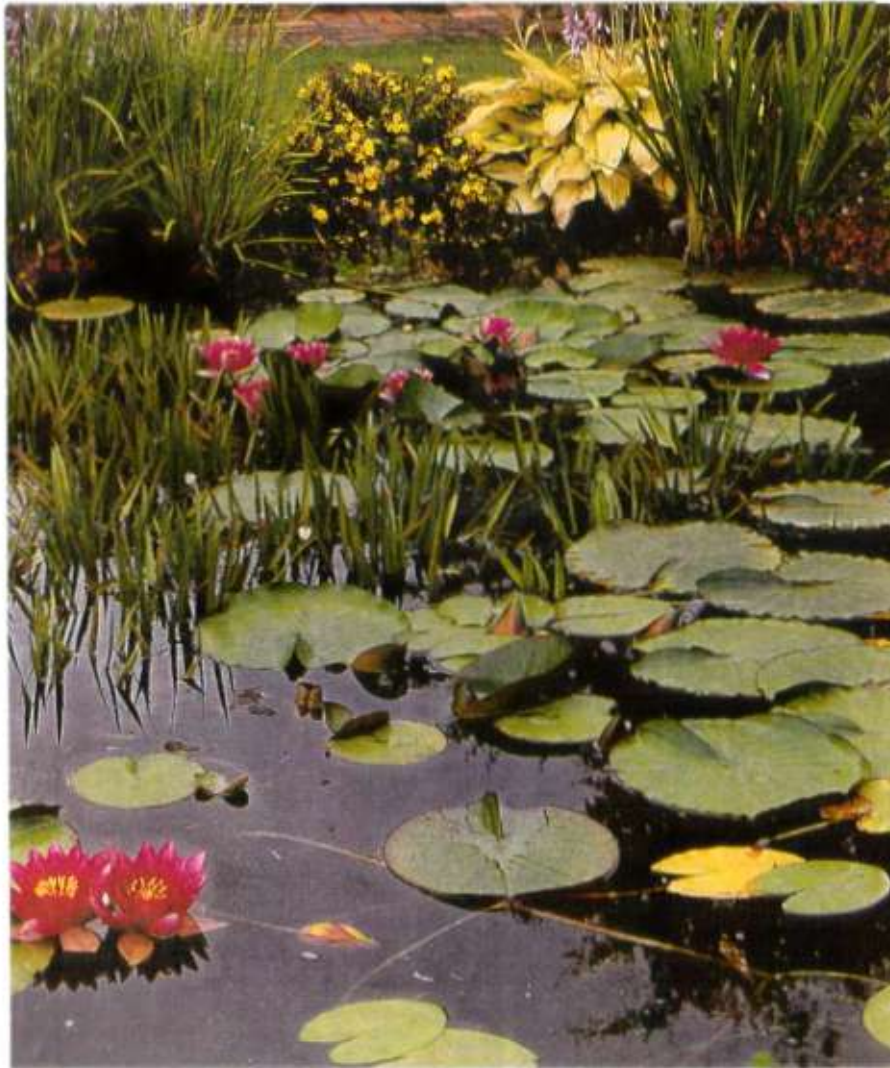


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FROM THE EDITOR

Welcome to the Federations Magazine, the number one hobbyist journal produced in the UK today. The "new look" magazine has been received so well within the hobby, it will now be available to the general public at this years top gardening shows, BBC Gardeners World Live at the NEC and the Hampton Court Flower Show. This edition of the "Bulletin" carries articles from three of our sponsors, adding to the quality and range of aquatic subjects in this edition. Along with articles from your selves I can only Thank you.

The Rolf C. Hagen article in the "Spring Edition" carried the NUTRAFIN MAX FISH WORLD COMPETITION with a closing date of 30th April, due to the lateness of the magazine this has kindly being extended to 31st July so please put those entry's in the post NOW and win fabulous prizes. (Photo copy your entry form and keep your "Bulletin" altogether")

For those of you going on holiday let me know your fishy tails (sorry about the pun) in the next issue read and see what Bob Esson and Dick Mills saw on there trip to Egypt, also what happened at Chelsea, NEC and Hampton Court with the rest of the gang.
Good Fish keeping.

