FISHWORLD MAGAZINE©

SPRING 2000

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Hagen Master Kit Competition

Bamboos

Wildlife in Your Pond

Water Quality in Koi Ponds

Water Quality in Tropical Tanks

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FBAS

EDITORIAL

Dear Readers,

First of all - Happy New Year. Nostradamus was not quite right and we are all here to tell the tale!

You can now EMail your contributions to me on fishworldeditor@bluegill.freeserve.co.uk.

Quite a few 'seasonal' contributions on or associated with the subject of ponds.

The J & S Committee have worked exceptionally hard over the last year and I think it will be evident to everyone partaking of the new trilogy of books (nos. 6, 27 & 28).

If any of you live in an area that does not currently have a club then contact Les Pearce on 01983 613575 who will be able to offer support and guidance.

We have a number of special offers to help with the finance over the next year. Newly affiliated clubs especially can benefit.

More to come...

Sue Crew,
Editor

Contributions for the next issue should be posted to me by
25th April, 2000
at the address in the FBAS Year Book (2000) or
Sue Crew c/o Albany Print & Design - address below
Federation of British Aquatic Societies 2000
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COVER PHOTO

New Variety of Crayfish
Aquarama '99

Courtesy
Roger Crew

THE SPRING GUIDE TO FEEDING YOUR POND FISH

from the Tetra team

With the arrival of warmer weather and rising water temperatures it is now important to begin feeding pond fish but before starting, it is worth taking a few minutes to ask ourselves about how and what type of food we should be feeding at this time of year. After a harsh winter, fish are in a relatively weak state as they have had to depend on stored food reserves in their own body tissues to see them through the cold weather. Our job during early spring is to give them a food which will help them replenish these reserves and build up their strength for such energy expensive activities like breeding.

Just throwing food into the pond though, is not the best thing to do as we have to match the food to the fishes own requirements. Relatively low water temperatures in spring mean that the fish's digestive system cannot cope with very rich foods and so they require a diet which is not only of very high quality in terms of nutrition, but one which is very easily digested. TetraPond Wheatgerm Floating Foodsticks conform to all the requirements of fish during this time and is the ideal starter food for early spring.

Once water temperatures rise and the fish become very much more active then they can be weaned on to a diet of TetraPond Floating Foodsticks which can be used throughout the summer and autumn to provide the high quality nutrition which all pond fish need in the warmer weather. However, variety is the spice of life so why not try giving your fish TetraPond Variety Sticks either as a supplement to their usual diet or simply as an extra food to use whenever you fancy a change!

Fish diseases may also appear during early spring as fish are in a relatively weak state and this can be easily controlled by giving the pond a regular dose of TetraPond MediFin to help keep numbers of parasites down until the fish are strong enough to fend them off for themselves.

Question 1: I have heard that overfeeding can cause problems for my fish, so how much food do I give them and how often?

Answer 1: Overfeeding your fish can indeed create trouble as the excess food given will simply break down causing water pollution problems. It is best to feed your fish "little and often". Feed your fish three to four times a day with TetraPond Floating Foodsticks giving as much food as they will take within 1½ - 2 minutes. Change the feeding 'site' as often as you can as this makes sure that all the fish in the pond get some food and not just the biggest or most active.

Question 2: Is spring the best time to give my pond a thorough clean out?

Answer 2: The answer to this question has to be no, as the fish are very susceptible to stress and disease at this time so major disturbance may well cause problems. Simply freshen the pond up by gently scooping out any accumulated debris with a fine net and give the pond a partial water change of approximately 10% each fortnight. Whenever using water from the tap or hose it is recommended that TetraPond AquaFin is used which neutralises harmful chlorine and protects fish from damage and infection.

For a free Pond Information Pack simply send your name and address to: TetraPond Information Pack, PO Box 1025, Nailsea, Bristol BS19 2FX

TetraPond Pondtex Liners

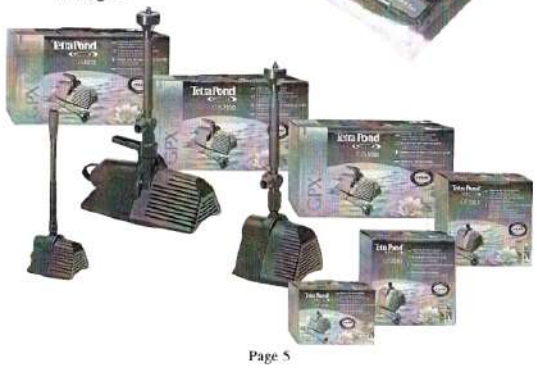
A revolutionary new pond liner made from Xavan, the newly patented material from DUPONT. Totally unlike any other pond liner on the market, no pond lining material is stronger yet lighter and easy to install (and transport), it also retains its flexibility when cold. Pondtex is supple and thinner, improving pond installation and landscaping (no ugly pleats or folds) moulding like a second skin to the bottom of the pond. Proven 3 times more tear resistant than butyl liners that are twice as thick. Will not rot or deteriorate and has a UV resistance 6 to 7 times better than butyl or polythene liners. Lasts a lifetime with a genuine 25 year guarantee. Easily joined and will not leak even when penetrated by nails.

6 sizes:

Liner size	3m x 1m	3m x 3m	3m x 4m	3m x 5m	6m x 4m	6m x 6m
Pond size (metres)	2.5m x 0.5m x 0.2m	2m x 2m x 0.4m	2.5m x 1.5m x 0.6m	3.5m x 1.5m x 0.6m	4.5m x 2.5m x 0.6m	4.5m x 4.5m x 0.6m
(feet)	9'10" x 3'3"	9'10" x 9'10"	9'10" x 13'1"	9'10" x 16'5"	13'1" x 19'8"	19'8" x 19'8"
Volume	250L	1600L	2250L	3150L	6750L	12150L
RSP	£22.95	£69.45	£92.55	£115.75	£179.95	£271.35

For information on Pond Liners see table on Page 4

For information on Pond Pumps see table on Page 6



TETRAPOND FOUNTAIN AND WATERFALL PUMPS

MODEL	GP1000	GP2000	GP3000	GPX5000	GPX7000	GPX8000
Max. Flow per hour	1000L 220gal	2000L 440gal	3000L 660gal	5200L 1140gal	6600L 1450gal	8200L 1800gal
Pond size	2000L 440gal	4000 L 880gal	6000 L 1300gal	10000 L 2200gal	15000 L 3300gal	20000L 4400gal
Max. pumping height	0.6 m	1.3 m	2.0 m	4.1 m	6.7 m	5.2 m
Typical fountain height	0.5 m	1.1 m	1.8 m	3.3 m	4.8 m	4.0 m
Waterfall/ Stream	No	No	No	Yes	Yes	Yes
Inlet	1"	1"	1"	1"	1"	1"
Outlet	0.5"	0.75"	0.75"	1"	1"	1"
RSP	£55.65	£78.35	£110.85	£170.85	£208.55	£227.95

New TetraPond Fountain and Waterfall pumps are extremely powerful pumps with energy efficient motors and reliable, quiet operation. They outperform main competitors, have a stylish, functional design in green (to blend unobtrusively with plants and pond) and are complete with high quality accessories. They have a robust handle and stable base (to prevent it falling over) and are easy to maintain and clean (the pre-filter just slides off and slides back on). They are of high quality with a 3 year guarantee. Models GP1000, 2000 and 3000 feature a durable ceramic shaft, advanced compact design and high energy efficiency. Models CPX5000, 7000 and 8000 have a unique Hydronic operation, are amphibious, can be used in or out of pond to power water features and fountains. They have an indestructible impeller and are constructed of precision stainless steel with a ceramic shaft. They have trouble-free graphite bearings, are low maintenance and yet give superior performance.

A BALANCING ACT

(Getting the environment for fish right - maintaining pH)

from the Tetra team

I am often asked "What value of pH, KH, Ammonia level, etc., should I be looking for in my water?"

One of my favourite phrases used when describing water conditions is "Stability is the name of the game!"

This should always be taken into account when looking at numbers relating to those factors describing water conditions in the pond as what we are actually looking for in most cases is a stable value not a 'perfect or ideal' one.

pH is a value which describes the acidity or alkalinity of the pond water. This is measured on a scale from 1 to 14 (1 being highly acidic; 14 being highly alkaline). The pH scale is also logarithmic which means that for every one point change in pH the actual conditions in the pond change by a factor of ten, i.e. if the pH changes from pH 6.0 to pH 7.0 then the water has decreased in acidity and increased in alkalinity by a factor of TEN. It is very important therefore that any fluctuation in pH should only occur very slowly or that the pH value should be maintained at a particular value as koi cannot withstand large, sudden changes in water conditions. In any pond, the pH of the water does fluctuate naturally during the day as filters produce acidic by-products, fish utilise oxygen and produce acidic carbon dioxide and plants and algae utilise the carbon dioxide and produce oxygen. The ideal time to test for pH is at the same time each day so that you are taking into account the natural fluctuation in pH. Probably the best time to test is first thing in the morning when the pH will be at its lowest as both plants and fish have been producing acidic carbon dioxide as a product of respiration and/or last thing in the evening as pH levels are at their highest due to oxygen production by plants and algae and consumption by the fish and filter bacteria. We then know the lowest and highest values of pH that our pond should reach so that we have a value to work with if conditions in the pond indicate that there may be a problem.

What value should I be looking for?

Koi, like many cyprinid fish can acclimatise to a broad range of pH from approximately 6.8 to 8.2, that is to say that they can tolerate a wide range of SINGLE pH values not an ever-changing one. If the pond maintains a STABLE pH value within this range then you have little to worry about. Many koi keepers however, strive for an ideal value of 7.2 to 7.5 as colouration is at its best at this value. However, the addition of pH buffers and additives to change the pH towards this value often does more harm than good as the pH can swing from acid to alkaline or vise versa quite quickly causing large changes in the conditions in the pond, stressing the fish.

In many cases the pH of the pond can maintain itself but in some cases there can be exceptionally high pH values due to the input of alkaline materials into the pond such as lime from unsealed concrete or cement leaching into the pond either from the pond itself or leaching from surrounding landscaping. In such cases the source of alkaline materials must be determined and the problem rectified.

In very low pH conditions where the water is actually quite unstable due to a lack of 'buffering' in the water, the pH can be stabilised by regular partial water changes or by the addition of alkaline materials to the pond system. These include adding cockle shell or calcium carbonate ('dolomite') chips to a filter bay or adding a treatment to the pond water which increases buffering capacity.

Carbonate Hardness

Although many koi keepers regularly test for pH in the pond few actually understand how this relates to the stability of the water conditions. The pH, or more correctly, the stability of pH in any pond is directly related to the carbonate hardness of the water, and in some respects it is the carbonate hardness or buffering capacity of the water which is the more important water parameter to test for.

Carbonates in water come from the surrounding rocks in any particular geographical area and dissolve into rain water as it passes over them on its way to rivers and ultimately the water reservoir. These carbonates, in the form of the

carbonate and bicarbonate ion act as buffers when dissolved into water. A buffer is simply something which enables a body of water to resist a change in pH even if an acidic or alkaline material is added to it. The buffers simply react with these materials so neutralising them. In any pond situation these buffers eventually become exhausted as acidic and alkaline materials are produced as by-products of metabolism, respiration and photosynthesis. It is important then to maintain the carbonate hardness level in order to ensure a stable pH. Carbonate salts, amongst others dissolved in the water, are also important in allowing the fishes osmoregulatory system to function correctly, and correct hardness levels ensure that minimum stress is placed on excretory systems.

In areas where the water is naturally hard (limescale or "furring" builds up in kettles, immersion heaters and household pipework) the carbonate hardness is easily restored by carrying out a partial water change on the pond thus restoring the levels of buffers. This is particularly important in early spring as any rain or snow fall entering the pond will have diluted down the buffers in the water.

In areas where the water is very soft then the tap water does contain a small amount of carbonate hardness. In this case regular partial water changes are essential as the buffers will soon be used up allowing the water to fluctuate in pH. Water hardness can also be boosted by using such additives as *TetraPond ClariFin and Refresh* which both contain carbonate boosters.

Whenever using additives, however, always experiment on a small scale first, mixing the correct dosage in a bucket and testing pH before and after adding the additive, to ensure that if introducing it into the pond, the pH is not changed suddenly, stressing the fish. Carbonate hardness can also be boosted by adding cockleshell or calcium carbonate chips to a filter bay.

Carbonate hardness is easily tested using a test kit available from your local retailer but make sure that you buy a carbonate hardness (KH) test kit not a general hardness kit (GH).

Carbonate hardness is often measured in aquatic circles in "Degrees of German Hardness" (DKH) although you may find a reading is given in milligrams per litre (mg/l). The simple conversion factor in this case is that one degree of German hardness equates to 17.9 milligrams of carbonate in solution.

1. Avoiding Water Pollution Problems

In any body of water which contains fish, be it a natural river or lake, a simple garden pond or a more advanced koi pond, there is always a potential danger of water pollution problems occurring due to the fact that the fish are actually polluting their own environment as they excrete waste products into it.

Fortunately for all fish and fishkeepers, mother nature has devised a perfect way of removing and recycling these pollutants by using bacteria as a sewage removal system. In a balanced aquatic ecosystem there are enough bacteria present to absorb the waste products produced by the fish and convert them into by-products which are less harmful to the fish and which can also be utilised by plants as food. I am of course referring to the nitrogen cycle which describes the conversion of ammonia produced by fish and organic decay, to nitrite, and the conversion of nitrite to nitrate which is then utilised by plants. However, although the system works well in a balanced ecosystem it is only too easily upset, particularly in the rather 'sterile' environment of the koi pond.

It is for this reason that koi keepers have developed highly complex filter systems that, as they become more complex, are beginning to replicate what nature does, but in a way which can be controlled by the koi keeper.

Unfortunately it is almost impossible to actually see the development of bacteria within a pond and its filtration system so we must monitor the system in other ways, that is, by monitoring waste levels in the water.

Short-term pollution problems in the pond basically manifest themselves in two ways; raised levels of pollutants such as ammonia and nitrite and also depleted levels of oxygen due to the raised pollutant levels placing a demand on the available oxygen in the pond as the bacteria require oxygen to break them down. Such pollutant problems invariably lead to disease occurring as fish are stressed and prone to infection.

By far the most common pollution problems occur when the koi pond is established for the first time and too many fish are placed 'all at once' into an 'immature' system. (The definition of system within the context of this article relates to the pond, the filter and all biological and mechanical processes occurring within it.) When a pond is set up for the first time it contains no, or very few, 'filter' bacteria which are essential for the conversion of the fish wastes in the pond. Without these bacteria the fish wastes will simply build up and kill the fish. We must then build up a culture of bacteria over a period of time to ensure that a 'balance' between the numbers of bacteria and the numbers of fish is reached. The general rule for stocking a pond from new is to add a few hardy fish initially (no more than 5% of the maximum eventual stocking level required in the pond) and monitor ammonia and nitrite levels in the pond until BOTH have risen and fallen to zero. Once this has occurred, the stocking levels can be increased by no more than 20-30% of that currently in the pond. Once the new fish are added, both ammonia and nitrite levels should be monitored and once both have returned to zero the stocking level can be increased following the same rule as previously.

In this way the extra 'load' on the system is increasing by small steps and waste levels never rise to excessively toxic levels in the pond.

Pollution problems also occur if, for some reason, the filter system has been disturbed and the bacterial population on it has decreased. The most common way of this occurring is during the cleaning of filter media, using raw, untreated tap water. Tap water contains chlorine to kill bacteria to make it safe for us to drink. It will also kill filter bacteria. When these bacteria are killed we are back to stage one with what in effect is a brand new pond, but unfortunately in this case we have an immature pond containing a full stocking level of fish. Pollutant levels then rise to very high levels and the fish suffer. The rule is to ensure that whenever cleaning filter media or flushing out filter bays, we use water from the pond or which has first been dechlorinated using a proprietary pond water conditioner.

It is not just fish which can add to ammonia levels in the pond. Any debris collecting at the bottom of the pond or within filter chambers, etc., can also decay releasing ammonia to the system, causing water pollution problems. It is essential that any build-up of debris and sludge in filter systems is kept to a minimum.

Water Pollution Parameters - Acceptable Values

Ammonia - zero. However may rise to 0.25-0.30mg/l TOTAL AMMONIA in maturing systems. During this time the level should be controlled through regular partial water changes or by presence of zeolite in filter system.

Nitrite - zero. However may rise to 0.25-0.5mg/l in maturing systems - controlled as per ammonia.

Nitrate - toxic past 150-200mg/l dependent on species of fish kept. Ideal value is zero. Most systems maintain a level of 25-50mg/l. Controlled via regular partial water changes or via vegetable filtration.

2. Controlling Dissolved Oxygen Levels in the Pond

There is often an incorrect assumption in fishkeeping that fish are the only organisms which utilise oxygen in the water and the idea of aeration is for their benefit. Every fish, invertebrate, plant, micro-organism and living beast in the pond utilises oxygen in one form or another and there is strong competition for that which is present as dissolved oxygen (DO) in the water. In fact, by monitoring dissolved oxygen levels we can actually determine the actual 'health' of our total system.

The idea behind aerating the pond is to supply plenty of dissolved oxygen for all species in the pond. However there must always be plenty for our fish to use. In some cases, for example in heavily planted ponds at night or those which contain a large accumulation of debris, the oxygen level can be rapidly depleted by respiring plants and algae and the bacteria decomposing the debris in the pond. In such cases the whole pond system becomes stressed as the depleted oxygen levels affect fish and nitrifying bacteria. Obviously the way to control this is to obtain a balance between numbers of plants (if present at all) and fish and to reduct the biological demand for oxygen (BOD) by reducingwaste levels in ponds and filter systems.

What we aiming for is approximately 75% oxygen saturation in the water at any given temperature. Warm water naturally contains less oxygen than cold water so aeration is particularly important in hot weather.

There are three main ways of increasing aeration in pond water. The first is to use an airpump powering an airstone or diffuser which both produce many small air bubbles increasing the surface area across which oxygen and carbon dioxide diffuse at the water's surface, the more air bubbles the greater the surface area. The second method is to use a venturi system to mix air and water at a high pressure return to the pond, creating a mix of air bubbles and water increasing the surface area across which gaseous exchange occurs. The third method is to use more decorative features such as waterfalls and fountains which also aerate the water by causing disruption at the surface of the water.

Maintaining water quality is probably the most important aspect of koi keeping as it is down to us to regulate the actual environment in which our fish are living.

We cannot see what is happening visually until our fish show changes in behaviour or become infected through stress and by then the damage has often been done. The only way to monitor the health of our system overall is through careful testing and maintenance of all the important water quality parameters that I have described. Regular testing when there is not a problem is probably more important than testing when there is one. How else are you going to know if conditions in the pond are changing from good to bad?

This has been a brief overview of the most important water quality parameters that the koi keeper should be testing for.

For more information on each of these the Tetra Information Centre is available to answer any questions which you have relating to fishkeeping.

Contact Tetra at PO Box 1025, Nailsea, Bristol BS19 2FX

KEEPING AQUARIUM WATER PERFECT

from Rolf C. Hagen

Over recent years there has been an increasing interest in water chemistry due mainly to the trend towards a greater number of products and processes that promise to keep aquarium water in perfect condition. Aquarists are also choosing to keep a wider range of fish, many of which are far more demanding in terms of water quality in their requirements. A basic knowledge of aquarium water chemistry is therefore almost essential these days to allow us to enjoy our hobby to the full, even if at times these processes can seem a little complex.

Firstly, let's not over-exaggerate the complexities of water chemistry in the aquarium as once a few essential principles are mastered you will be surprised how much better equipped you will be to manage water quality. Basics such as the nitrogen cycle which governs the level of organic waste de-composition in the aquarium, pH values, water hardness and carbonate levels once understood provide a pool of knowledge which will allow you to manage the water quality requirements for a wide range of aquarium fish.

In natural ponds and rivers the nitrogen cycle allows a balance between the animals and plants. Nitrogen is a vital element in this balance produced from the breakdown of organic substances, contributed mainly by the animals, which are transformed into nitrates by bacteria and then absorbed by green plants as a nutrient.

In the first stage of the nitrogen cycle toxic ammonia (NH^3) and non-toxic ammonium (NH^4+) are produced. The pH value of the water determines which of the two will predominate. Ammonia occurs at the pH of 7.0 and over, ammonium at less than 7.0. Ammonia cannot, therefore, build up in acid conditions, that is below a pH value of 7.0, and it is easy to understand the importance this gives to regular pH checks.

During the second stage of the nitrogen cycle, bacteria oxidise the ammonia and ammonium to form another toxic compound nitrite (NO^2). Nitrite like ammonia and ammonium is very harmful to fish, even at very low concentrations, although not nearly as toxic.

The bacteria that promote nitrification belong to a group known as nitrosomonas species and for the third and final stage another group, nitrobacter bacteria are employed which convert the nitrite into much less toxic nitrate (NO^3). Nitrate is only harmful at high concentrations, that is over 50mg/L, by comparison with ammonia which is toxic at less than 0.1mg/L and nitrites at around 0.2mg/L.

In open natural waters the concentrations of these toxic elements are very low but in the aquarium the situation differs, the quantity of water is much smaller and nitrogen compounds can be created very quickly by faeces, urine and other excreta from the animals, the decay of plant remains and decaying food. Nitrogen compounds can soon become concentrated, therefore, and have a harmful effect on the tank's inhabitants. This is why it is essential to manage the water quality in terms of the nitrogen cycle and the aquarium needs to be maintained as free as possible of harmful nitrogen compounds.

The natural waterways from which all of the fish we keep in the aquarium are derived, also contain various levels of calcium (Ca) and magnesium (Mg). Waters rich in these elements are usually considered 'hard' and those with only a little 'soft'. The hardness of the water can be measured in degrees of hardness, one degree equal to 10mg of calcium or magnesium per litre of water. Naturally various groups of fish have different requirements in relation to the general hardness level and knowing a little about each specific species' needs can allow you to provide optimum conditions as regards this balance.

Similarly the alkalinity or carbonate hardness of water is also important. This is provided by two salts, calcium bicarbonate [$Ca(HCO^3)^2$] and calcium carbonate ($CaCO^3$). There is a relationship in the water between the carbon dioxide content, the pH value and the bicarbonate. In acid water containing high levels of carbon dioxide the carbonates are low whilst in highly alkaline water most of the carbon dioxide exists as carbonates. Carbonate hardness is, therefore, a measurement of the water's capacity to neutralise an acid, known as the buffering capacity. In standard conditions in the aquarium with pH values between 6 and 8.2 alkalinity is usually at optimum levels at 20-80mg/L for fish that prefer acidic conditions and over 80mg/L is recommended for fish preferring alkaline conditions.

pH has cropped up quite frequently in discussing the various water chemistry parameters mentioned. This is merely a way of measuring the degree of acidity in water and is a good indicator of movements above or below the chemically neutral point fixed at a pH value of 7.0. Values above 7.0 indicate increasingly alkaline water and those below increasingly acidic water.

Testing Times

It must have become clearly apparent by now that an important starting point in controlling and managing water quality in the aquarium is to know the values of the various parameters we are controlling. These days there are many sources of aquarium test kits available to calculate these values and the new Hagen range is perhaps the latest to respond to the needs of today's Aquarists with a very creative new line of user-friendly safe and accurate kits.

The Hagen new line includes a comprehensive range of individual aquarium test kits plus a master test kit which is almost a complete lab in a box.

The individual test kit range includes:

pH Wide Range Test
Nitrate Test
pH High Range Test
Phosphate Test
pH Long Range Test
General & Carbonate Hardness Test
Ammonia Fresh and Salt-water Test
Iron Test
Nitrite Test
Calcium Test

The Master Kit includes:

pH High Range Test
Phosphate Test
pH Low Range Test
General & Carbonate Hardness Test
Ammonia Test
Iron Test
Nitrite
Calcium Test
Nitrate

All kits are supplied with the necessary leaflets, test tubes and pipettes making them ready to use and a most valuable tool for the Aquarists.

Trouble Shooting

Finding the true levels of the various parameters is though, as mentioned earlier, only a starting point. Once these are established there is likely to be a need to solve a problem with one or other of the following:

Problems regarding the Nitrogen Cycle are usually due to poor aquarium management and hygiene and/or ineffective filtration.

ALWAYS

1. Clean the tank regularly, and remove dead fish, decaying plant material etc. promptly.

2. Regularly undertake partial water changes (intervals differ with the species of fish).

3. Add fish to the aquarium system slowly to allow the biological filter to adjust to the greater biological load.

4. Regularly clean the filter system.

5. Reduce feeding if increases in nitrate and nitrite are occurring.

6. Avoid overstocking due to increasing the numbers of fish over recommended maximum levels.

pH levels can be adjusted to create optimum conditions for specific species of fish.

Lowering pH (acidifying)

1. Filter water through peat.
2. Undertake a partial water change.

Increasing pH (alkalinity)

1. Add sodium bicarbonate ($NaHCO^3$) or sodium carbonate ($Na^2 CO^3$).
2. Aerate the water to expel CO^2.
3. Undertake a partial water change.

Water hardness can also easily be adjusted to promote specific conditions.

Reducing hardness

1. Undertake a partial water change using distilled water.
2. Use water softening equipment designed for aquarium use based upon an ion exchanger.
3. Filter water through peat.

Increasing hardness

1. Carefully add calcium or magnesium salts.
2. Undertake a water change using hard water.
3. Filter water through marble chips or coral sand.

High phosphate levels can occur as a result of overfeeding or infrequent water changes and will contribute to the growth of unsightly algae growth.

Reducing phosphate levels

1. Undertake a partial water change using phosphate free water.
2. Use a phosphate remover, for example the Hagen Green-X Phosphate Remover.

Iron levels in the aquarium vary with the amounts present in tap water. Non-chelated (free) iron is toxic at low levels and should be reduced if detected whilst chelated iron is a good supplement for plants.

Reducing non-chelated iron

1. Partial water change with iron-free water.

Increasing chelated iron

1. Add a chelated iron supplement to reach levels between 0.25 and 0.5 mg/ltr for plant growth.

Problems with water from the tap

Unfortunately due to chemical additives such as chlorine and chloramine and impurities which may include copper, lead and iron and various other toxic elements, water from the tap is not always safe for the aquarium.

A water conditioner such as Hagen AquaPlus should be used for all water changes using mains water to remove all chlorine and chloramine and neutralise heavy metals. The benefits of using AquaPlus have been recognised recently with the awarding of a patent by the US patents office because of its unique ability to not only condition tap water by removing chlorine, chloramine and heavy metals but also relieve the stress fish can suffer due to water changes and tank introduction.

HAGEN MASTER TEST KIT COMPETITION

We have a Hagen Master Test Kit, the complete lab in a box, to give away for the first correct solution to the competition below drawn from the hat on 1st April, 2000.

Here's your chance to try this new user-friendly Master Test Kit ready to respond to all of the needs of today's Aquarists. Ready to use, with easy to follow instructions you will be sure of fast and accurate results and on the road to ensuring optimum water quality.

Answer the following questions by ticking the appropriate box:

1. Ammonia is converted to nitrite by:

   Nitrosomonas ☐ Nitrobacter bacteria ☐

2. Nitrite is converted to nitrate by:

   Nitrosomonas ☐ Nitrobacter bacteria ☐

3. pH levels below 7.0 are considered:

   Alkaline ☐ Acid ☐

4. Chelated iron is good for plant growth:

   Yes ☐ No ☐

5. Optimum carbonate hardness for fish preferring acid conditions are:

   between 20/80 mg/L ☐ over 80 mg/L ☐

Cut out and send your entry to Rolf C. Hagen (UK) Ltd., Fishworld Magazine Master Test Kit Competition, California Drive, Whitwood Industrial Estate, Castleford WF10 5QH West Yorkshire, before the closing date of 1st April, 2000 to have a chance of winning this great Master Test Kit prize.

BAMBOOZLED

by Roger Crew

Fancy a bamboo to complement the new Japanese style pond or water feature? Want to hide that compost heap? Puzzled about which bamboo suits the job best? Or just fancy a bamboo plant - read on! No need to be bamboozled by bamboos.

The ever increasing market for water gardens and features, particularly the formal designs mean that more and more people are looking for a bamboo to complement their new project or design by adding to the "oriental" look.

Botanically, bamboos belong to the Gramineae family, alongside the grasses we use in lawns and cereal crops such as maize and wheat. There are over 1000 species contained in 70 or more genuses from the four continents of America, Asia, Africa and Australia. Despite there being no species indigenous to Europe, we have access to around a hundred imported species. Little wonder then if we do get confused about which to buy.

We can use bamboos for a variety of purposes, for ground cover, particularly on awkward to mow areas such as banks; as a border or partition between areas, for screening or hedging, in clumps or containers as features or in the larger plantation or grove of plants.

Bamboos stay green (or whatever colour they are) all year round, but only grow - that is increase in size - for around three months of the year.

As bamboos rarely flower - more of that phenomenon later, classification is difficult so we can best regard bamboos as being simply separated by size, which is what generally happens in the local garden centre anyway.

Dwarf species are considered to be those whose height does not exceed 5' (1.5m), small as 5-10' (1.5-3m), medium as 10-30' (3-9m) and tall anything larger. Tall species can reach 65' (20m) in height. Amongst the commonly found varieties, the species of the genus ***Sasa*** usually are small plants with large leaves and those of ***Phyllostachys*** tall with small leaves.

Height is not the only factor of course, although it can be seen that the range is such that a misplaced choice could be somewhat devastating to the best of plans. In this country we usually expect to grow bamboos outdoors, and this requires a frost hardy variety. There are tropical varieties and temperate so beware! Another factor influencing choice is the habit of a particular species. Some can be particularly invasive, whereas others grow in well-defined clumps.

In considering bamboos for water gardens, remember that with the exception of ***Arundinaria gigantica*** and ***Phyllostachys heteroclada*** bamboos are **not** suited to waterlogged soil!

Talking of soil, bamboos usually like a neutral to acid pH soil, which should be fed with a fertiliser (not Chlorine based) in February/March and again in July/August. Soils should ideally be light and well drained yet water retentive, rich in nutrients and organic matter. Newly planted bamboos in particular must be kept well watered.

The culms or canes emerge from the soil at their full diameter, growing in height only. The species ***Phylostachys pubescens*** can be over 8" in diameter as it emerges from the ground, growing as much as a metre a day until a height of over 20m is attained. Bamboos are the fastest growing plants known.

A developing bamboo plant of 3-5 years of age will each year produce thicker culms than in early growth years. Looking at a mature plant we could be forgiven without that knowledge for mistakenly thinking that the thicker culms were the oldest.

You will note that I do not recommend any specific varieties. This is deliberate! The factors listed above should suffice to assist you to select a species suitable for any role, but choice will also be influenced by leaf and stem shape, and colour, availability and of course price. The consideration of factors listed will ensure that whatever your preference you should not be bamboozled!

I said earlier that we would learn more of the phenomenon of the flowering of bamboos. Sometimes a species of bamboo can go for a hundred years or more without flowering, but when it does it can be universal, that is to say that throughout the world, all the plants of that generation and species flower simultaneously! These flowerings can be very prolific, but the scale of the flower production can be such as to prove fatal to the host plant. To date nobody has been able to explain this phenomenon.

TANKMASTER

A practical guide to setting up your TROPICAL FRESHWATER AQUARIUM

Author: Gina Sandford

Published by: Interpet Publishing

ISBN No. 1-902389-94-8

Price: £5.99

Reviewed by Roger Crew

To quote the news release, this is one of a pair of practical books, this one aiming to guide the reader through the process of setting up the first aquarium system. The companion volume, which I have not had the opportunity to review is called "The Taskmaster Tropical Fish Guide".

Both volumes are produced in landscape form, which works well in allowing somewhat larger photographs or illustrations than would be the norm, although this does have the disadvantage of creating the feel of a child's 'pop-up' book. With a retail price of around £5.99 the book is good value for the beginner seeking advice on how to set up their first tank. There are around a dozen species of fish illustrated and described, the failing being the omission of any full grown sizes from most species.

All in all this is a well-balanced and useful guide for the novice and would make a sensible and realistically priced gift for the family considering the first tank.

THE SHOW REPORT OF THE ISLE OF WIGHT JAPANESE STYLE FIRST OPEN SHOW

by Kevin Driscoll

After months of planning show week was here. Work started on the Wednesday before the show and some of the show committee met at the venue to start erecting and filling vats through an All Clear purifier. As soon as we could get in the main hall on Friday, we had to erect more vats in the correct position. The stored water was then pumped across the hall to fill the vats. By 5 o'clock we had most of the vats in place and water was on the move. Dealers and craft stands were arriving and the show was beginning to take shape. As more club members arrived it allowed some of us to go and start catching our own fish. This activity went on till after dark in ponds all around the Isle of Wight. Around ponds with no lighting we had people stood with torches and two with nets. What must the neighbours have thought? But we all know it's just an average day for the mad Koi keepers.

We had Martin Priday checking the fish over and measuring them, then Lisa Davis taking their photos with Mary Barney giving their details to Steve on the computer. The fish were then put into the correct vats. All the vats had filters in and by midday we had 77 fish.

Our judges were Val Frost and trainee Ian Prior and when they had finished with all the results stored in the computer, the show closed on a busy first day.

On Saturday night we all met up for a meal and social evening and a good night was had by all.

Two more members stayed at the show hall all night to carry out water tests, but again we had no problems.

On Sunday members were kept busy again. We had a tombola and club stand to publicise the club and get new members.

It was then the time for the presentations. For this we had our friend, Alan Rogers, trophies and Hagen koi food. Everyone that entered was given some food.

The Grand Champion Award was made to an Isle of Wight member Sean Rowley with his lovely size 5 Sanke. Sean really deserved his award not only for his lovely fish, but also as one of the main people in setting up our section and also for his efforts in showing his fish all over the country for many years. The only mistake was our Chairman did not get his awards. Sorry again Ron, but Alan presented them to him afterwards.

With the show closed and everyone packing up there were plenty of things learned and new friends made and hopefully some new members attracted. The hard work had paid off and it had been a great weekend with no major problems.

Thanks to all the people coming over to the Island and supporting our 1st show. Thanks also to our judges, Val Frost and Ian Prior, also Eric and Mary Barney, Alan and Margaret Rogers and also Martin Priday. Thanks to all the dealers and craft stands and all our sponsors. Thanks also to the Isle of Wight Bonsai Society, the Isle of Wight Aquarists' Society and to Hagen for donating the Koi food.

That's it until next year. We hope to see you all again next year with more fish.

SHOW RESULTS

Grand Champion - Sean Rowley Size 5 Sanke

Mature Champion - John Shoulders Size 5 Shiro Utsuri

Adult Champion - Martin Priday Size 3 Kohaku

Baby Champion - Frank Hadlow Size 2 Kohaku

Junior Champion - Lizzie Driscoll Size 3 Shiro Utsuri

VARIETY SIZE	1BU	2BU	3BU	4BU	5BU	6BU
Kohaku	Kevin Driscoll	Frank Hadlow	Martin Priday	Warren Godfrey	-----	Martin Priday
Sanke	Warren Godfrey	Bob & Carol Balchin	John Shoulders	Warren Godfrey	Sean Rowley	Martin Priday
Showa	Carl Rowley	Sean Rowley	Andy & Lisa Davis	Warren Godfrey	Peter Webber	-----
Utsuri Mono	Ron Parkman	Sean Rowley	Lizzie Driscoll	-----	John Shoulders	Martin Priday
Kotromo	-----	Kevin Driscoll	-----	Ron Parkman	-----	-----
Hikari-Muji	Kevin Driscoll	John Shoulders	John Shoulders	-----	Sean Rowley	Sean Rowley
Asagi-Shusui	-----	Warren Godfrey	-----	Andy & Lisa Davis	-----	-----
Kawari Mono	-----	-----	Sean Rowley	Kevin Driscoll	Sean Rowley	-----
Tancho	-----	-----	John Shoulders	-----	Peter Webber	-----
Gin Rin	-----	-----	Carl Rowley	Joanna Godfrey	-----	-----

Varieties not shown - Bekko, Hikari Utsuri, Hikari Mono

77 fish entered from 18 exhibitors (3 mainland exhibitors)

Top: Sean Rowley receiving his Grand Champion's Trophy from Alan Rogers
Bottom: The Grand Champion, Mature Champion, Adult Champion and Baby Champion

This is a new series of articles which will appear quarterly focussing around "A 'Day' in the Life of..." various people involved in the world of fishkeeping.

A 'DAY' IN THE LIFE OF... A FISH SHOW EXHIBITOR

by Sue & Roger Crew

The reader should bear in mind that for the last three days or so, activity in the house seems to have focussed around:

- sitting in front of the computer compiling lists of possible exhibits, equipment required and packing lists
- assessing fish for quality and size in relation to standards/ show sizes
- perusing the Show Schedule
- making a final decision as to what fish to take
- editing original list to more realistic proportions!
- determining how many and what size tanks are required
- carrying out water changes in tanks fish are to be taken from to ensure good water quality and less likelihood of problems in condition on the day
- prepare enough water for Show day to ensure large show tanks do not deplete holding tanks too much
- get outer containers ready to transport fish (e.g. cool boxes, polystyrene boxes, etc.)
- planning how it will all fit into the car and probably carrying out a 'trial fit' the day before the Show

Prior to this fairly localised activity, fish have been prepared over a period of months by taking them out to table shows held by local aquatic societies so that your fish are used to being caught, put in a small tank and put on a show bench to be peered at at close quarters by Judges and sightseers alike. Some fish never settle down to being benched and always appear stressed often causing themselves damage in transit. If this is the case it is cruel to keep subjecting your fish to this activity. Stop while the fish is still alive and select one that is happier to adapt to this activity. Hopefully you will have conditioned your fish by providing them with a good balanced diet of suitable proprietary brands of fish food (flake, pellet, etc.) interspersed with treats of live foods and other suitable goodies. Obviously you will pay regular attention to the water quality of

your fish's home and maintain optimum conditions for them.

The equipment needed to show fish is reasonably priced with glass show tanks costing about £2 - £3 each. Often you will be able to purchase show tanks from your local aquatic society either from an enthusiastic amateur who makes them or from someone who has a surplus. Another good place to pick up such equipment at a reasonable price is the local society auction, but remember always to sterilise the tanks when buying second-hand! You also need to purchase a copy of any standards relating to your fish and the show sizes they are expected to achieve. You will also need to purchase a special ruler to measure your fish known as a refraction rule. Again your local society will be able to source all of these items for you. The rule will cost about £2.50 and the show sizes £2.50.

As you can see, your local society is a crucial point for supporting you through your early days in showing fish. Many of its members would be happy to lend you their equipment to see how you get on with your first show once you have joined their society. If you do not have a society near you perhaps now is the time to think about forming one. *(Anyone seeking to form a society should contact the FBAS PRO at 44 Weeks Road, Ryde, Isle of Wight PO33 who can offer support and advice. In addition, Fishworld will be happy to print a free 20-word box advert for anyone trying to form a local society.)*

SHOW DAY

0600 The alarm sounds and we wonder - not for the first time - why we're getting up at this time on a Sunday morning! We have a pact not to talk to each other until we get on the ferry unless absolutely necessary on these days. We also agree up front which fish each of us is going to concentrate on if we are both catching as it saves us getting under each other's feet. It substantially reduces the risk of a civil war if, like Sue, you are not 'good' at early mornings. Stumble out of bed with bleary, half-closed eyes and switch the kettle on for that life-giving, thirst-quenching nectar TEA! FIND PACKING LIST!

Start packing the coldwater fish first. These were probably caught the night before, especially if their normal home is in one of our ponds. If this is the case they will have been stored in large plastic tubs outside overnight. To give you an idea, an average Common Goldfish needs at least a 12" show tank to exhibit it in, so you are talking about one tank in a cool box and some fairly serious

weight lifting early on a Sunday morning.

Fish never seem to want to be caught at this time of the morning (or any other for that matter) and chasing them is the last thing you want to do as this stresses them out and will lead short-term to their losing colour and not deporting well on the show bench. Longer term it will inevitably lead to stress-related diseases such as whitespot and fungal infection in any wounds you have caused. Ultimately you may lose your fish!

To reduce stress for both the pursued and the pursuer it is best to take all the plant and ornaments out of tanks prior to catching fish.

Each fish caught must be placed in an adequately sized show tank and cling-filmed to reduce the possibility of in-transit water loss.

Don't forget to cross the fish caught off of your packing list as you pack them. You would be surprised how many times you either forget to catch a fish or forget to pack it!

Don't use new water straight from the tap as it will contain chlorine which will kill fish and it will cause hundreds of minute bubbles in your show tank. Tap water is unlikely to be of comparable chemical balance with your tank water and is likely to shock your fish.

0630 Drink tea now it has cooled down. Start to feel a little more human, but not enough to talk or be talked to!

For your day to be as stress-free as it can be make sure excessive alcohol was not partaken of the night before.

[Roger made the mistake a couple of years ago of going to a mate's 50th birthday bash the night before Eastleigh Show. His mate - who shall (probably) remain nameless - plied him (apparently against his will) with all sorts of alcoholic beverage. True to form at 0600 the alarm went off. Sue put the light on at 0605 as a subtle hint, woke Roger at regular intervals until she screamed at him at 0615 that if he didn't get up immediately she was turning over and forgetting all about Eastleigh Show. Roger couldn't understand what had resulted in this tirade and with a heavy head dragged himself from his bed. Fish catching that morning was regularly interspersed with visits to the loo to be ill and his pallor turning a deeper green by the minute. Eventually arriving at

Eastleigh somehow the fish got benched and Roger retired to the car to 'die'. Throughout the day several members of the fishkeeping fraternity sought Sue out to ask if Roger was 'all right' as apparently he looked rather ill asleep in the car! Roger is not what could be termed a heavy drinker normally and certainly learned his lesson that day!]

Where tanks are up to 12" we take the fish ready tanked. If over 12" the tank is taken to the Show in its dry state and the fish transported in a larger plastic bucket with lid or polystyrene box, etc. A 12" tank is about the largest to safely lift onto a show bench ready-filled with water. It should be borne in mind that where fish and tank are transported separately there is an automatic doubling (at least) of car space required.

Big fish need to be caught using different techniques. If the fish is not too large and not too easily spooked it can be caught in the normal way with a (large) net and bagged or boxed. Very large or easily stressed fish may need to be caught using a very big, strong transparent plastic bag into which they are coaxed whilst in their usual holding tank and lifted with the minimum of water to be transported in large lidded plastic buckets, cool boxes, polystyrene boxes, etc.

As time goes on a 'fish mountain' appears in the hallway ready to be packed into a car that already seems to be 'shrinking'!

One of our absolute essentials for the trip is THE GREEN BAG. The Green Bag holds all our setting up bits and pieces and our fishy first aid kit. It contains:

- portable battery powered air pumps for hot days or fish that become stressed on the show bench (these are fairly easily available at about £9 each from aquatic outlets or about £6 each for exactly the same thing from angling retailers!). We have saved many of our own fish from oxygen starvation on a hot day and probably as many of other exhibitors' fish.
- spare batteries
- spare air stones
- fine meshed nylon coffee filter (for filtering tank water through to remove fish debris)
- nylon meat baster (for sucking out fish debris from show tanks)

- kitchen roll (for mopping up generally and polishing show tanks)
- cling film (for packing show tanks for the return journey)
- syphon tube (for transferring water)
- two or three different sized fish nets (for catching fish out of tanks)
- dechlorinator (in case tap water has to be added whilst at the Show)
- plasters (for us in case of cuts from chipped tanks)
- Stress Coat or similar (in case of transit damaged fish)
- plastic measuring jug (for transferring water)

The Green Bag is actually a strong tool bag which we won at one of our early Open Shows in a raffle and has proven invaluable to us and others over the years.

Also pack at least one spare polystyrene box for impulse buy purchases during the day. *(These polystyrene boxes are those that the fish are imported in. They are sturdy and ideal for transporting fish to fish shows. Your local retailer may be willing to give you one or two of these if you explain your predicament or you may have to part with £1 or so. If, like us, you have been known to purchase large quantities of fish at particular retailers they will pack the fish in a polystyrene box for you to take them home.)*

0730 Load fish into the car and hope that none of the boxes have 'grown' overnight and that you can still remember how you got them in the night before!

0740 Quickly throw on some clean (previously laid out) clothes, clean teeth, wash, shave, go to the toilet and GO! It is surprising how quickly all of these jobs can be done when the necessity arises.

0750 Depart for two-mile journey to ferry. Ideally they like you to be there at least 30 minutes before sailing, but the only time we have ever done that they wouldn't let us on because we had not bothered to book it being mid-morning on a weekday! We now have a 'name' for getting to the ferry 'just in time' and believe this is where the Japanese got the idea from for their Just In Time stock control system.

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[Sue really got the 'hump' with Roger one morning though, when at two minutes to eight he calmly stated that he was going upstairs to shave. He couldn't understand why Sue was huffing, puffing and generally blowing a fuse at the bottom of the stairs. Sue said they would miss the ferry and he replied that they had plenty of time as the ferry was 0830. Cutting a long story short Sue became a little more explicit and they still made the 0800 ferry which luckily was late on that day!]

0800 (Hopefully) Safely on the boat. Get tea and bacon butty from the buffet. Relax. Metamorphose into two relatively-normal human beings during the 35 minutes or so of the crossing. Practice smiling and talking to each other now that the stress of catching those damnable fish is completed.

0845 Disembarkation complete so get on the road. It is surprising how fast a fish will travel along Britain's motorways. We experienced Brochis multiradiatus travelling in excess of 100mph a few years ago, but have not witnessed such speeds in their 4' tank at home! Isn't nature wonderful?

1045-1100 Arrive at Show venue. Book fish in and pay for entries. It usually costs about 30p per fish to enter an Open Show but can be cheaper if your fish are pre-booked. Some shows give a 'bulk price' of say £2.00 for 10 or more fish to be benched. If you can, it is always beneficial to the Show Secretary of the show you plan to visit to either post or telephone through your planned exhibits so that their workload is reduced on the day. This also saves you time when you book in as you only have to pay for your entries and collect labels when you arrive.

After booking in, the next most important thing is to find a toilet and then it is time to unload the car. We have purchased a sturdy trolley for this purpose and it is surprising what a difference it makes if you are showing a large number of fish. Your muscles will not 'scream' quite so much the following day.

1115 Collect tank labels from Show Secretary.

1117 Start benching fish. The method we use is to bench all the fish prior to 'tittivating' the tanks to remove water stains, fish excreta, etc. This is where The Green Bag really comes into its own. Once all the fish are located in the correct place on the Show Bench, we go round to each tank to check

that the fish have settled down and do not need any additional air. We also use the meat baster to suck up any debris from the bottom of the tank and filter the water through the coffee filter back into the show tank so that the water level is maintained. You will be surprised at the amount of fish 'poo' that one tiny fish can get rid of in the space of a couple of hours in a show tank whilst you are travelling to an Open Show. This is despite the fact that you have probably 'fasted' your fish for a day prior to the Show so that this will not happen! In this respect fish are just like small children - guaranteed to let you down!

1155 Make sure you have everything you need to take with you prior to the Show Hall closing. Your fish list is important as you will probably want to check the judging results prior to the hall being opened again.

1200 All the tanks should be spruced up and the fish settled. The Show Hall is usually closed at 1200 so that there are 30 minutes of peace and quiet for the fish to really settle before judging commences at 1230.

Stop for a few minutes to re-charge our batteries and wonder if it really is only six hours since we woke up?

Now is the time for another cup of tea and to check out what food (if any) is available on site. Most fish shows offer refreshments for exhibitors, but the range can vary quite a bit from full cooked 'brunches' of bacon, eggs, sausage, tomato, etc., to sandwiches and cakes.

1230 Judging commences and you will not be allowed into the Show Hall again until about 1630.

At this point you will probably have one of two options:

1. Attend the Open Show Auction. The majority of Open Shows now include an auction within the day's programme. Auctions are particularly good entertainment for a number of reasons. You will often find that the local 'character' acts as the auctioneer providing a humorous, but informative interlude in the day's programme. You will also be able to purchase a wide variety of good quality fish at reasonable prices. The type of fish you find at the Auction may be dependant upon who is shutting down a tank or what has been bred in the locality over the past year.

2. Visit local fish retailers and/or garden centres with fish for sale. Again being in a different locality you may find different varieties available from those you are used to. Ask members of the Society holding the Open Show which outlets they would recommend. Often you will find that the Society have been thoughtful enough to provide a flyer with details of a 'fish shop crawl' (similar to a pub crawl but marginally less alcohol consumed). Whatever your sources of purchasing fish, ensure that you have adequate facilities for

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them at home.

1600 Make your way back to the Show venue to check the results of the judging. Although not all will yet be posted, the majority will be displayed. There will be frantic activity with other exhibitors doing the same. You will be able to take this opportunity of discussing your fish with other fishkeepers. This is also the opportunity to have a good whinge (or crow) about the placement and marking of your fish if you want to!

1630 This is usually about the time when the Show Hall is opened and will probably be the first opportunity that you, other exhibitors and the public will have had to peruse the fish on display. If you are a new exhibitor, this is the time you will learn an awful lot about the popularity of various species, how to breed them and what they look like.

If there has been a raffle it will be around now that everyone frantically searches for the tickets they bought this morning when their main aim was to get their fish on the bench.

Prize-giving will follow. It is usual to award place cards for 1st, 2nd, 3rd and 4th places. Special prizes are also awarded for Best In Show, Best Coldwater, Best Tropical, Best Breeders, Best Junior, etc., etc. Prize-giving can take a considerable time depending on how the local Society have organised it and how many classes there have been.

1700 Debenching of fish. This means doing the reverse of what you started at 1117 this morning!

1730-1745 Load car and get on the road again!

1945 Reach ferry terminal if the journey has been smooth.

2000 Embark the ferry and settle to a cup of tea. Wish you were home with all the fish safely back in their tanks! By this time you have probably had enough, but need to find a bit more energy for the toil to come.

2045 Disembark the ferry at the Isle of Wight and we make our way home.

2100 Reach home and start unloading the car. This time, however, we not only have to return our show fish to their tanks, but also find homes for our new purchases. Grab a cup of tea during proceedings.

2300 Hopefully by this time we will have finished putting the fish 'to bed' and can fall into bed ourselves leaving the debris of the day until tomorrow. By this time we will have been shifting fish around the south of England for about seventeen hours, but it's a bit like giving birth, you seem to forget before long and do it all over again.

This is a very personal account of a day at a fish show. Other's experiences and their way of catching or transporting fish, etc. may be totally different, but often their journey's as long.

"ANTIQUARIUM" BOOKS

by Dr. Peter Burgess, Aquarian Advisory Service

Some aquarists are keen collectors of old aquarium books, myself included. Looking back over the older aquarium literature reveals just how difficult it must have been to keep tropical fish during those early days of the hobby - and just how few species were available to the pioneering aquarists.

Hunting down old aquarium titles can be almost as much fun as touring the shops for fish, but where does one look? Actually, just about any second-hand bookshop is worth a try, and I have certainly found a few bargains this way. But I also have a couple of more reliable sources - one being near the Welsh border, and the other comes to your door!

Nestling under the shadow of the beautiful Black Mountains, Hay-on-Wye is famous as the "town of books". Stroll around this pretty Hereford town centre and you will encounter no less than 40 bookshops selling second-hand and antiquarian books on all subjects. Most of the shops have a natural history section, but if you have not got the time to browse all of them, then I suggest the following three:

C. Arden, Church Street who specialises in natural history books,

Hay Cinema Bookshop, Castle Street,

Richard Booth's Bookshop, Lion Street which is a massive shop with almost half a million books!

Within these three shops alone I recently counted well over 150 aquarium and fish titles. I picked up a wonderfully clean copy of Innes *Exotic Aquarium Fishes*, second edition, for only £12 (not bad for a 60-year-old book) plus a 1964 English translation of De Wit's *Aquarium Plants* - a snip at £5!

A visit to Hay-on-Wye is well worth the effort, and there is some beautiful countryside within just a few minutes of the town centre. The tourist information centre (next to the main car park) can supply you with a free town map with all the bookshops clearly marked.

Those aquarists who prefer an armchair approach to book-hunting may be interested in the mail-order service by Steven Simpson Natural History Books. Many titles are available for under £20 but you can also find some rarities that are of international importance. For example, you could purchase a highly desirable five-volume set of Donovan's *"The Natural History of British Fishes"* dated 1802-1808, containing over a hundred hand-coloured plates - all for £2500. Contact Steven Simpson for the latest catalogue of new and second-hand aquarium, fish and reptile titles (telephone 01728-604-777) or write to: Steven Simpson (Natural History Books), Rising Sun, Kelsale, Saxmundham IP17 2QY.

Be warned, however - book collecting can be addictive. My own 'antiquarian' collection began about 20 years ago and I must confess it has got completely out of hand - with over 100 volumes currently crammed into two ceiling-high bookcases. I just hope the floorboards are sturdy....!

aquarian

WALTHAM's experts are often asked for advice on feeding and care of fish. We include a selection of your questions here.

Dear Dr. Ford,

Question 1: I have been given an "Atlantis X300" external filter, but unfortunately there are no fittings with it (i.e. input/output tubes) and I was hoping that you could let me know of any supplier who would have them in stock. I have tried a number of suppliers advertised in the aquatic press, but have had no luck. The gentleman who passed the filter on to me said it was very effective and it would be a shame if I could not make use of it.

Answer 1: We stopped making aquatic equipment several years ago and spares were retained to cover guarantees. However, this has now ended and all stock has been issued.

With a little ingenuity you should be able to use other manufacturers' spares (such as Eheim or Interpet). Clear plastic tubing of various diameters is available at good garden centres. Check that pipes and hoses are the right diameter or slightly larger than required. If too large, make water-tight by glueing into place.

Do not use Silicone Sealer because this does not adhere well to plastic, nor Superglue since this is water soluble with time. The best choice is Araldite, especially the 5 minute mix.

Question 2: Please could you give me advice on where to buy Red Belly Piranhas, what they eat and how to keep them. I already have a big tropical tank with a heater and air pump, but I want some fish to put in it!

Answer 2: My best advice about keeping Piranha is - don't. They are not the vicious fish depicted by Hollywood, but are actually timid and very nervous in the confines of the home aquarium. They prefer to be in shoals and one is unhappy on its own in the tank. Add two or more and problems will occur eventually since they do have razor sharp teeth and if one nips another it will quickly die from the wound.

You cannot add them to a community tank since the other fish will be eaten or bitten. Feeding the fish is not easy. They need chunky foods and being nervous and stressed in the tank their appetite is poor.

It is unnecessarily cruel to feed them live Goldfish. The Piranha will take worms but they can be weaned on to chunky fish and shellfish.

Question 3: Can you put wild Rainbow Trout from an outdoor pond into an indoor aquarium with Goldfish?

Answer 3: No, you should not bring Rainbow Trout into the aquarium. Goldfish are classed as 'coldwater' fish, but in fact they are 'temperate' fish and prefer the 10°C to 20°C range. Rainbows are true coldwater fish and so need the 0°C to 10°C range. Apart from the requirement for low temperatures, the fish need the high oxygen content of cold water and will become distressed in room temperature water. Rainbows can be seen in publish aquaria tanks, but these are connected to refrigeration systems.

Question 4: I have two common Goldfish. One has red 'streaks' down the caudal fin as though a blood vessel has burst. The second fish is now starting to show fine red lines on the same fin.

Please can you advise me what this problem is?

Answer 4: Red streaks in the fins of Goldfish - especially the fancy varieties with their long fins - are due to inflammation, which is usually a reaction to ammonia in the water.

Your aquarium is either overcrowded, too small, unfiltered or no water changes are being done, or you are over-feeding ... any (or all) of these problems will lead to ammonia build-up in the water, with stress on the fish, first shown by varicose-like veins in the fins.

Correct these problems and the symptoms will fade. Fish have to swim in their own loo, so do everything possible to maintain water quality, i.e. always zero ammonia and nitrite.

Question 5: I am interested in setting up a tropical aquarium. Due to a tight budget I am considering buying second-hand. What should I look out for when buying second-hand equipment? Are there any particular cleaning/disinfecting techniques that you would recommend to make the tank free from bacteria and viruses?

Answer 5: Second-hand aquaria can be very cheap. Look in the sales column of your local paper or 'free ads'. Visit the home to check the aquarium is well-maintained and supervise the move so you can retain as much of the mature water as possible, plus keeping any filter system intact (so it keeps the nitrifying bacteria culture).

Obviously avoid 'tank busters' such as Redtailed Catfish or Giant Gouramis, unless you really want to keep such petfish. The best second-hand set-up is the tropical community aquarium.

As regards sterilisation, this should be avoided unless the aquarium is sold with no fish or plants. Then just use elbow grease and tapwater and reseal the inside corners with Silicone Sealer if any leaks are found.

Send your questions to Dr. Ford at:

Aquarian Advisory Service,
Waltham Aquacentre,
PO Box 5059,
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DR. FORD'S 100 TOP TIPS

Coldwater Tips

1. To make your own inedible plastic plants use the large coloured dustbin liners - green is obviously ideal, but not essential. Cut into strips and tie the ends to a stone with nylon thread. Interesting aquascapes can be made with very long strips that rise to, and run along, the water surface. Rinse well before use. (You can also make breeding mops out of this material. Newts in particular will love to curl their eggs into this material.)

2. Goldfish and many other fish are fond of earthworms. Collect these by placing an old sack on the garden and throw onto it all your used tea-leaves and tea-bags. Lift the sack for an instant supply of red earthworms.

3. Do not use undergravel filtration in coldwater aquariums. The temperature is too low and the excreta too bulky for rapid breakdown. This means dirt collects in the gravel and harmful bacteria develop that can feed back onto fancy goldfish types, causing finrot.

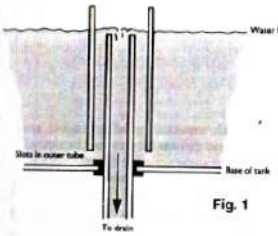


Fig. 1

4. One advantage of coldwater fish is that water straight from the mains can be used for continuous flushing in large tanks. It must only be a trickle, to prevent a chlorine build-up. Use a double tube outflow so water is drained from the base. (See Fig. 1.)

Tropical Tips

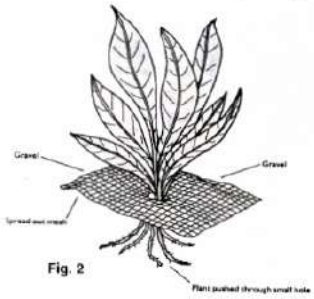


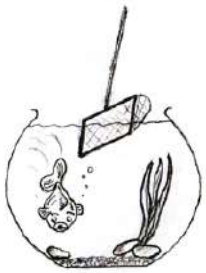
Fig. 2

1. If that rooted plant keeps working loose, don't crush the delicate roots with lead - use a section of plastic mesh (old fishnet or onion bag) and hold the lot down with gravel. (See Fig. 2.)

2. Many tropical fish thrive better in soft acid water and its brown peaty colour is often necessary for breeding these fish. A simple method of changing the water chemistry is to place a few handfuls of peat (garden centre stuff is OK providing no fertiliser is included) in the leg of a pair of nylon tights. Knot loosely and pack into the filter box.

3. Most tropical tanks have lots

Goldie by Les



Uh Oh!! I don't like the look of this!!

Oh no! Fish soup! What have I done to deserve this?

Phew!! They're just cleaning out my bowl!

of electrical wires dangling down the back. Tidy them all up by threading through a piece of tubing fixed into place with double-sided sticky tape. Spare power filter tubing is ideal for the job.

4. Power filters collect a lot of dirt that feeds the bacteria when oxygenated water is continuously flowing. If the filter is turned off for a day or more, the oxygen is soon used up and the dirt becomes foul. These substances are toxic to fish, so never turn a power filter back on without first cleaning it out.

Marine Tips

1. If you are new to marine keeping and setting up your first tank, ask the dealer for some of his dirty filter wool or gravel and use it to 'seed' your own filter system. This speeds up the 'nitrite crisis' and allows sensitive fish (the prettier ones!) to be added sooner.

2. Instead of making up a new batch of saltwater every time you perform a partial water change, have some stored in bulk for immediate use. To reduce the space taken up, make the solution at double strength so that half a bucket, topped up with warmed tapwater, will give instant seawater. The extra salt also prevents any pollution from bacteria in the stored container.

3. Lighting is particularly important if marine invertebrates are included. Spotlights are best for such inverts because they can be trained onto a collection of coral heads or an anemone. If fluorescents are used, remember they 'age'. It is best to change a tube once a year, even if it still looks OK.

4. Marine fish will patrol up and down their tank until you have a visitor - then they will all dive into the coral decoration. Bring them back into view by using the stick-on tablet food as used for tropicals. Use it occasionally so they catch on, then have a few tablets standing by. Remove any surplus when the visitor leaves, of course.

Pond Tips

1. If you need to catch a pond fish for treatment, etc., place a large pond net such that it dips just below the surface. Leave for as long as possible so the fish come to ignore it. Then feed with floating pellets or flake over the net to attract the fish into an easy catching position. Remember you will only get one go!

2. If all the fish need removing, or that particular one needs netting, siphon or pump out sufficient water for you to climb into the pond wearing Wellington boots or waders. Leave as much water as possible so the change in chemistry is not too drastic. Refill very slowly with a cascade.

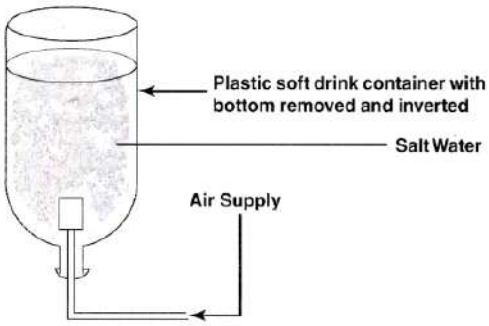
3. The traditional method of discouraging herons is to put a cotton trip wire at ankle height. This could cause problems for birds and fish. A better system is to use a very visible string at 6" and 18" from the perimeter. The heron won't step over the low string and won't duck under the high one, so the fence looks impassable to the bird.

4. Providing you have a good filter system, clear green water in the pond by draping black polythene over the top to exclude the light for two or three days. The free-swimming algae causing green water will die off in the dark, but this is obviously a cause of pollution, so a good filter is needed too.

General Tip

That piece of driftwood, bamboo or tree branch would look very natural in the aquarium, but unless it is petrified, the living tissue will decay and foul the water. So sterilise it with boiling water and dry it thoroughly in a warm oven. Then paint it all over with a top quality polyurethane varnish. Repeat at least three times when dry, so not even a pinhole is left for water to enter. It will then last for years in the aquarium.

Simple Brine Shrimp Hatcher



This simple design for a Brine Shrimp Hatcher was submitted by Dick Mills our erstwhile Editor.

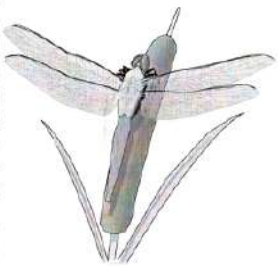
1. Cut off a plastic soft drinks bottle about 2" from the bottom (i.e. cutting off the fluted or coloured base portion of the bottle).
2. Fix an airstone to a length of airline long enough to reach from your airpump to your Brine Shrimp Hatcher.
3. Drill a hole in the bottle cap which is large enough to feed the airline through.
4. Feed the airline through the neck of the bottle and the cap, being careful to ensure the airstone is left in the bottle.
5. Silicone around the hole in the bottle cap and the airline to ensure you have a watertight seal.
6. When the silicone is dry you can fill your Brine Shrimp Hatcher with the saltwater solution, add the aeration and the eggs and wait for them to hatch!

WILDLIFE IN AND AROUND YOUR POND

by Sue Crew

Roger has built a series of ponds with the last and largest of them only really being completed last summer when it was finally filled with water.

It seems that as soon as he filled it the amount of wildlife we had in our garden seemed to really escalate. We live on a semi-rural housing estate so there are still surprises for us. Our foxes are regular visitors to the garden, as is our Green Woodpecker and our Hedgehogs, but they still provide us with pleasure when we see them. These 'friends' would be sorely missed if they did not come again.



We first noticed our escalating wildlife when we started seeing more Damselflies and a greater variety of colours. There is nothing more magical than to watch pairs and groups of these delicate little creatures with the sun shining on their gossamer wings dipping in and out of the water on a balmy summer's day. The colours they show are what I call the 'jewel colours', the brightest of turquoise, green, red and blue. I can remember as a child having a book all about fairies and the Damselfly seems to epitomise the fairies in my dearly loved childhood book.

A Jenny Wren started to visit us to partake of a drink, a few insects and a bath all from around our pond. The previous year we introduced some Toad tadpoles and were delighted to find that one or two had returned last year. Frogs we have had in abundance since we took over the house. Our Siamese cat delights in catching the Frogs. She never hurts them, she just flips them on their backs and they remain absolutely still until we take them out of her mouth and turn them up the right way! Boy, do they jump then unless you are quick enough!

What else did we notice? One really hot summer day we had put a scaffold plank across the pond to a middle column Roger had loose laid to put something on. Both of us were dangling our legs in the pond to cool off and were trying to catch fish fry to rear elsewhere. Our first Dragonfly circled around our heads in a sapphire-blue sky. We both willed it to land on our pond and remained absolutely still until it eventually did.

We watched as it laid eggs, but could do nothing about it. It was one of those times when you really wanted a camera to hand! Several times it flew away into the sky and then came back again some time later. That was the first time we saw a Dragonfly and hope they will come back again this year. Later in the season we were lucky to witness a Dragonfly pupae, but do admit to transferring it away from our baby fish.

On Boxing Day we were again watching our ponds (as we seem to do a lot of the time) and were thrilled to see a Kingfisher on the fence next to the pond. Obviously there were mixed emotions because we were a little worried for the fish, but certainly around where we live it is a privilege to have your very own Kingfisher! The last time I saw a Kingfisher was when I was a kid walking home from school over our local river and that was some 35 years ago!!

As far as water bugs are concerned, we've had our fair share of those too.

We believe that we have attracted so much more wildlife since the filling of the bigger of the ponds because it reflects the sunlight much more as it is the higher of the ponds and can probably be seen easier from the sky!

We're looking forward to logging more wildlife this year and will report any further 'jems' as they occur.

Try some water in your garden or backyard. You don't have to build a pond. You can buy a large plastic plant container and add a few water plants to be able to attract some wildlife into your garden.

AFFILIATION STILL ONLY COSTS £12.00 pa

Can your Society or Area Group afford not to affiliate?

FBAS

ALL AFFILIATED SOCIETIES NOW HAVE FREE VIDEO/ TAPE/SLIDE FOR THE YEAR OF 2000

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and also

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DO YOU WANT TO START A SOCIETY IN YOUR AREA?

Phone Les Pearce (FBAS Public Relations Officer)
on 01983 613575
for support and guidance

Welcome to the March edition of the Judges News Page and as this is the start of a new show season we on the committee would like to thank you all for your past efforts during the previous year. As you are all aware the Judges and Standards Committee has changed this year in its membership and it hopes that we will be able to meet all Area Panels during the next twelve months.

I must apologise for the late delivery of the Size Sheets. This has been due to the Federation's printers being taken over by another company and the printing is well behind schedule, BUT they should be out in time for the first show of the year. We will also be issuing two new books to all judges (books 26 and 28), details to follow.

The J & S committee has carried out a tremendous amount of work on these books during the past 12 months. We have made numerous alterations to sizes as well as class changes on a number of fish. The main reference book we have used is the Aquarien Atlas Foto Index 1 to 5 and this has been used mostly for referencing the name changes on quite a number of fish. This book has been updated so the references are fully up to date and although there are 5 other volumes in the series, this is the most recent. We have also used the "Aqualog" series of books to help with identification of fish. One of the things we have added, for example, to the Barbs a number of new genus, which are classified as Barb type fish. This has been carried through to all classes so there are a number of very significant class changes for next year. To make things a little easier we will be publishing a new booklet - no. 28 - in the series entitled "Additions, Amendments and Deletions to the Millennium edition of the Showfish Size Guide". As there have been many new fish added to the list we will also be publishing a new book no. 26 (a reference dictionary) in good time for next year's show season. The Show Size Book is recommended to be used in conjunction with the other two booklets so it will make things a lot clearer when trying to find any of the fish which have changed name or class.

A number of Judges have passed upgrading tests during the last 12 months and all the updates can be seen in the new edition of the Year Book.

Please see the following from the new Chairman of the Judges and Standards Committee (Mr. Gordon Best), an observation from the previous years' judging scene:

During my travels on the Open Show circuits last year I have observed more and more fish that are very difficult to identify and that are invariably identified by the exhibitor as a fish well above the size norm quoted in the FBAS Size Sheets. As Rule 24 states that unless the Judge concerned can produce a picture and a written description of the fish concerned then the judge has to accept the identity of the fish as quoted by the exhibitor! What we must take into consideration is that size is only 20 points out of 100 points maximum. If the fish does not conform to the other areas of pointing (i.e. body shape, colour pattern, finnage of the identified fish), then it could be heavily downpointed in these areas. Therefore, just a case of what you gain on the swings you lose on the roundabouts. You have been warned!

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

FBAS MERCHANDISE AND PUBLICATIONS

Available from Show Stands, by Mail Order, or at General Assemblies

Book No.			
1	Cultivated Fishes		£1.00
2	The Sunfishes		£1.00
4	Goldfish Standards		£1.00
5	FBAS Constitution & Show Rules (2000)		£2.00
6	National Show Fish Sizes (2000)		£3.00
7	FBAS Yearbook (2000)		£1.00
8	Forming a Society		£1.00
9	Dictionary of Common/Scientific Names (Freshwater)		£2.50
10	Scientific Names and Their Meanings		£1.50
11	Plants		£1.25
12	Dictionary of Common/Scientific Names (Marine)		£1.25
13	Nishiki Koi (in colour)		£1.50
14	Organisation of the Open Show		£1.00
18	Quiz Book 1		£1.50
19	Synonyms of Fish Names		£1.50
24	Not yet published		
25	Quiz Book 2 (new)		£2.00
26	Species Reference Dictionary of Freshwater Fishes	looseleaf	£1.50
		with binder	£4.00
27	A Reference Dictionary of Aquatic Plants		
28	Additions, Amendments and Deletions to the Millenium Showfish Size Book		£0.50
	***Special Offer package of Book 6, 26, 27, 28 + folder		£5.00
	Binders for booklets and supplements		£2.50
	Car Stickers		£0.20
	Lapel Badge		£1.00
	Rules		£2.50
	Pointing Disc		£3.50
	Fish Penknife		£1.50
	Key Fob		£1.25
	Refrigerator Magnets/Fish Brooch		£1.00
	Plug Label		£0.25
	Sweatshirts (FBAS)		£9.50
	T Shirts (FBAS)		£6.50
	Umbrella		£10.00
	Holdall		£9.00
	20 for size badges		£0.20

ORDERS:

BY POST Send cash/cheque with order + 25% of total for p & p
Cheques made payable to FBAS
Send to: Address in FBAS Year Book (1998) or
Roger Crew c/o HMP Albany, 55, Parkhurst Road, Newport, Isle of Wight PO30 5RS

SHOWS Telephone orders for collection at Assembly or shows

Tetra

FBAS

CORAL CREATIONS

A Tetra (USA) line that became unavailable in the UK three years ago. Recently a small stock was identified in the UK warehouse and Tetra have agreed to its **sole distribution** in the UK through the Federation of British Aquatic Societies' Merchandising at **absolutely knock-down prices!**

Here is the opportunity for all of you marine or Rift Valley enthusiasts (or any fish-keepers for that matter) to create a coral scene **without damage to the environment**, for **Coral Creations** are a synthetic resin product which is totally inert and harmless to your fishtank. Now you can enjoy the sight of lifelike 'coral' at a fraction of the cost.

As an example, the top of the range "Brain Coral 1/2 helmet" which **normally would retail at £23.25** can be yours for merely **£6.80** and for a "Mini Brain Coral" in either white or natural, you pay only **£2.00 instead of £6.75.** Do not forget that these recommended retail prices are now three years old, so you are getting even better value!

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!

1999 SHOW DATES AND EVENTS

Rule Codes: A = A of A; FB = FBAS; FN = FNAS; FS = FSAS; U = US of A; V = YAAS; B = BKKS; BK = BKA; I = International Goldfish Standards; N = NEFAS; C = CAGB NGS + National Goldfish Standards

4.3.2000	**FBAS AGM - Del/member cards for free admission to view Syon Park**
5.3.2000	Eastleigh AS (FB)
12.3.2000	Greenock AS (FS)
26.3.2000	Clyde AS (FS)
2.4.2000	Northampton AS (FB)
15/16.4.2000	Grow Exhibition Sandown Park
16.4.2000	Stroud AS (FB)
23.4.2000	Malvern AS (FB)
29.4.20000	Southend & Leigh AS (FB)
30.4.2000	Aberdare AS (FB)
5/8.5.2000	South Downs Holiday Village Gardeners Weekend
7.5.2000	Musselborough AS (FS), Ryedale AS (Y)
14.5.2000	Corby AS (FB), Halton AS (FN)
21.5.2000	IOWAS (FB)
28.5.2000	Castleford AS (Y)
23/26.5.2000	Chelsea Flower Show
3.6.2000	**FBAS AGM - Del/member cards for free admission to view Syon Park**
	SFAS Coldwater Show (NCIS)
4.6.2000	Erith AS (FB)
11.6.2000	Bracknell AS (FB), Tameside AS (FN)
14/18.6.2000	BBC Gardener's World
18.6.2000	Workington AS (S)
19.6.2000	Bristol Tropical (FB)
49.7.2000	Hampton Court Flower Show
8.7.2000	Port Talbot AS (FB)
19/23.7.2000	Tatton Park
9.9.2000	Hounslow AS (FB)
17.9.2000	Otley AS (Y)
1.10.2000	Halifax AS (Y)
15.10.2000	Doncaster AS (Y), West Cornwall AS (FB)
20/22.10.2000	Supreme Festival of Fishkeeping
19/20.8.2000	Yorkshire Aquarist Festival

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,

Dept. FW, 22, Flamsted Avenue, Wembley, Middlesex HA9 6DL

In order to provide the most complete service to all Societies, please communicate your show information to the same address.