markings on a black fish.  
**Kohaku** Red markings on a white fish.  
**Koshi no Hisoku** As an Ensu no Hisoku.  
**Koshinishiki** A Taisho Sanke with large areas of white and Gin-Rin scaling.  
**Kumonryu** A Hage Shiro with interlaced white patches on the body.  
**Matsukawa Bako** A black dorsal area on a white fish.  
**Nezu Ohgon** A metallic silver grey fish.  
**Raigo** A light orange fish with green or light blue areas.  
**Shiro Bekko** Black markings on a white fish.  
**Shiro Muji** A matt white fish.  
**Shiro Utsuri** White markings on a black fish.  
**Sho Chiko Bai** An Aigoromo with Gin-Rin scaling.  
**Shusui** Light blue upper half, ventral region red, the flanks are streaked with red on blue, the fish always exhibits Doitsu scales.  
**Sumigoromo** An Aigoromo with black scaling within the red patches.  
**Sumiangashi** A black reticulated pattern.

**Tancho** This name is given as a prefix to any recognised variety that exhibits a single red patch or cap on the top of its head.  
**Yamabuki** A fish showing delicate yellow-reddish patches usually on an Ogon type.  
**Yamatonishiki** A type of Taisho Sanke exhibiting a delicate indistinct patterning, usually with Gin-Rin scaling. Yamato is the very old name for Japan (Nipon).  
**Zuiun** A Shusui showing purple instead of the usual blue.

#### JAPANESE TRANSLATION

N.B. The English equivalent of a Japanese name for a feature or as a proper name is not necessarily a literal translation.

**Aka** Red (colour)  
**Akame** Eyes with a red iris  
**Ao** Turquoise (colour)  
**Asagi** Light blue reticulated pattern  
**Bekko** Tortoise shell pattern.  
**Beni** Orange (colour)  
**Doitsu** Mirror scaled  
**Gin** Silver metallic (colour)

**Go** Five (number)  
**Goke** Scale  
**Hi** Red (colour)  
**Hisoku** Yellow green (colour)  
**Kabuto** Cap or helmet.  
**Karasu** Black (a crow)  
**Kawa** Leather or hide  
**Ki** Yellow (colour)  
**Kuchibent** Red lips  
**Kujaku** Multi-coloured (Peacock)  
**Kuro** Black (colour)  
**Matsuba** Pine cone pattern  
**Meija** Era from 1868-1912  
**Mono** Type or group  
**Moyo** Patterned  
**Muji** Self-coloured  
**Ni** Two (number)  
**Ogon** Golden yellow  
**San** Three (number)  
**Sarasa** Multi-coloured (painted cloth)  
**Shiro** White (colour)  
**Shoku** Coloured  
**Showa** Era from 1925  
**Sui** Water  
**Sumi** Black (colour)  
**Taisho** Era from 1911-1925  
**Tancho** A crane (Tancho zuro) a bird with a red crest  
**Utsuri** Reflecting (like a mirror)  
**Yamabuki** A Japonica bush with pale yellow flowers  
**Yon** Four (Number)

Page 35

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**BRACKLESHAM BAY**  
by Sue Crew

In May a group of FBAS personnel joined in with a gardening weekend at the new venue of the Supreme Festival weekend on 20th - 22nd October, 2000.

The venue itself is an improvement upon the Weston-Super-Mare venue. The meals are excellent quality and the staff were all helpful. There were three courses to all meals (including breakfast) and there were at least three choices for each course. The salad bar was extensive and was usually extended by the omelette bar where you could order freshly made omelettes, but there was a slight wait for these.

The two gentlemen lecturers on the horticulture side were enthusiastic and knowledgeable. The personal touches of posies for the ladies, note pads they had made themselves for everyone and a goodies pack on the last day were extremely well thought out. The weekend was enhanced by their quizzes, question times and competitions. The prizes ranged from a brand new lawn mower down to large bottles of Miracle Grow!

Towards the end of the weekend we were all pleased to hear that they had enjoyed our company enough to want to do it all again and come in with our fishkeeping weekend in October. Let's face it the two hobbies are complementary to each other and very often cross over!

The surrounding area is picturesque, but in addition has a multiplicity of horticultural outlets and we visited as many as we could on the way to the camp and on the return journey.

One of the most impressive was an establishment called 'FuschiaWorld' only about half a mile from the site. As

you would expect it specialises in fuschias. They are categorised according to habit (e.g. hardy, bush, trailing, etc.).

In addition to the hundreds of different fuschias this nursery also specialises in geraniums and pelargoniums. Roger and I also took advantage of a super special offer they had over the weekend we were there of some variegated rhododendrons and azaleas for only £4.99 each! They were superb plants and we have been very pleased with them. All of those that we bought have bloomed.

Travelling a little farther afield you will be able to visit the Architectural Plant Centre. This establishment has an array of vast tree ferns, palms and succulents. It was like entering a tropical rain forest when you went into the glasshouses. Some of the price tags were worth looking at twice, though, at over £800 a piece!

There is the Maidenhead Aquatics well within an easy drive as well as an aquatic centre which had a centre attached that specialised in hawks and the like. For £3 they will put on a show for you. Apparently this show was well worth the money and although Rog and I did not see it others on the weekend did.

Portsmouth is only about 20 minutes drive away and boasts a number of very good aquatic outlets.

For those not too interested in fish there are markets at both Portsmouth and Gosport, the Saturday Gosport market being the superior of the two.

As can be seen from the photo on page 38 the FBAS have just built a pond for the site with donations of pumps, UVs and some of their new 'indestructible' liner from Tetra. In addition there is a goldfish pond sponsored by Hagen.

I know that all of you will be pleasantly surprised by the new venue. Book now!

Page 37

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Adding the final touches to the FBAS pond at Bracklesham Bay  
Photo: Dr. David Ford

Page 38

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Page 39

## FISH ARK MEXICO

by Ivan Dibble

Fish Ark Mexico is a project designed eventually to set up just what it says, namely an 'ark' for all species of Mexican endangered and threatened freshwater fish species. You see, after spending most of the night until the early hours of the morning talking to some Mexican biologists following an American Livebearer Meeting I attended in 1995 where they were lecturing, I learned all about the environmental problems that the Mexicans were facing. I stuck my neck out and promised to do something to try to help in some way, if only to highlight their problems. Well, to cut a long story down, I ended up doing a little more than that. Initially, thanks to FAITAG I was able to contact some Mexican universities by e-mail. Then they managed to arrange a symposium of viviparity at Cuernavaca Mexico in February 1997. However prior to this meeting I had successfully made contact, by e-mail, with a Mexican hobbyist who was also a student at Morelia University. As it turned out, it was a most fortunate choice as through him I was able to arrange a week long trip for the six other FAITAG members that were attending the symposium, so that they could get a brief first hand glimpse of the problems with some of the species. During the course of this field trip it quickly became apparent that the problems were many and diverse and not just rivers like the Rio Teuchitlan were in trouble but many more waters across the country, and that

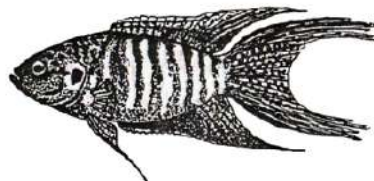
the preservation of native species would be a more sensible approach initially as these were being lost at an ever increasing rate. So, what had started with an intention to help one habitat and its endemic species was evolving into a far greater project. At the end of this week prior to going to Cuernavaca for the symposium we returned to Morelia and it was there we met with senior faculty members who showed us their terrific aquatic laboratory facility. We were surprised that apart from a small turtle project there was little going on at that time, so we asked them to join a **conservation project on native freshwater species.**

As soon as I got home I corresponded with my friends in Morelia who were even more keen than I to get something started.

There were problems in getting the project set up but Dr. Peter Burgess was kind enough to volunteer to go over to Mexico and give a series of lectures on the subjects of Aquaculture and Fish Diseases while he was there. Since this time the project has gone from strength to strength with very few problems. Besides the help it gets from HALCP the laboratory at Morelia has started extending the project of its own accord besides what help the hobbyists are able to give them and, where as originally there were only two people studying here, now there are more than twenty, and hopefully they will become the conservationists of the future. You can pick up the story from here through the Annual Reports posted here at this web site at <http://home.clarria.net/brachydibble>.

Page 40

## MACROPODUS OPERCULARIS



**Common name:** Paradise Fish

**Colour:** Basic body colour greenish brown to grey, anterior of body and nape of head marked with black, alternating red and blue metallic bars are present on the flanks, operculum adorned with a greenish black oscillated spot. Dorsal and anal reddish brown to red, streaked anteriorly with blue with very pale blue or white margins, caudal red, streaked with blue, pectorals blue with white or red tips, pectorals clear. The intensity and colour of this species changes with its mood.

**Characteristics:** Body and fin shape as illustrated. Not the extended dorsal and anal fins, and the lobes of the caudal which tend to become filamentous in older males. Females are smaller, less brightly coloured and have less sharply pointed fins.

**Remarks:** *Macropodus opercularis* is not a good community fish, firstly coming from the subtropics it prefers water on the cool side and would be distressed if kept constantly at tropical temperatures and secondly it is a pugnacious predator and should only be kept with fish of its own type or size. Exhibit in FBAS show class E.

Page 41

## MACROPODUS OPERCULARIS (Continued)

**Habitat:** This species has a wide distribution living in slow moving, shallow or stagnant water with a muddy substratum in Southern China, Korea, Taiwan and the Riu-Kiu Islands. It is a labyrinthine fish which can breath surface air, as befits one who lives in dirty stagnant water.

**Temperature:** 15°-20°C (59°-68°F) This should be raised to 22°-25°C (72°-77°F) for the purpose of spawning.

**Water:** pH 7.0 but will tolerate slightly acid or alkaline water. Soft water is preferred but again this is not critical.

**Feeding:** Will accept most foods especially insect larvae and Daphnia not forgetting the occasional vegetable course. The aquarium containing *Macropodus opercularis* should be covered to prevent the loss of the fish who are known to have a predilection for jumping to catch flies, etc., above the water surface.

**Breeding:** This should be carried out in a single species aquarium with a maximum depth of 100mm, the type of water is not critical although it should not be drawn straight from the tap. Water temperature between 22°-25°C (72°-75°F) is ideal. Plants should be floated on the water surface beneath which the male builds a nest of bubbles. When the pair are ready to spawn they embrace below the nest and the eggs are ejected.

Page 42

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Page 43

## RECYCLING COCKROACHES

Very often it is the case that large institutions have a problem with cockroaches. If you work in such a place or have access to their cockroaches and you are also a fishkeeper you will have a (free) ready supply of fresh food for fish such as large Cichlids.

However, you must ensure that you keep them alive until feeding time and properly contain them to avoid a similar infestation within your home! You must also establish that these creatures have not been exposed to any insecticides - a certain death to your fish!

To catch your cockroaches you will need simple apparatus: a wide-mouthed jar similar to a sweet or large pickle jar which has been thoroughly cleaned. Smear a band of petroleum jelly around the inside of the jar about two inches below the aperture. The band of vaseline should be approximately two inches wide and spread fairly thinly.

To bait your trap, place some bait in the bottom of the jar. Dog biscuits work well, but as a fishkeeper you will probably be able to donate some damp

fish food flake to this exercise. Your captives will also require moisture to sustain their lives until you place them in the aquarium. Put a pad of very damp cotton wool or kitchen towel near the food. You will also need something resembling a used toilet roll centre or part of a kitchen roll centre. Again place this in the jar so that the cockroaches have a temporary residence. If you do not have either of these items available

you can use a piece of crumpled up newspaper.



Put your trap upright in a fairly warm place where cockroaches might be likely to be found. If the cockroaches are able to smell the bait they will crawl up the sides and into the jar.

When they try to get out the band of vaseline will be their downfall literally!

Cockroaches are usually found in dark, damp and fairly warm areas.

If you are a successful cockroach catcher, you will find that your fish will love their crunchy new style of food. However, it may not be a popular choice of food according to the remainder of your household and whilst I do not advocate lying or being selective with the truth, you may need to be a little discreet about some of the cockroaches less endearing little habits!

Page 44

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Page 45

The new



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Page 46

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Page 47

**JUDGES CORNER**



Welcome to the June edition of the Judges News Page and as we have now had the first shows of the season the J & S hope that things are progressing well and not too many problems are being experienced.

By now every one of the judges will have received their size sheets and the two new books mentioned in the last News Page.

I am sorry to have to report the resignations of two judges who have served the Federation for a long time. The judges concerned are Mr. and Mrs. Waller who have had to resign due to ill health as they are finding it very difficult to carry out their judging duties with their illnesses.

We would like to wish them well and thank them for all the good work they have done for all of us in the past.

I am sorry to have to report that a number of judges did not send in their workload forms by the due date and reminder letters had to be sent out. I would like to remind all judges that the workload forms are due in by the end of January of the following year and any size adjustment forms are due in by the end of November the same year.

Last year the J & S put into place a form called a Senior Judge Checklist to aid senior judges at Open Shows. This year the forms will be discontinued but a new sheet will be issued with the next judge's mail drop. It will be for information only and contain the rules and the rule numbers that they appertain to. The checklist seemed a good idea at the time, but to have it filled in was a wasteful exercise and caused the senior judge more time in writing than was worth.

On a personal note, I would like to thank everyone who sent in good wishes to me when I was ill. I am very glad to say that I am on the road to a full recovery and should have regained my fitness in the next few months.

**Colin Pannell,  
9 Edwin Road,  
Hastings,  
East Sussex TN35 5JT**

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**SHOWS** Telephone orders for collection at Assembly or shows

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This unique opportunity is only available to you through FBAS Merchandising. Obviously the cost of post and packing would be high on items of this kind, so we are offering **coral creations** for sale only at open shows and major shows and only whilst stocks last.

Enquiries via the Merchandising Officer - address in your Year Book!

**2000 SHOW DATES AND EVENTS**

Rule Codes: A = A of A; FB = FBAS; FN = FNAS; FS = FSAS; U = US of A; Y = YBAS; B = BKRS; BK = BKA; I = International Goldfish Standards; N = NEFAS; C = CAGB RGG - National Goldfish Standards

3.6.2000	FBAS AGM - De/Member cards for free admission to view Syon Park, SPASS Coldwater Show (NGS)
4.6.2000	Erith AS (FB)
11.6.2000	Bracknell AS (FB), Tamworth AS (FN)
14/15.9.2000	BK (Gardener's World)
18.6.2000	Wokington AS (S)
19.6.2000	Bristol Tropical (FB)
19.7.2000	Hampton Court Flower Show
8.7.2000	Port Talbot AS (FB)
19/23.7.2000	Tatton Park
19/20.8.2000	Yorkshire Aquaria Festival
9.9.2000	Hounslow AS (FB)
17.9.2000	Olney AS (Y)
1.10.2000	Halifax AS (Y)
15.10.2000	Doncaster AS (Y), West Cornwall AS (FB)
20/22.10.2000	Supercor Festival of Fishkeeping

**NOTE TO SHOW SECRETARIES**  
The above dates are those available at the time of going to press. For the latest, most accurate dates and venue information (and trophy allocations where applicable), please refer to the Quarterly Supplement issued by the FBAS giving details of shows around the country. The Show Supplement is available, price 50p post paid from:

**SHOW INFORMATION**  
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