Malcolm Goss

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ALL IN YOUR NEXT BULLETIN

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THE BIG ISSUE

A NEW WAY OF PLANTING IN JUNGLE CREEK

GROWING AN APONOGETON

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Pollution in the Aquarium

by
Tetra



Introduction: Pollution is constant threat to our fishes habitat in the worlds rivers and lakes. As aquarists at home whilst feeling sad at hearing news of mining, damming and industrial waste, we feel that there is very little we can do. However within the aquarium its all down to us. At best, polluted water may be seen with our fish being off colour or disinterested in feeding, but acute water problems can kill our fish outright.

Ammonia, nitrites, nitrate, carbon dioxide, chlorine, fluctuations in pH and shortage of oxygen in extreme cases are all forms of pollution.

Ammonia

Ammonia destroys the mucus membranes of our fishes and, when exposed to high levels of ammonia can be noticed in bleeding from gills of fins. Even higher levels our fish will show rapid movements and gasping at the water surface similar. With oxygen shortage or build up of carbon dioxide, fish exposed to these conditions will die very rapidly. A build up of ammonia is likely to occur in a newly furnished aquaria, where the process of biological degradation have not had time to become fully established. Ammonia is far more toxic in alkaline water, here "old" water where the pH has drifted to a markedly alkaline value ammonia levels can be high. Partial water change of

5

25% and up to 50% will be of help in the first instance. Stocking of too many fish or infrequent partial water changes in the more established aquaria are often the cause of the problem.

Nitrite

Nitrite in excessive amounts can be detected by rapid gill movements in our fish and many become "pop-eyed" in appearance. Anaemia develops and death is usually rapid. Nitrite poisoning can occur in newly set up tanks in which the biological degradation system is not yet functioning properly. Water that has added chemicals from disease treatments can also up the nitrite levels. Here again in acute cases a 25% to 50% partial water change is vital, however do not clean the filter at this stage. If at all possible, add a filter from an established aquarium and do not feed the fish for a few days. Measure the nitrite level once a day to ensure things return to normal.

Nitrate

Nitrate, the end product of nitrogen degradation only manifests itself as signs of distress. In high concentrations this can be seen in your fish that develop "pop-eye". Yellow colour water along with excessive growth of algae (place sample of aquarium water in a glass or jar along side the same with tap water as a guide). Nitrate build up is easily avoided with regular 25% water changes.

6

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Oxygen shortage

Oxygen shortage is still a form of pollution and in advanced stages fish are constantly at the water surface. Instant action can be taken by placing an extra air line operating vigorously. In the long term reduce the stock level of your fish and introduce more fully aquatic plants.

Carbon Dioxide

A certain level of carbon dioxide is always in our aquarium. Very high levels give our fish difficulties in balance, paralysis and disturbed breathing. Fish seen at the water surface will die very quickly and when dead have a highly coloured look. Carbon dioxide poisoning occurs in overstocked aquariums with also a lack of aeration and aquatic plants. Those using 002 diffusion equipment used to manufacturers instructions will not be at fault. However in acute cases of carbon dioxide pollution if 002 diffusion equipment is running, switch off equipment and aerate the water vigorously. As a preventive measure reduce fish stocks and stimulate the plant growth with more light.

Chlorine

Chlorine in gas form causes severe gill damage and leads to the fish dying from asphyxiation. We are well aware of chlorine in our tap water and many water authorities are

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chlorinating water supplies to an excessive level. In these situations a treatment of "AquaSafe" to new tank water will reduce the chlorine levels.

pH Fluctuates

When the pH level suddenly fluctuates to the acid end of the scale, fish gills may go brown. However a sudden increase in pH to a markedly alkaline value may cause reddening of the gills. Also there may be noticed an excess mucus secretion along with fraying of the fins. The fish may also appear nervous and dart around the tank or even try to leap out. Over feeding can cause a pH drop as can infrequent water changes. Excess natural sunlight can cause a marked pH rise where there are no fully aquatic plants growing. A unit shift of just one point on the pH scale is regarded as quite a jump in the living environment of a fish so gradual changes have to be made for their safety.

Some of the "tell tale" symptoms appear to occur in many forms of pollution and this is because many types of pollution overlap into each other. Also it is clear some forms even add to more forms of pollution, but above all it is under control. Water is our fishes life line we must not fail to give them the best.

Original article by W Renner for "Tetra" with introduction by M Goss.

9



GIVE YOUR FISH A WEEKEND TREAT

Pets enjoy an occasional treat and your fish are no different. Tetra have now come up with an exciting new innovative solution to delight your fish, by supplementing their normal diet with fresh natural food. Naturally people can be put off by the hassle of using frozen food and the mess involved with using real "live" food.

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Jungle Creek

Furnished Aquaria
6ft x 2ft x 2ft

Have you got fed up with those big Catfish or that Giant Gourami or even those large Cichlids? Why not turn that large tank into an *under water* creek with a habitat to match any marine reef scene. Furnishing a 6 ft aquaria with fully aquatic plants can cost a small fortune. But don't let that put you off, purchase the lower cost plants and add to them as you would add the numbers of fish. Give yourself at least a year to complete this project and be the envy of all your aquatic friends.

The substrate is of normal brown gravel with two pieces of bog wood placed towards the centre in the background as a focal point. Internal power filter place in the rear right hand corner with the flow being diagonal across the aquaria will add natural qualities to the aquarium. Those of you that use an external power filter, then have its entry of flow as that used with the internal filter. However the power of the flow should be gentle at best, too much a thrusting flow will reduce plant growth and in extreme instances will course some species of plants to die back. It is a good idea to place one of those plant back drops that can be brought from most aquatic retailers, these covering the rear glass of your aquaria will certainly help the overall appearance of your display in the early day and months while your plants get established.

11

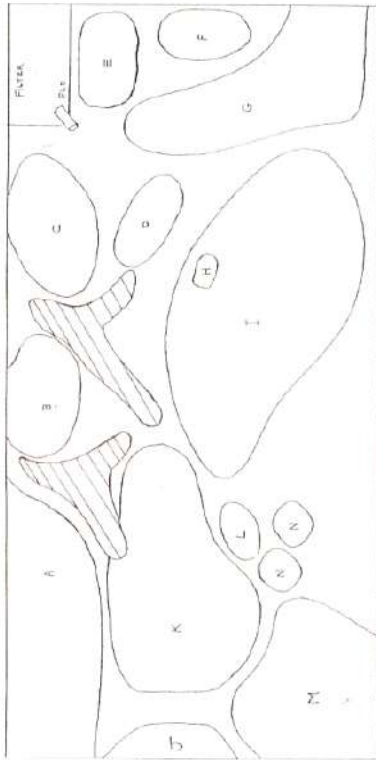
Fish for the furnished aquarium

- 10 *Carnegiella strigata* (Marbled Hatchetfish)
- 8 *Phenacogrammus interruptus* (Congo Tetra)
- 6 *Bedotia gayi* (Rainbow Fish)
- 10 *Hyphessobrycon erythrostigma* (Bleeding Heart Tetra)
- 40 *Rasbora heteromorpha* (Harlequin Fish)
- 10 *Petitella georgiae* (Rummynose Tetra)
- 10 *Barbus barilloides*
- 6 *Apistogramma cactuoides* (Dwarf Cichlid)
- 12 *Corydoras melini*
- 8 *Corydoras sterbai*
- 6 *Synodontis niqiventris*
- 4 *Peckoltia pulcher*

Petitella georgiae (Rummynose Tetra)



12



Echinodorus tenellus (Mart)

Plants for the furnished aquarium

- a Vallisneria spiralis
- b Echinodorus cordifolius (Radican)
- c Echinodorus amazonicus (Amazon Sword).
- d Cryptocoryne wendtii
- e Ludwigia palustris
- f Cabomba (Green)
- g Echinodorus schlueteri
- h Hydrocotyle leucocephala
- i Echinodorus tenellus
- j Bacopa caroliniana
- k Rotala macrandra
- l Nuphar japonica (Spatter dock) in Echinodorus latifolius (Dwarf Amazon Sword)
- n Cryptocoryne parva

After cleaning your aquarium and having it set up in your desired position, after all you will not be able to move this tank in a hurry. Place one of those laminated back grounds to the rear glass of the aquarium, choose a planted scene that will help the look of your set up in those early months while your plants become established. Every thing you do is on a grand scale and none more so than purchasing the gravel. