FISHKEEPERS AND WATER GARDENERS

BULLETIN

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Features

(The above Features are located in order)

Cover Picture at Hampton Court Flower Show 2001 by M. Goss

Opinions expressed in any article remain those of the author and are not necessarily endorsed by this publication

"The Fishkeepers & Water Gardeners Bulletin" is published quarterly by the Federation of British Aquatic Societies

FROM THE EDITOR

Well with "*tongue in Cheek*" I feel this is the best Bulletin since I became editor. This edition contains three new first's, the featured article, "Know your Plants" is illustrated in colour. Your questions answered, in the FBAS. Help and Advice page, plus all those aquatic items including fish and plants that you want to sell through the Classified Page. Adverts must have an aquatic content and will be FREE to Federation Affiliated Societies and Club members. So let me have your adverts for the next issue by the 31st July.

For those of you that have filled and sent in forms to me for the INTERPET competition, a big thank you, and those of you that haven't, get them to me now! It's not too late (just).

The Federation would like to thank TETRA for their Super Prize Packs, going to six lucky winners in this issue, so please get your answers to me SAP.

The Bulletin will have been to the Chelsea Flower Show by the time you are receiving this issue, this type of invitation is a great honour and a "Big Thank You" to all those involved. The next event of this type will be at Hampton Court Flower Show 2nd to the 7th July, and once again will be promoting the Water Gardening aspect of our hobby.

Promoting our hobby is at the forefront of the Federations organising committee for the Festival of Fishkeeping and Water Gardening being held at Bracklesham Bay on the weekend of 11th October. To complement the serious side of Fishkeeping there is great evening entertainment, a chance to relax with all your friends. It may seem quite a time away but Grace tells me bookings are on the up compared with this time last year, and there are only so many beds, don't be disappointed, contact Grace Nethersell by Tel / Fax:020 8847 3586 ----- see you there.

Happy Fishkeeping

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THE HIDDEN PERILS OF TAP WATER

by Dr Peter Burgess, fish health scientist, Senior Consultant to Aquarian

Water is for drinking.. "Our water is supplied for human use, not for keeping fish!" replied a Water Company representative when approached by an irate aquarist who was blaming the local tap water for his fish deaths. Of course, the Company employee was quite right: tap water is primarily for human use and has to meet stringent drinking quality standards. Indeed, it is very safe..for humans. But fish and humans react differently to the chemicals in tap water.

We merely drink or bathe in water, whereas fish live and breathe in it. Additives, Hardness and pH aside, it generally isn't the water source itself that can cause fishkeeping problems (although heavy metals may pose risks). Aquatically speaking, our major concern lies with the disinfectants that the water companies add to tap water.

Avoiding the trots..

Chlorine compounds are great for killing water-borne bacteria that could otherwise give us humans a bad stomach upset. Unfortunately for us aquarists, chlorine is highly toxic to fish, harming their delicate gill and skin surfaces. Water companies add sufficient chlorine to the water supplies to achieve a concentration of 0.5 to 1.0 milligram of chlorine per litre at the tap. Enough to kill those gut-thumping bacteria...and our fish.

Avoidance reaction

Fish that are exposed to high levels of chlorine will show an avoidance reaction and may attempt to leave the water. Trout and other salmonids are particularly sensitive to chlorine, but high chlorine levels can irritate and harm just about any fish species, even the so-called "hardy" goldfish.

As little as 0.25 mg/L of chlorine (about half the amount in tap water) is sufficient to kill most fish fairly quickly. But more insidious are the sub-lethal chlorine levels that we may inadvertently expose our fish to.

It has been suggested that fish should not be exposed to more than 0.003 mg/L of chlorine. This "safe" level is less than 1 per cent of that found in tap water. To look at it another way, over 99% of the chlorine in tapwater needs to be removed in order to render the water safe to fish.

Chlorine damage

Chlorine reacts with the fish's gills and skin. Gill damage results, causing the fish breathing difficulties. Affected fish may develop fast gill beats and may gasp or "pipe" at the water surface. These symptoms can easily be mistaken for low oxygen problems, gill flukes or some other sort of gill infection, when in fact it could be the raw tap water that's to blame. (Tip: If you do suspect chlorine/chloramine damage to your fish, increase aeration for a few days. This may improve their chances of recovery.)

Inactivation by organics

Chlorine is inactivated by organic matter, so adding untreated tap water to a mature aquarium is less risky (well, slightly less!) than adding it to a recently set up system. Those of you who show your fish should be extra cautious about chlorine toxicity as there will be little organic matter in the show tank to mop up free chlorine. So beware of topping up a show tank with raw tap water - always treat the water first, even if its just a small quantity.

As indicated earlier, exposure to even tiny amounts of chlorine can irritate the fish, and could conceivably mean the difference between the fish getting 1st in a Class and being unplaced.

Total chlorine eradication is therefore our goal, whether we show fish or not.

Chloramine

This is a more stable form of chlorine. It has the advantage over chlorine in that it doesn't react with humic acids and other organic acids that are present in some water supplies. These chlorine-organic acid reactions can yield compounds known as trihalomethanes that are potentially harmful to humans. Hence chloramine is nowadays added to some tap water supplies to safeguard human health. Good news for us, but not for our fish and that's because chloramine isn't easily removed from tap water.

Removal of chlorine-based disinfectants

Some aquarists vigorously aerate tap water (eg overnight) to drive off chlorine as gas. This technique works, but be aware that even if you can no longer smell chlorine it could still be present at levels that can harm fish. Aeration is far less effective in removing the more persistent chloramine. If you are 100 per cent sure that your water supply company NEVER uses chloramine then aeration is a satisfactory method of dechlorination. If not, then aeration alone is risky in my view. Either way, aeration won't deal with another group of potentially harmful contaminants, namely heavy metals.

Heavy metals

By "heavy metals" we mean elements such as cadmium, copper, lead and zinc. Fish appear to be much more sensitive to heavy metals than are humans. Hence, water that is deemed safe for us may contain levels of heavy metals that could harm fish. Some water bodies are contaminated with significant amounts of heavy metals. Industrial mining is a major source of heavy metal contamination of water supplies. Being "pure" elements (rather than complex compounds that ultimately break down), heavy metals may continue to pollute watercourses for years or decades even after local mining has stopped.

Heavy metals also accumulate in the sediments on the lake and river bed, reaching concentrations that are far higher than in water the itself.

There are other routes by which heavy metals can enter the aquarium. Zinc and copper, for example, may leach from galvanised or copper water pipes. It is therefore a good idea to run the tap for a few minutes before drawing off water for aquarium use. Heavy metals may also be present as seams within certain types of rock - something to bear in mind if you decide to collect rocks from the countryside to furnish your tank.

Too much of a good thing..

Of course, tiny amounts of certain heavy metals are actually necessary for fish (and humans) to survive. Zinc, for example, is a component of certain enzymes (eg carbonic anhydrase) that perform key biochemical functions, as Aquarian's fish nutrition experts well know. Zinc is therefore an important dietary component for fish. But at very high levels zinc and other heavy metals will be directly harmful to fish. Fish can deal with excess amounts of zinc in the water by actively excreting this metal from their tissues. But they can only cope with so much zinc. Hence, if the zinc concentration is very high then it will have toxic effects, causing gill damage and, in extreme cases, death. At sub-lethal levels zinc can inhibit the fish's growth and breeding potential. So if your fish aren't getting 20 for size at the show then perhaps there's too much zinc in the water.. its possible. Copper is another vital trace element necessary for life, but at high levels it too is potentially toxic to fish. (Incidentally, copper is an active ingredient of many traditional fish disease remedies and that's why it is important never to overdose with such remedies or to use them unnecessarily). The toxic action of copper on fish tissues is not fully understood but appears to be similar to that of zinc. We know that copper is extremely toxic to certain aquatic invertebrates, affecting their respiratory systems. That's why copper based remedies must be used with extreme caution (ideally not at all) in mini-reef systems or tropical aquariums housing freshwater shrimps. Even tiny amounts of heavy metals can harm fish. It has been suggested that fish should not be exposed to more than 30 micrograms per Litre of lead or iron, or to more than 15 micrograms per Litre of copper. (1 microgram per Litre is equivalent to 1 part in 1,000,000,000.)

Water hardness

This has a significant influence on the toxicity of certain heavy metals such as copper and zinc. Generally, metal toxicity falls with increasing water hardness (specifically, calcium content of the water). So if your fish are kept in soft water they will be more vulnerable to any heavy metals

that may be present in their environment. Studies on rainbow trout illustrate the relationship between water hardness and heavy metal toxicity. In one experiment it was found that trout held in water containing 10 mg/L calcium carbonate survived zinc levels up to about 0.5 mg/L, whereas those kept in much harder water, 300 mg/L calcium carbonate, survived up to about 2.5 mg/L of zinc - that's some five times higher.

Banishing chlorines and heavy metals

It is clear that chlorine-based disinfectants and excess heavy metals have no place in the healthy aquarium, be it a tropical system or a goldfish tank. Even when present at sub-lethal levels, these "contaminants" can affect our fish in various ways - causing respiratory difficulties, poor growth, poor breeding potential, and poor show performance. The outward symptoms are not always glaringly obvious, or we may attribute poor performance to other causes: "Mmm, I wonder why that brood of Tetras hasn't achieved good growth - maybe the infusoria culture wasn't right, or perhaps the water temperate was a bit low, or because there's an "R" in the month.." Would our thoughts automatically turn to possible high zinc levels to explain poor growth performance in fish? - probably not.

Fortunately, we don't have to tolerate any of these tap water problems. Various reagents exist that deal swiftly with chlorine and chloramine disinfectants, and other chemicals can be used to neutralise any heavy metals that may be present. (Remember, heavy metals are simple elements so we cannot destroy them - "matter cannot be created or destroyed" so the laws of physics tell us. But we can render them non-toxic to our fish).

The all-singing, all-dancing water conditioner

What is required is an "all-in-one" water conditioner that deals with chlorine-based disinfectants and heavy metals. Formulating the right blend of active reagents in such a product is the challenge. Well, Aquarian's new "Water Conditioner" achieves all these things, and more.

There are many water treatments already on the market but Aquarian's product has extra health benefits for our fish. "Water Conditioner" contains a plant extract that is known for its tissue healing properties.

The special extract helps in the repair of damaged fish skin. Unlike human skin which is "dead" on the outer surface, the skin of fish is a living tissue throughout, hence is much more sensitive to cuts, infections and other traumas. Damaged skin - such as caused by fin-nipping, fighting, accidental abrasion on décor, net-damage and skin parasites (eg "ich") - is vulnerable to secondary bacterial or fungal infections. So the faster the fish's skin can heal, the better.

Following rigorous testing at the Waltham Aquacentre, the special "Water Conditioner" formulation has been given the "thumbs up".hope you will try Aquarian's "Water Conditioner" at home and see the results for yourself.

Healthy fishkeeping!

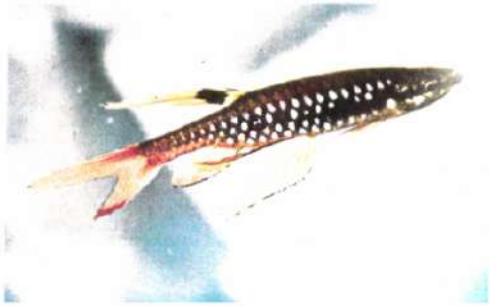
DAIRY DATES 2002

FBAS	*Assembly*	1st June
Erith A.S.	Open Show (F)	2nd June
Caer Urfa	Open Show (O)	9th June
Thameside A.S.	Open Show / Auction	16th June
Bristol Tropical FC	Open Show (Ca)	15th June
A.M.G.K.(Coventry)	Open Show /Auction	29th June
Workington D.A.S.	Open Show	30th June
Merseyside A.S.	Open Show	21st July
ACA American Cichlid Convention (Atlanta *USA*)		25th-28th July
K.A.S.S.	Open Show (Q)	1st September
Wyke A.S.	Auction	1st September
FBAS	*Assembly*	7th September
Alden A.S.	Open Show /Auction	8th September
BKA - Killifish	Auction (Weybridge)	8th September
Hounslow D.A.S.	Open Show	14th September
Otley A.S.	Open Show /Auction	15th September
Port Talbot D.A.S.	Open Show	21st September
Scandinavian Killifish	International Show (Copenhagen)	27th-29th September
N.G.P.S.(Goldfish)	Open Show /Auction	28th September
Goldfish Soc.G.B.	Open Show /Auction	5th October
Grangemouth A.S.	Open Show	6th October
Festival of Fishkeeping and Water Gardening		1th-13th October
Bracklesham Bay. Events include:		
G.S.G.B. Goldfish	Open Show	12th Saturday
Catfish	Open Show	12th ^
Auction of "Home Bred Fish"		13th Sunday
Livebearer Convention		13th ^
"Supreme Championship" Final		13th ^
"Hagen Masters" Open Show		13th ^
Bookings /Inquires: 0208 847 3586		
FBAS	***Assembly***	**7th December**

Please note: Events in **bold** are to F.B.A.S. rules or associated.

Tony Armstrong of the Colorado Aquarist

THE SPLASH TETRA (*Copella arnoldi*) is native to Brazil. The reason I am going to write about it is because of its unusual breeding habits.



Male *Copella arnoldi*

Photo by Dr. Herbert R. Axelrod

They are very long and slender fish (65mm) that stay at the surface of the water most of the time. Their body is mainly silver over-laid with orange to red dots. There are two rows of them down the side of the male, and on the female they are very faint. The upper lobe of the male's tail is nearly twice as long as the lower lobe. The female's tail is similar but will never be as long as his. Every once in a while, if they are shown under the right light or put in the sun, they will reflect back a blue-green sheen.

For breeding, have an aquarium that is at least 10 or 15 gallons in capacity. Then take a sheet of glass and sand it, but make sure that it is big enough to be at an angle and stand out of the water about 4 to 6 inches. Make sure that the glass is sanded very well so it is very rough. Have about 7 to 8 inches of water in the tank with some gravel and some plants for the female to hide in when the male becomes too rough with her. Feed them well on live or frozen food. Then put them in the aquarium and let them be. In a day or so he will start to court her and chase her around. When they are ready to spawn both male and female go to the far end of the tank, swim as fast as they can, and when they get fairly close to the glass they will lock their lower fins together and jump out of the water and land on the glass. Make sure that the glass is slanted enough for them to fall onto or adhere to. When they have landed on the glass, she will lay approximately 10 eggs, he then fertilises them, and they both jump off back into the water. It usually only takes them about ten to twenty seconds for all this to happen. They will do this over and over again, until there are about a hundred eggs, more or less.

Copella arnoldi ♀, ♂

Remove the female and put her in an aquarium by herself so she may be able to recuperate. Do not take out the male be-cause he will play a very important part in hatching the eggs. About every 15 minutes he will take his tail and splash water all over the eggs on the sheet of glass. He will do this until they break their shells and jump out and into the water. Then the male should be removed or else he just might eat them. Start feeding them on infusoria, a microscopic food for baby fish. Feed it to them according to the directions. Soon enough they will be able to take on baby brine shrimp. I must admit they are not the most fascinating fish I ever saw, but watching them spawn is some-thing you will never forget.

FBAS

help & advice

Q. My pond is very green and I can not see my fish. When I built it I positioned it so it will get the midday sun like all the books advise. I also have Canadian Pond Weed that may have died over winter and two lilies that I purchased from Hampton Court Flower Show last year. I did what I was advised by standing my Lilies on a pot and removed it in the winter but I have not seen any sign of them growing.

A. Well contrary to what we all think, we always get a lot of sun in early spring and often through till the end of May.
Now if your lilies are to flower well, then they need a lot of sun, so positioning the pond as you say is correct. However Lilies do not show at the water surface till May, or a little later in some parts of the UK. I am also sure your Canadian Pond Weed (*Elodea sp.*) will be seen at the water's surface very soon.
When all this happens your pond will clear very quickly, in fact all your plants may grow quicker than you wish. So in the meantime get your pump working well, keep the filters clean, as the algae will block them very quickly. If you have a natural pond with no pump you will have to be patient, but do not keep changing the water as fresh, well aireated water will only increase the algae growth.

Q. Three months ago I joined a fish club, they are all very nice but they know so much more about fishkeeping than me, I feel it is difficult to ask them for advice and show myself up. However after talking to one member I brought six goldfish that he said was "home bred" but also added it was too early " to put them out ". Can you tell me what he means !

A. Home bred Goldfish will have been reared in doors, so don't put them in your pond till the summer sun has raised the temperature to which they have been kept indoors. Fish club members are very helpful so don't hold back they are all there to help new aquarist to our hobby ____ so go on ask!

Synopsis of Filtration

by Alan Benson

PART ONE - The Basics

Editor: It was while I was looking for articles, that I came across this work by Alan Benson who died last year. I have checked with Dick Mills who believes that this work has never been published. In true Alan style it is well detailed, so the full synopsis will be in four parts. I would like to thank Alan's wife who help him with this documentation.

The following work was based on public questions and reactions at some 12/14 aquatic shows throughout the country, combined with associated questions and answers raised through the medium of the F.B.A.S. and its member clubs.

The original articles were written for the hobbyist in an attempt to clarify the mystique that still tends to surround this subject.

The documentation is split into sections based upon the articles as follows

1. Raw Material
   Under Gravel Filtration
2. General Introduction
   Pumps and Filters
3. Biological Filters
   Ultra Violet Filters

AQUATIC FILTRATION

Any talk on Aquatic Filtration must of necessity be a compromise. Should it be aimed purely at the hobbyist, if so then should it be explained in terms of a simple freshwater Tropical Aquarium, a more sophisticated Marine Set-up or the current trend of High Tech Koi Ponds (although these more realistically should be included under the general "Coldwater Ornamental" heading)

Alternatively do we start from the viewpoint of Aquaculture, the highly scientific laboratory techniques of the Marine Biologist or even the routine operational procedures of the Water or Sewage Engineer?

Settlement Sedimentation, Mechanical,Chemical,Biological, Purification, Clarification, Pump Fed, Gravity Fed, High Pressure, Low Pressure, Centrifugal, In-Line, Centripedal, Under Gravel, External, etc.

Is it really that difficult and complex to maintain the life support system of your fish?

The straight answer is NO! Leave the mystery and mystique to the Magic Circle, leave the formulae and mathematics to the scientists and concentrate on what you need to know to enjoy your hobby and care for your fish.

The most important thing to understand is that filtration is not directly for the benefit of your fish. It is in the majority of cases for your personal benefit, to enable you to keep far higher densities of fish in a given volume of water than nature ever intended. In this respect your aims are exactly the same as the intensive Commercial Fish Farmer, who has been utilizing the basic techniques for years.

Here it is emphasized that none of the above is intended to arouse controversy, merely to concentrate the listener's attention to the amount of jargon that has been intentionally or unintentionally built up around what is basically a simple operation. If you are a Water Scientist, Marine Biologist or similar, then these discussions are not for you.

What do you want to know? Would a diatribe aimed at the experienced Aquarist be of any use to beginning Koi Enthusiast? Do you really want to keep your pet Goldfish in a sterile environment more suited to a local isolation hospital?

The Raw Material

As pond filtration is utilised to maintain water quality in a pond environment, on the principle that if you manage the water then the fish will manage themselves, we cannot end a discussion such as this without a look into basic raw material ---- WATER.

Broadly speaking, water supplies are restricted to:

a) Domestic Water
b) Collected Rain Water
c) Streams and Waterways
d) Withdrawal from Water Table

First and foremost, water authorities have a mandate to supply domestic water suitable for human consumption, by no means suitable for maintaining aquatic life support systems.

Until comparatively recently, the only purifying agent we had to worry about was basic Chlorine, which heavy aeration or even spraying through the air could normally be relied upon to dissipate. Over the past few years there has been a changeover to Chloramine, a substance which not only doesn't

dissipate but tends to collect in a fish's system reaching toxic levels in a very short time.

Similarly, various heavy metals and other substances in quantities harmless to the human body are present in domestic water and tend to stress the fish making them more susceptible to disease.

Take these facts, together with the ever present headlines on what the farmer is putting into the water table, the increase in acid rain syndrome, various radiation leaks, decrease in quality (!) of sewage outlets and so on and so forth and it becomes very apparent that the serious fishkeeper should really do something to ensure that the poisonous cocktail which we can apparently drink with immunity receives a modicum of purification before we subject our aquatic pets to its effects.

In general one should look to the aquatic sphere when buying filtration units, as these have been designed by fishkeepers for fishkeepers and can thus be relied upon to do a useful job.

Domestic units can be considered reasonably safe for aquatic use if they are of a Membrane type construction, a wary eye should be kept out for "Carbon Based Units" containing Silver Impregnated Carbon for anti bacterial purposes -- this is another toxic substance which collects in a fish's system.

A general principle for domestic water supplies for aquatic use would therefore appear to be "Can't trust it, purify it"

Two separate incidents in the past will emphasize the point that you can't be too careful with your water units.

The first involved a hose pipe left laying full of water for some weeks in the height of summer; come top up time, a nameless client sticks one end of the hose in the pond and turns on without flushing out the hose resulting in the death of some 20 Koi. Remember flush the hose pipe first!

The second was very similar but involved a home-made carbon based unit unused for several weeks and again flushed straight into the pond with similar effects. Remember, it doesn't have to be an outside villain from the Water Board, a moment of carelessness and you are the villain! HAVE A NICE DAY!

Undergravel Filtration

In the early 70's when Koi first became readily available in the U.K., the obvious solution was to plagiarise the under gravel aquarium filters most commonly used in aquaria.

The most popular consisted of a grid mad of 1¼" or 1½" waste pipe, perforated with ¼" holes at 2" - 3" spacing placed in the bottom of the pond under an 8" - 10" layer of pea gravel with a pipe extended above the gravel from the centre of the grid. This pipe was then connected to a pump, usually a domestic central heating circulator, which when switched on, drew water down through the gravel, cleansing it of most physical debris and returning it to the pond via a waterfall or similar. Whilst not generally appreciated at the time, the gravel also provided a large biological bed once matured.

For very valid reasons such units gradually went out of favour in the Koi scene, being replaced with more sophisticated external units adapted from both Aquarium and Commercial Fish Farming spheres. The concept was sound and I have personally run such systems in well stocked Koi ponds over considerable periods without trouble. In general, problems arouse due to lack of maintenance rather than any basic flaw in the system and with the rise in popularity of Water Gardening, should certainly be considered as an option when placing a semi-natural pond in the middle of a lawn. It will enable you to maintain higher stocking levels of live stock without the need to camouflage those obtrusive black boxes.

We have apparently gone the full circle, the Spider Filter is in fact identical to designs of many years ago.

Whilst I have never found the need to experiment with it, common sense indicates that it would not be prudent to use such a system in conjunction with an Ultra Violet clarifier. If UV levels of clarity are required why not reverse the flow of the system, put a small mechanical filter in line to remove flocculated algae from the circuit and pump the clarified water up through the gravel, which would now act as a large unobtrusive biological bed, the best of both worlds, maybe.

So you can see that to the water gardening hobbyist, simplicity can sometimes provide the answer without recourse to the hype and sophistication encouraged by the more specialised enthusiast.

Having possible got your attention, I now will answer a few of the common inquiries:

1. Mechanical Filtration

Mechanical Filtration is basically the removal of solids and physical impurities from the pond or aquarium water by means of sedimentation, settling of the use of some method of physical straining (media) to achieve clarity to enable you to see your fish. This will not on its own necessarily provide the best environmental condition for fish.

2. Biological Filtration

Biological action is not in fact filtration but purification and makes use of naturally occurring Bacteria to remove toxic waste products and other chemical impurities from pond or aquarium water and thus safe-guard the health and well-being of your fish. 'CLEAR water is not always HEALTHY water!'

Most filtration media have one main function (Mechanical or Biological) but there is usually a degree of both in any mature filter.

3. Ultra Violet Units and Sterilizers

Ultra Violet Units, used correctly are Sterilisers and are capable of 99.9% sterilization of water, they **will indirectly clear algal growth** (Green Water) in pond or aquarium and have a place in practical fishkeeping if used correctly. UV Light can be dangerous and such units should be used with care and discretion. Similarly but not so generally known are OZONE generators which utilise high frequency UV to generate ozone which unless properly controlled and dissipated can be just as effective in removing your fish as it obviously is all the potential nasties at which you aim it !

Whilst I will be concentrating on Pond Filtration, the same principles apply to Aquaria.

Zeolites, Activated Charcoal, pH Buffers, other commercially available chemicals all have a use in practical fishkeeping but my personal recommendation is to 'complete the basics' prior to adding these sophistications to your filter circuit.

These are the basics, the sophisticated hardware is merely utilized to achieve the same objectives via another route.

Next edition of the Bulletin, Alan answers the most commonly asked questions, particularly from enthusiast new to the hobby.

SPRING IS IN THE AIR
Les Holliday

Gauging by the size of the **Hagen Laguna Advisory Service** post bag, spring is no longer the time when a young man's fancy turns to the opposite sex but into the garden and its promise of a brand new pond season. It seems that the warmer weather and longer days have inspired many of you to look for simple and effective ways of introducing and managing water in your garden.

It's only natural, of course, that we have also received the usual rush of letters with utterances of woe and doom from those first brave souls venturing to poke their noses out of the back door and view the winter-long neglected water garden. Typical of these are the following:

Over the past couple of weeks a number of the fish in my pond have died. As the weather was quite mild last autumn they were fed well into November and even through the winter during mild spells. I would have thought that my fish would have built up ample reserves to bring them through the cold weather. What do you think happened?

It's not unusual around March and April for some losses to occur with pond fish as any entering the winter period that were sickly or undernourished usually manage to survive the coldest winter months as they remain dormant. They only fail to revive when temperatures rise.

Feeding late into the autumn and at mild times during the winter, although seemingly a good strategy, can also easily lead to disaster. Mild weather can stimulate fish by raising their metabolism and encouraging them to feed. If temperatures then suddenly fall, any intake moves very slowly through the digestive tract. This undigested food can start to decompose in the gut leading to a wide range of ailments from internal ulcers through to septicaemia due to pathogenic strains such as aeromonas and pseudomonas bacteria, which are always present in the water.

It's better, therefore, to allow fish to rely on stored fat through the winter and follow the advice of the experts who usually recommend not feeding between October and the end of March. Feeding well into the winter could have been the primary cause of this correspondent's losses. What's more, if several fish were lost over a short period and these deaths were left undetected the build up of ammonia could easily have killed otherwise healthy fish.

A similar plea we often receive at this time of the year is:

I am finding dead, partially decomposed, fish on the surface of my pond and there also is a thick oily film forming all over the pond. What do you recommend?

These are classic signs of a complete breakdown in the water quality of the pond due to decomposing organic matter. If a pond is left through the winter with lots of dead leaves and other decaying plant material, the balance can soon suffer. Most of this dead material inevitably sinks to the bottom of the pond where the water is usually warm enough for bacterial decomposition to take place. Unfortunately, low oxygen levels often lead to anaerobic conditions, which can create poisonous gases such as sulphur dioxide to form.

Take this scenario a little further and add a cold spell when the pond freezes over and these gases can become trapped and accumulate in the air space beneath the ice, unable to be liberated into the atmosphere. Large numbers of the fishes in the pond are likely to be killed by this lethal cocktail of poisonous gases and if left unnoticed will, in turn, decompose and further foul the pond.

Good housekeeping the autumn before is, of course, the answer as all dead and dying material from the margins and floating plant material such as lily leaves should be removed as soon as these accumulate. A good strong skimming net will effectively clear away surface material and can be used to clear leaves from the bottom of the pond also. It's amazing how much debris and leaves blow into the pond from surrounding trees and it's worthwhile, if the pond is not too large, to cover it over with chicken wire or polythene during leaf fall to prevent leaves fouling the water. Keeping an area of the pond free from ice during really frosty periods through the winter is also very important. A pond heater is the best method but a small area of ice-free water can be created by standing a pan of boiling water on the ice and allowing this to melt through. Alternatively, just float an empty plastic soft drink bottle, anchored upright by attaching to a stone, to provide a small opening through which gases can escape.

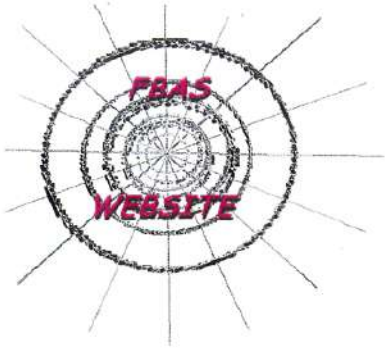
A complete pond overall is obviously necessary following this kind of episode including emptying the pond and clearing away all dead material before re-filling with clean tap water treated with a de-chlorinator such as **Laguna Water Prep.**

Hopefully, though, your pond has come through the winter reasonably unscathed and water temperatures should now be approaching that all-important 5°C (41°F) level which truly heralds the spring. Fish that have coped well with their winter fast will be showing interest in feeding and it's really crucial to encourage them to feed once they have become active to avoid any springtime losses.

You may have some difficulty in persuading fish that are weak and lethargic to initially feed on dry foods and live foods such as maggots or earthworms will often trigger off a feeding response wriggling temptingly before them. A good quality processed food though is the way forward to ensure you are satisfying full nutritional needs. **Laguna Goldfish and Koi Foods** are ideal for this time of the year, as they have highly advanced formulations based on many years' knowledge and expertise in producing high quality aquatic foods. They are well balanced nutritionally and fortified with multi - vitamins including stabilised vitamin C, an important food supplement in the spring. Pond filtration is not as efficient in cool springtime conditions but as **Laguna Foods** contain much less bulk than other foods this results in less waste and minimum impact on water quality.

A good tidy up to the surrounds of the pond is also called for. The bog garden will benefit from removal of any lingering winter debris and a mulch of well-rotted compost can be applied. Avoid using fertilisers on a bog area which is connected to the pond as these can easily be released into the water and create algae problems. Marginals should also be tidied up and any requiring splitting and re-potting can be attended to. A little bit of good housekeeping is also required to bring water quality in the pond up to par. The first priority is to ensure that the filtration equipment is working efficiently. Give the media in the biological filter chamber a good rinse in pond water and wash any mechanical sponge filters in the system to make sure they are not clogged with debris. If you have had your pump raised towards the surface for the winter this can now be lowered into its permanent summer position. Remember to raise it on bricks rather than directly installing on the pond bottom to help prevent silt blocking the inlet strainer sponge.

Dose the filter and pond with a good biological formulation such as **Laguna Pond Detox** to build up beneficial bacterial populations and effectively remove organic wastes and you should see a vast improvement in your pond without any more effort on your part over the next few weeks.



In case there is anyone out there who does not yet know – the hot news is that the FBAS now has an official website up and running. This can be found at www.fbas.co.uk. The site is still in its infancy and I am learning more and more about it as I go along. When I started, a few months ago, I knew absolutely nothing about publishing to the Internet. There is still a lot more to learn, but at least there is something there to advertise our presence.

The primary purpose of this site is as an additional service provided by the FBAS to its member societies and, therefore, to the individuals belonging to those societies. If there is anything you would like to see on the site or if you have any ideas for improving or enhancing it then please let me know and, if it is possible or practical, it will be done. If any member society has their own site and wishes to link to the FBAS site, just let me know, provide me with a copy of your badge or logo together with your web address and I will put a link to your site on the Member Societies page. All we ask is that you provide a return link on your site to the FBAS site.

One of the goals I have set is to make the site more educational and informative and for this, I need the help of you, the reader and fish keeper. Why not jot a few lines down about your favourite fish species or an item on that last spawning you had? Anything, in fact, which may interest fellow aquarists and enhance the information available on the site. Send it to me by any means that is convenient to you, for example e-mail, floppy disc, typed or hand-written or even jotted on the back of a cigarette packet (joke). If you send a computer file either on floppy disc or by e-mail, it is best for me in rich text format (.rtf) or Word Perfect (.wpd) although I am able to open some other files including Word 97 (but not later versions of Word).

It is nice to be able to say that I have already had a few enquiries generated by the site from people who were seeking clubs in their areas and I have, in most instances, been able to put them in touch with their local clubs. This is another, very important aspect of the site which I hope will continue to evolve.

If you have any questions or suggestions regarding the site, do not hesitate to let me know:

e-mail:
Webmaster@fbas.co.uk
Fax: 01983 613575
Snail mail
Mr Les Pearce (FBAS PRO)
44 Weeks Road
RYDE
Isle of Wight PO33 2TL

Bracknell Suffers a Loss

We regret to have to report the loss of a past FBAS Council Member and of Bracknell A.S.

Maurice Carter, who passed away recently, was a very active Bracknell member during the 1960-70s. An accomplished fishkeeper, he soon became connected to another Bracknell 'legend' at that time, the Jordan family one of whose daughters, Gillian, he married.

Over the years Maurice played his part for the Federation and was its 'Ties' Squares and Badges Officer' (now 'Merchandising Officer). Serving the Federation was second nature in the family, as Les Jordan, Maurice's father-in-law invented the Programmes Aid Booklet (No 7), which eventually evolved into today's Yearbook.

Through Maurice's connections with the Mars Company, the FBAS was introduced to the originators of 'Aquarian' fish foods, which led on to the lasting relationship between Aquarian and the Federation.

We occasionally caught up with Maurice at various Trade Shows, where he was a representative for a pet-related Company, and found that he had since re-married and had become a father to two children. Sadly, once people drop out of fishkeeping's social whirl, it is difficult to keep track of them but we know that all that knew Maurice would wish to join us in extending our condolences to Zoe and Maurice's family in their loss.

Alan Titchmarsh goes ***WILD !***

A pond is more than just a charming feature it's also a haven for wildlife. The finishing touch for any natural style garden is a pond, but if you yearn for the untouched by human hands look you can't just leave it to nature.

A wild pond looks wonderful, but don't confuse "natural" with "easy", because pond building is nothing of the sort. There is a fair bit of digging and hauling required, so phone a friend, it's a two person job at least. The end result should suggest a haunt of coot and heron, not a hardware convention, so forget paving, fountains or a rockery and think pebble beaches, boulders, timbers and wild style water plants.

The proper place for a pond is out in the open. Sunlight is vital for pond life and, without it, a lot of water plants will not flower well. Under tress, you just end up with sludge.

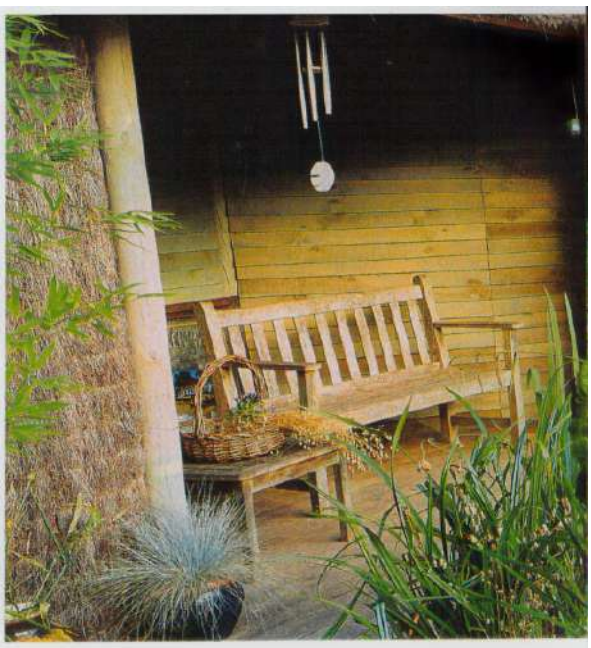
"Put a pond where you can see it", people often say, but a natural pond wants a wild setting a little way down the garden. Don't worry if you have to make a special trip, it is better for the wildlife because birds, toads and hedgehogs feel more inclined to turn up when they are not disturbed.

But first things first. Start by marking out the shape. If possible, fit your pond into the contours of the ground so it looks as if rainwater has collected there naturally. If your land is a bit flat then make a generous, informal, ink-blob shape. Don't dig a hole that looks like a meteor crater. It needs shallow, sloping sides dipping gently to the deepest parts. Make the middle at least two feet deep, or more if it's to be a big pond.

Where you want a pebble "beach", build a flat platform a few feet offshore to stop the pebbles rolling down the slope, and if you want an area of boulders or a log-faced bank, "cut" a steep face to fit them against. Leave some level places on the bottom of the pond at the right depth to stand baskets of water plants later, it's less bother than carving out shelves round the sides like a conventional pond.

Take care that the edges of the pond are level, then spread soft building sand over interior as padding, it stops stones poking through the liner. In a site surrounded by big trees, like mine, it's worth buying a proper pond underlay as it is tough enough to stop tree roots making holes.

Now for the liner. Use the thickest grade butyl you can find, as the better the quality the longer it last, 10 years or more, easily, for a top notch liner. To fit it, stand one person each side of the pond and open the liner carefully over the hole so don't disturb the padding. Let the fabric fall naturally in place, then ease out the worst wrinkles while you fill the shape with water from a hose pipe. As the weight of the water flattens the liner into the nooks and crannies, "tweak" heavy folds out round the edge, but don't fuss. When the pond is full of water, you'll be able to see how much spare liner sticks out, so trim the excess. Leave a border about 18" wide, and hide it



*Editor: The Bulletin would like to thank **Sunday Express** magazine for their article on ponds by Alan Titchmarsh. Alan, Charlie and Tom of Ground Force have been such good friends to the water gardening enthusiast with their coverage of water features in the BBC program. They have spoken to FBAS helpers and given support at summer gardening shows on many occasions. You can read Alan's gardening tips every Sunday in the **S Magazine free with the Sunday Express.** Pictures: Garden Picture Library (Daily Express).*

HIDDEN DEPTHS to ALAN TITCHMARSH'S POND

A POND IS MORE THAN JUST A CHARMING FEATURE - IT'S ALSO A HAVEN FOR WILDLIFE.

Alan Titchmarsh 24/3/02

under a few inches of soil, turf or pebbles which you then run down into the water to make your "beach".
Here's the clever bit. Leave the hose running until the pond overflows, and you'll have a wonderful damp garden around it that will get topped up each time it rains. Dig well-rotted organic matter into the area to enrich the ground. Moisture-loving plants such as hostas and primulas will love it, as will true bog-plants such as the skunk cabbage and marsh marigolds.
When it comes to choosing plants to grow in the pond itself, go for cultivated kinds that grow in baskets. They'll be on sale at this time of year. Marginal plants need to stand in water deep enough so that the tops of their baskets are 5/20cm(2/8") below the surface. Water lilies need deep water closer to the middle.
They'll be out of arms reach, but there's a knack to planting them. Thread a rope trough each side of the basket and, with a helper at each end, lift it over the pond, lower it in, then let go of one end so you can pull the rope out again. *It's easy when you know how.*

Plants for the pond:
Water lilies like "James Brydon" will not swamp a smallish pond. Where

more space is available, choose the larger *Nymphaea* "Gadstoniana".

Floating plant *Hydrocharis morsus*. Frogbit is a small native plant. It looks like tiny water lilies linked by threads. *Stratioles aloides* Water Soldier is chunky with spiky leaves and underwater counterweight. Marginal plants *Iris* Holden Clough is a compact version of the Yellow Flag with tawny and yellow flowers.
Sagittaria sagittifolia produces clumps of large arrowhead shaped leaves and stems of yellow-centred, white triangular flowers in summer.

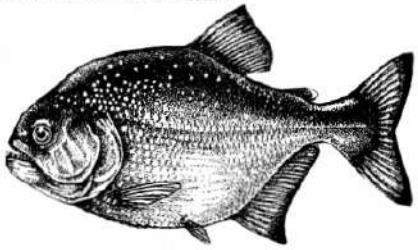
Oxygenators are essential to keep the water healthy. Throw bundles of water milfoil or water crowfoot, above all over the surface. Pebbles or small pieces if lead will help them sink. Pull out handfuls in summer if they start to take over.

Know your Fish

Serrasalmus nattereri (Kner) 1859

Family: Characidae
Genus: *Serrasalmus*, Subgenus: *Taddyella*. (True Piranhas)

Distribution: The entire Amazon Basin, Orinoco.
Common Name: Red Bellied Piranha.



Body and Colour: Body shape is not only elongated but deep, having a heavy robust appearance. Whilst the body is flat viewed from the front it is also broad. This view is dominated by the strong teeth and jaws. Dorsal area is steel grey with many tiny metallic gold-shining scales fading into a bright red belly and throat (Juvenile fish are covered with small black spots that fade away as the fish matures). Fins are smoke/grey with a dark/black border to the caudal. Anal fin being bright red. Distinctive black blotch on the flanks close to the gills.

Remarks: *Serrasalmus nattereri* and *S. ternetzi* are the only dangerous piranhas when being trapped or hungry. *S. ternetzi* found in the Rio Paraguay while *S. nattereri* is common in the entire Amazon Basin. These two species differ only in the form of the body, *S. ternetzi* having a more arched dorsal profile. Both the dorsal and adipose fin distance is shorter than that of *S. nattereri*.

Controls on the Keeping or Release of Non-Native Fish in England and Wales

New inclusions are likely to be made to the 1998 Order on the introduction and keeping of non-native fishes.

Whilst the Federation has kept abreast of developments, proffered its views and, where justified, may agree with certain recommendations it is obligated to inform Member Societies of their responsibilities to the 1998 Order.

Notices waiving host Societies' responsibility for exhibitors not in possession of the necessary licence to keep any affected species on the bench could be displayed at Open Shows or included in Show Schedules. Show Organisers may ask to see exhibitors' licences where applicable or place a sticker - bringing attention to the 1998 Order requirement - on any exhibit containing an affected species.

A LICENCE IS NEEDED FOR ALL FISHES INCLUDING THOSE ALREADY IN YOUR POSSESSION ***NO MATTER HOW LONG YOU'VE HAD THEM***

Background

The spread of non-native fish species can have far-reaching and undesirable ecological consequences for animal and plant communities in rivers and lakes. Introduced non-native fish can have direct effects on native species; by predation or by upsetting the natural balance that operates between species. They can also introduce and spread diseases and parasites to which our native species may have no resistance. Zander and Signal Crayfish are good examples of non-native introductions that have already harmed native species. It is therefore vital that if we are to protect native species and their habitat and conserve the unique diversity of animal and plant life in our rivers and still-waters that we restrict the spread of non-native fish species.

Previous controls have not been entirely successful in preventing the unauthorised spread of non-native fish to many waters in England and Wales. New measures (set out in the Prohibition of Keeping or Release of Live Fish (Specified Species) Order 1998) have therefore been introduced to reduce direct effects on native fish and their habitat and to make it easier to prevent illegal movements of non-native species.

These measures **came into force on 1st November 1998** under the Import of Live Fish (England and Wales) Act (1980) and **make it an offence to release and/or keep** specified non-native fish species without a licence.

Species covered by the Order

The Order makes it illegal to keep or release any of the species listed into any water (including tanks and ponds) without a licence. The list includes non-native freshwater fish species already known to be present in the UK in the wild, non-native cold-water species being kept for ornamental purposes and certain other non-native species thought to have the potential to survive and possibly thrive in the wild in the UK. New species may be added to the list if these are considered to be a potential threat.

Who needs a Licence?

Any person intending to hold, keep or release any of the listed species is required to be in possession of a licence before obtaining the fish. Owners of waters in which non-native fish were kept or introduced before the new Order came into force should have applied for a licence by 1st May 1999. Anyone who has not yet applied is advised to do so as soon as possible.

All those wishing to keep the listed species, including fish farmers, fish dealers, wholesalers, retailers, hobbyists and owners of fisheries require an individual licence to do so. However, those wishing to keep Grass Carp, Sturgeon/Sterlet and Ameiurid (Ictalurid) Catfish in garden ponds and indoor aquaria (other than aquaria on retail or wholesale premises) are covered by a general licence and need not apply for individual licences. The general licence for Ameiurid (Ictalurid) Catfish will be reviewed in 2003.

A licensee must ensure that anyone to whom he wishes to sell or give any listed fish is first in possession of an appropriate licence, otherwise they may be committing an offence. Licence holders will also have to keep accurate records of fish movements. Other conditions may relate to site security, such as the fitting and maintenance of screens on outlets.

Licences will normally be issued for a single introduction of a single species, but multi-species and multiple-introduction licences can be issued to fish farmers and dealers, and will also be considered for fisheries on a case-by-case basis. Licences will generally be valid for an indefinite period, except where circumstances or conditions dictate. Licences will be issued free of charge by DEFRA or the National Assembly for Wales.

DEFRA, Room 316, 17 Smith Square, London, SW1P 3JR
Tel: 0207 238 3000 Direct line: 0207 238 5933 Fax: 0207 238 5938
E-mail: SH.FISHII@defra.gov.uk

Pumpkinseed — **Lepomis gibbosus**
Pike-Perch (incl. Zander) — species of the genus Stizostedion
Burbot — Ruffe

SPECIES COVERED BY THE 1998 ORDER (aquarium/pond fish in **bold**)

Common Name	*Species Name*
American Brook Trout	Salvelinus fontinalis
Landlocked Salmon	Non-anadromous varieties of Salmo salar
Pacific Salmon	species of the genus Oncorhynchus
Pacific Trout (excl. Rainbow Trout)	species of the genus Oncorhynchus
Steelhead	Oncorhynchus mykiss
Wels Catfish	**Silurus glanis**
Ameiurid (Ictalurid) catfish	species of the genus Ameiurus
American Catfish (or Black Bullhead),	including

Fathead minnow (or Rosy-reds)
Red Shiner
Bass species

Pimephales promelas
Cyprinella/Notropis lutrensis
(including striped species of the genus Morone Bass, White Bass and their crosses e.g. hybrid Striped Bass)
Micropterus dolomieu
species of the genus **Lepomis**

Small-mouth Bass
Sunfish (also Basses, Crappies & Bluegills)
Weather fish
Eastern Mudminnow
European Mudminnow

Misgurnus fossilis
Umbra pygmaea
Umbra krameri

Chinese Sucker (also known as Zebra Hi-Fin, Banded Shark/Sucker)
Common White Sucker
Blue Sucker

Myxocyprinus asiaticus
Catostomus commersoni
Cycleptus elongatus

Food Quality

by **Rupert Bridges,**

Tetra Information Centre

With the number of different brands available growing all the time, it is important to remember that there is more to a fish food than simply what's written on the packaging. More important is the actual quality of the diet, and this involves more than just its respective levels of protein, oil and vitamins.

So when selecting a food for our fish, how can we he sure that it is of a high quality; and more importantly what are the consequences if we mistakenly choose a poor quality one?

To answer the first question requires us to have some knowledge of the company that has produced the food and how they go about manufacturing and testing it. Tetra has a fifty-year history of producing high quality fish foods for the ornamental fish industry We also operate the largest commercial research and development laboratories in the world, for testing and improving ornamental fish foods. This means that our foods are not only well researched and manufactured, but that they have also proven themselves to be the best of their kind. Tetra's facilities are unrivalled by any other ornamental fish food producer, and this has led to the quality of our foods being recognized by fishkeepers world wide.

Quality vs Quantity?

We are obviously very proud of our fish foods, but what are the benefits to your fish of feeding them on a high quality Tetra diet? The answers that there are many benefits, some less obvious than others.

A high quality food will be more digestible, meaning that the nutrients in it are efficiently utilised by the fish, leaving less undigested waste.

Less waste means less water pollution, and consequently less tank maintenance. Poorer quality diets will create excessive waste, clogging up gravel and filters, encouraging the growth of algae and the proliferation of potential harmful bacteria, and adding to the ammonia load.

Another advantage of efficient food utilisation is that you will actually end up getting better growth rates, colour, health, and reproductive success from your fish. This is because with a high quality diet they are getting more out of a given quantity of feed than with a poor quality one. For example, if two diets both contain 40% protein (40g per 100g of food) you might think that they are equally matched. However, if one is a good quality diet and is 90% digestible, and the other is a poor quality one that is only 60% digestible, the figures start to mean less. In the high quality diet the fish will be able to utilise 36g of protein for every 100g of food fed, whilst in the poor quality diet they will only be able to use 24g for every 100g fed. Clearly the fish fed on the high quality diet are going to have more protein available to them for growth, reproduction and so on. In order to achieve the same level of performance with the poor quality diet, you would have to feed at least 50% more of it, so are you really saving money with cheaper foods?

Of course as will as leading to more waste in the tank, a poor quality diet may not provide your fish with the correct nutrition. Deficits or absences of key nutrients and vitamins can lead to decreased health and vigour, and by the time this is realised it can be a struggle to bring fish back to their former glory.

Quality Requirements

Knowing the advantages of feeding a high quality food to our fish, it is also useful to be aware of some factors that go towards determining the differences between high and low quality diets.

A high quality food will have the correct balance of nutrients to ensure that it is efficiently utilised by the fish. Balancing nutrients is important, as the quantity of one dietary component can affect the way in which another is used. For instance, there is a great deal of interaction between the oil and protein in a diet. Protein is used for new growth, as well as acting as a source of energy. However, when protein is used for energy it results in ammonia production. oil is an even better source of energy for fish, and if presented in the correct proportions it can reduce the amount of protein that is used for energy thereby lowering ammonia production. However, if too much oil is present the fish will not be able to use it effectively. There are many examples where getting the correct balance of nutrients is important in creating quality fish food.

The ingredients used to make the food are also critical in determining its eventual quality. There are many different potential ingredients that can be incorporated into a diet in order to provide the fish with its dietary requirements. Using ingredients that do not contain the right mix of nutrients, or that contain them in an inaccessible form, will decrease diet quality. To illustrate this we can take the example of protein. Proteins are made up of sub-units called amino acids. Amino acids are the building blocks that fish use for growth (through the synthesis of new proteins), as well as being crucial for a multitude of other physiological processes. There are ten different amino acids that have to be included in fish diets in order for them to remain healthy. Different sources of protein contain differing levels of these amino acids, and some maybe lacking in one or more of them. It is therefore very important to select ingredients that are high in all of these essential amino acids, otherwise the quality of the diet will be compromised. Vegetable and plant proteins in particular are often lacking in essential amino acids, and so if they are to be used it is essential that they are supplemented with those that are missing, either artificially or by haling in another protein source. High quality diets such as those produced by Tetra, contain the correct mix of all the necessary nutrients, as well as using the best available ingredients. Poor quality diets that do not may not only be less digestible, but they may also potentially lead to dietary disorders.

The final major determinant of food quality comes with the actual manufacturing process. The way that feed ingredients are treated and processed can dramatically affect their availability to fish (and thus there digestibility). To illustrate this we can take the example of ingredients derived from plants. Many plants contain anti-nutritional factors, which actually inhibit the digestive system of the fish. For example, untreated soybean meal contains five protease inhibitors. Protease's are enzymes that are essential for the efficient break down of protein. If these inhibitors are left in the food then they will severely reduce its quality. However, by using the correct processing techniques these anti-nutritional factors can be removed, making the ingredient perfectly suitable for inclusion in the diet. It is therefore very important to thoroughly investigate a feed ingredient before it is used, and then to determine exactly how best to process it before using it in a fish food. Tetra's formidable research and developmental capabilities allow extensive analysis of ingredients and,

because we have a manufacturing plant specifically dedicated to making ornamental fish food we can use specialised processing techniques to ensure that all ingredients are optimally utilised by fish.

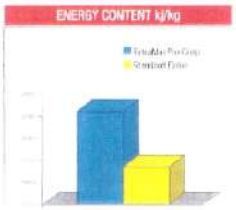
Tetra's latest fish food, TetraMin Pro, is testament to this ongoing dedication to researching new manufacturing and processing techniques. Traditional flake foods have to heated to over 130°C during the manufacturing process, which results in the destruction of some of the nutrient content (in particular vitamins). This in turn decreases the digestibility of the food. TetraMin Pro is manufactured using Tetra's patented new low - heat process that only requires the food to be heated to 75°C.

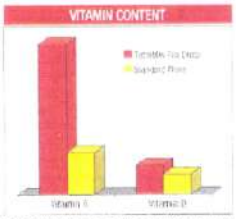
This results in a greater preservation of nutrients, energy and vitamins, and increases its digestibility.

It also contains L-Carnitine which improves the efficiency with which its nutrients are utilised.

In fact, TetraMin Pro reduces water pollution to the lowest level of any aquarium food.

So when choosing which fish food you are going to feed to your fish, remember that they are not all the same, and that it can have a real effect on the condition of your fish and the quality of the tank environment.





When choosing fish food, remember they are not all the same, this can have a real effect on the condition of your fish and the quality of your aquarium environment.Email (www. tetra-fish.co.uk)

TetraMin

COMPLETE FOOD

FOR ALL TROPICAL FISH

The Brand name of TetraMin is what has been associated with quality fish food for many years, however the slogan *complete food for all tropical fish* has not always been there!

Was it either of the following ?

1. **Never Kill's Fish**
2. **Never Clouds Water**
3. **Never blocks Filters**

If you know the answer fill in a post card, or e-mail the Editor at: malcolm@l-goss.fsnet.co.uk

Address.
25The Gowers
Chestnut Lane
Amersham
Bucks
HP6 6ER

The first six correct winners pulled out, will receive a

"Tetra supper Pack"

Know your Plants

Hygrophila polysperma (T. Anderson)1867

Distribution: India

Description: Cutting type plant having stems densely covered with leaves, Leaves oblong /oval being light green in colour. There is also a variegated form that has come from Holland in recent years.

Remarks: One of the easiest of aquarium plants to grow, requiring a temperature of 12 c. to 30 c. may be kept out of doors in the summer. Like many cutting type plants it requires plenty of light to stop it growing "stringy" . It is well documented that this very well known plants name can not be stated as correct! Many cultivators have never seen this plant flower, that would confirm its true identity.

What's in a Name

by Gordon Howes

I have been asked to write about taxonomy and nomenclature - the "scientific" naming of animals - in this case fishes, and about some of the reasons why names get changed, a constant source of irritation to the aquarist.

Although I am no longer a professional taxonomist I spent twenty years working on fish classification at the Natural History Museum (London) and in that time have come across most taxonomic problems, so I will do my best to explain in as few words as possible just what these problems are.

As you know, in order to communicate about any organism, plant, animal, virus etc. it is essential that everyone knows that they are talking about the same thing. So the agreed system based on that of Carl Linne (or Linnaeus) of 1758 is a two - name (Binominal) system. This is a genus name, always spelt with a capital letter, e.g. *Barbus* and a species name, having a lower case initial letter, e.g. *pallidus*. The names are derived from Latin or Greek terms and are printed in italic script or underlined to make them stand out in a text.

In the combination *Barbus pallidus* the name means that the species *pallidus* is a unique entity but it shares all the features of other species which unite them into the genus *Barbus*. So in effect, the name does more than just identify the fish. It is a statement about the genetic relationship of the species.

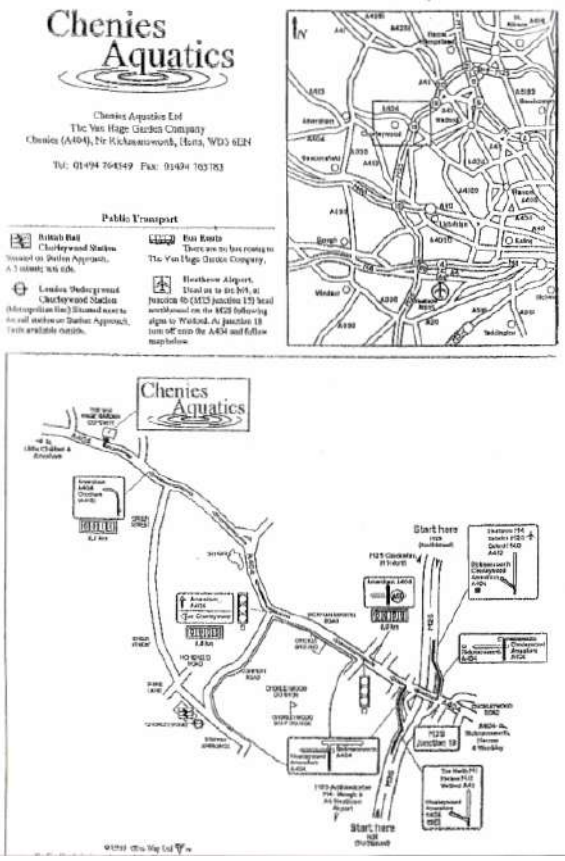
It is important to know the difference between identification and classification. Identification means just that, giving a name to the fish whereas classification is concerned with placing the species into a scheme of relationships. Here, I am only going to deal with the problems surrounding identification. The subject of classification will have to wait for another time.

Identification

When a zoologist identifies a fish he/she checks out various manuals and cross-matches with previous identified specimens until a "best fit" is found. Nine times out of ten the fish will already have been described (named) and it is simply a case of diligently searching the literature. If no identification is possible then the specimen may represent a "new species", i.e. one unknown to science. If this is so then the fish has to be described in an acceptable Zoological journal and the specimens deposited in an "available" museum collection. There are routine procedures for such descriptions which should include photographs and drawings of the specimens. In these descriptions you will come across words such as holotype, paratype etc. which are categories of the specimens, and I shall explain what I they mean.

Type Specimens

Suppose a new species is described on the basis of 20 specimens, then



one of these - a "typical" specimen - will be selected as the TYPE or HOLOTYPE, the remaining 19 are then know as the PARATYPES. In earlier times, the type concept was not so rigid as it is today and a species may have been described from several different specimens, from different localities collected at different times! In these cases they are know as SYNTYPES. Often, nowadays when a researcher looks over a number of syntypes they realise they don't all belong to the same species and that perhaps out of say, 6 syntypes only 4 are the species so named. In this case the researcher (reviser) will nominate one of these syntypes as the holotype but because it is done retroactively the nominated specimen is called a LECTOTYPE, the others PARALECTOTYPES.

Supposing somebody describes a species on the basis of a single specimen, a practise frowned upon nowadays but common in the past. Then suppose the specimen gets lost, it is extremely difficult, if the description is poor to determine exactly that species. In this case a researcher will select will select a type of what they think was the species described and this is then called a NEOTYPE. However, this can lead to all sorts of problems. In one case a worker nominated a neotype for a characid species and then later the original was found and the neotype turned out to have been wrongly determined and itself represented another species!

Synonyms and Name Changes

A synonym is another name for the species. Often in taxonomic works one sees a whole list of synonyms under a species name. Why is this ? Supposing somebody names a species *Barbus hunteri* then later somebody else names a species *Barbus browni*. Then along comes a third worker and realises that the author of *Barbus browni* had failed to spot the original description of *Barbus hunteri* and in fact both are the same species! Because *Barbus hunteri* was the first to be described (however badly) it takes priority and so *Barbus browni* is know as a JUNIOR SYNONYM.

This is the most frequent cause of species synonym. When a researcher "revises" a group of species he/she will almost find errors of identification or literature searching. In some cases workers may have independently described the same species under different names! In other cases it is simply our improved knowledge of species variability that makes us realise what were original described as two species are just population variants.

Generic synonyms arise through rather different causes but can upset a lot of people. I will give one example that has caused havoc. Several species of Salmon formerly included in the genus *Salmo* have now been referred to the genus *Oncorhynchus*.

Biologically and anatomically this makes perfect sense, all *Oncorhynchus* now occur on the western seaboard of North America and all *Salmo* on the Atlantic side and around Europe. There is excellent biological and biochemical evidence to support this generic arrangement arrived at by independent researchers. The trouble is that some so-called Trout are now regarded as Salmon and this has caused such problems with the fish marketing industry that a court case was brought, pending concerning the proper trade description of Rainbow Trout whose generic name has changed from *Salmo* to *Oncorhynchus* (biological evidence) and whose species name has changed from *clarkii* to *matsou* on grounds of name priority!

When a well known generic name is found to be the junior synonym of an obscure name which everyone has overlooked it is possible to make a special case to conserve the original name. The rules for naming animals scientifically are drawn up and administered by the International Commission for Zoological Nomenclature (ICZN) whose offices are in the Natural History Museum, London. In such cases as the conservation of a name then the ICZN Council make a ruling their decision being published as an opinion in the ICZN Bulletin.

Some problems can be difficult to resolve. For example, several species of Amazonian fishes described in the early 1800's by Spix and by Castelnau are know only from the illustrations they published. In such cases the "type" being an illustration is called ICONTYPE but has a debatable standing. It is now almost impossible to much these "icontypes" with any known species possibly because the artist embellished or neglected certain features. In such circumstances a case can be made to declare the species name a NOMEN DUBIUM and to place it on a "black list" of names which can no longer be used.

Sometimes (this has occurred in aquarist literature) a "new species" appears just as a name without any formal description. This is referred to NOMEN NUDUM. If the species does eventually turn out to be a 'new' one then a formal description is required to validate the species.

Yet one other reason why name changes occur is that a generic name may have been PREOCCUPIED elsewhere in the animal kingdom. No two animal species can bear the same binomen. Some times one finds that a generic name is already in use for an insect and so a new name NOMEN NOVUM must be given to replace it. Sometimes a name may be too close in spelling to another e.g. *Cyprinus* and *Cyprinis* in which case the junior name is rejected on the grounds of HOMONYMY.

I have set out an hypothetical example of typical synonymy which incorporates some of the problems given above. I hope these few examples give some idea of the problems surrounding the naming of fishes. I must emphasise that name changes are made only with good reason and not just for the sake of it and are usually the outcome of much research which leads to a more stable taxonomy.

Example of a Synonymy

Barbus hunteri (Gray) 1820

Genus	Species	Author's name	Date of description

When the authors name is in brackets it indicates that the species was originally placed in another genus.

Synonymy

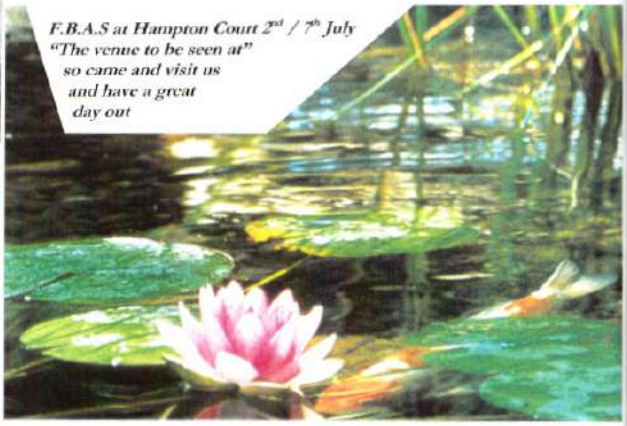
Cyprinus hunteri Gray 1820, Rec. Ind Mus. 20: 1-10 Journal name abbreviated with volume number and page numbers.

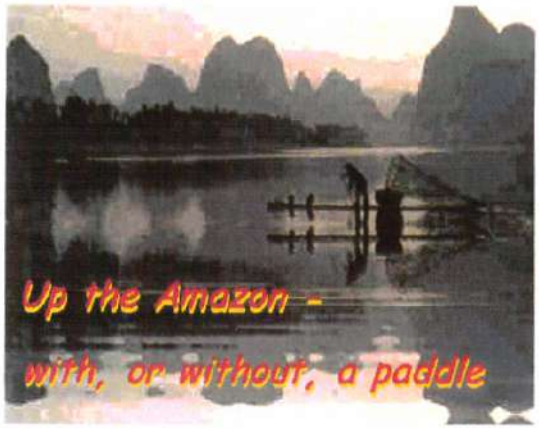
Capoeta dubia Buchanan 1830 Put into synonymy because Buchanan described it without realising Gray's species was identical.

Barbus hunteri Day 1840 (part, Indus) This entry means that only the Indus river specimens belong to *Barbus hunteri* the remainder of *browni* is still a valid species.

Barbus hunteri Davis, 1920. The comma after the species name means Davis was the first author to put *hunteri* into the genus *Barbus*.

?*Barbus grayi* Johnson 1990. The query mark means this is possibly the same species but the description is too poor to tell.





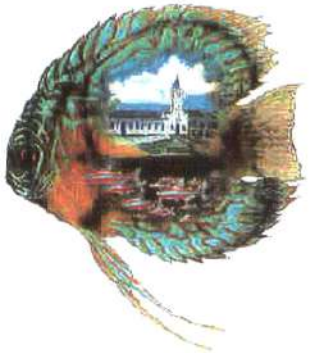
Talk to any fishkeeper and, depending on their personal interests, there are always one or two ambitions common to everyone. Scuba diving on the Great Barrier Reef, visiting the African Rift Valley Lakes or Fish Collecting up the Amazon. In recent years, any of the above have become lees of a dream but more of a reality.

Holidaymakers (whether fishkeepers or not) travel to the world's sunspots and regularly plunge into coral seas and watch the fish; countless glass bottom boats and even submarines provide a more comfortable viewing service for the less adventurous.

Sonia Guinane and Dave Tourle have written and lectured about their visits to Lake Malawi, and Derek Lambert has added the Amazon experience to his frequent Mexican collecting trips. So what's new? Well, next year (2003) could be your turn.

Here is an opportunity for you to join Dr. Labbish Chao, Ichthyologist and Professor at Universidad do Amazonas, Manaus, Brazil and his students on a collecting/research trip in Amazonian waters.

To give you some idea of what you'd be letting yourself in for, we're printing the itinerary of a similar trip which took place in 2001.



From: Paulo Petry
To: Members of the Y2K2 Expedition

This is an official announcement of the unofficial Wild Goose Chase Expeditions inc. Below you will find a briefing on the trip, our schedule, route and main activities. I have also included a checklist of items that you might consider taking with you, none of which are mandatory of course.

We will all depart on the same flight, leaving Miami on Jan. 23 at 10:00 pm and arriving in Manaus at 3:00 am. From the airport we will be shuttled to the boat to unload our luggage and rest until the morning. We will spend the day in and around Manaus where we can visit the famous Opera House, the downtown public market, the fish and fruits market, the Natural History Museum, to obtain souvenirs and get a feeling for the place. If time allows, we may be able to visit INPA, the research institution in Manaus that houses huge collections of Amazonian flora and fauna. Like the time on the river, this day will be flexible to take advantage of opportunities that might arise. We may also pay a visit to the shopping mall, the modern side of town, and stock up on hard liquor for the river trip,

since it is cheaper than at the Miami duty free shops!

We will be travelling with boat captain and Amazonian Renaissance man Moacir Fortes (also known as Mo or Marú). Mo is fun, flexible, and full of local knowledge, always enthusiastic and a fanatic fisherman. Moacir is a native Amazonian with a huge amount of experience on the river and is used to outfit trips for scientists. Some of his clients in the past were Sir Guilian Prance (former director of the Kew Botanical Garden), Scott Mori curator at NYBG and Kirk Johnson, paleobotanist at the DMNH. He speaks excellent English and several other languages. He will be accompanied a local crew of 3-5 deck hands and a couple of cooks. The food onboard is excellent (specially the passion fruit cake) and includes a lot of local fruits, vegetables, and fresh fish. The water is bottled and very safe to drink. Fruit juices are always available. The boat has a full cash bar, which has all sorts of stuff, and an unlimited supply of beer. If you want to purchase your beer in bulk quantities and take on the boat, there is no problem, since Moacir does not mind us bringing our own beverages. Nonetheless, the prices for beer onboard are not too bad, and you may consider just running a tab and not worry about it. We will be able to fit the trip to our objectives once we're underway on the river.

We will be travelling on the Victoria Amazonica, a 67-foot-long river-boat with double cabins and three decks. Each cabin has two beds (bunk bed style) and its own facilities including a toilet, sink, river water shower and A/C. There is also plenty of hammock space on the upper deck in case you like to sleep in the open and enjoy the forest noises.

We will depart from Manaus, which is situated at the confluence of the Solimões and the Rio Negro, on the evening of the 24th just after sunset. We will cruise up the Rio Negro to the city of Barcelos (450 km upstream the Rio Negro), which should take us about 28-30 hours. Just upstream from Manaus, the Rio Negro is 12 kilometres wide and looks more like the ocean than a river. On our way up we will cross 2 large archipelagos, Anavilhanas with over 200 islands and Mariuá with over 600 islands. On Saturday (Jan. 26) we will arrive in Barcelos early in the morning and spend the day between cruising the town and going out on a short river trip to get you used to the wooden canoes.

Saturday evening we will attend to the ornamental fish festival dance competition, in which 2 rival groups (the Cardinals and the Discus) compete for the annual title. From Barcelos we will continue to the mouth of the Rio Preto some time Sunday, where we will start our collecting.

A typical day on the river will begin with an early wake-up and a bird watching exploration in one of the three small, wooden boats that are towed behind the Victoria. Then we return for breakfast, load the sampling gear and head out to collect. We most likely will ask the cook to prepare a take out lunch in order to use up most of our time in the field. We'll return to the Victoria around 5:30 pm. The Mo hour is the sunset cocktail hour on the top deck and dinner is served after darkness falls, normally around 7:30 –8:00 pm. We will occasionally venture out late at night for sampling and night diving after armoured catfish and other night dwelling creatures. We will also spotlight for mammals, snakes and maybe catch a caiman. You sleep for a few hours - then it starts all over again!

There will be for sure a fishing boat commanded by Sandy Webb, who is responsible for our supply of fresh fish everyday. Whoever wants to join them is welcome. For the non-fishing folks, Mo and the crew will show you around the area and you can spend good part of the day in the water and sun bathing if you so desire. Short hikes can also be arranged through the close by forest. Depending on weather conditions and the group desire, we might setup camp in the forest for a night, to give you the chance to get your feet licked by a Jaguar during the night. Mo will have hammocks for everybody onboard, but we need to make arrangements to purchase mosquito nets. So, if you think you would like the experience of a night in the forest, let me know in advance.

Our main objectives are to carry out a rapid inventory of the fish fauna in the Rio Preto/Padauiri and the Erere, both draining the Guyana shield. The Rio Preto/Padauiri is interesting because of the different characteristics of the waters. The Preto has very black water, while the Padauiri has somewhat muddy waters. In contrast, the Erere has crystal clear waters and several endemic Tetras that I hope we get to see in their natural environment and acquire samples. I have several taxonomic keys for the fishes, cartographic maps and satellite imagery that I will bring along as well. During our journey up river Labbish and I will brief you on the work that we will do and the approach that we will take. We will basically use the sampling procedure that Chernoff et al used during the Aqua-RAP project. Sampling will be carried out using a multitude of gears and we will sample all the possible habitats, this include the river channel, forest streams, sand beaches, leaf litter banks, log jams, etc. We most likely will work 3 days in the Rio Preto/Padauari and 3 days in the Erere, before starting to head back downstream. I hope to have enough time for a 1-day stop in the area of the Jauaperi delta and go to a crystal clear stream called Cambéua, which we visited last year. Snorkelling at Cambéua is like being inside a huge aquarium, there are lots of cool fish in it.

We will be back to Manaus on the 5th of February, having a group dinner before catching the return flight on the early morning of the 7th back to Miami.

Next year's trip (2003) is being organised by Jim Forshey, the well-known American book collector and store owner. However, there is already a familiar face on the expedition in the form of Jane Lloyd, ex Sparsholt, who will be supervising any British participants.

You can get full details about the venture direct from Jim from his website or contact Jane via email.

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Last entries for the next edition

JULY 31st

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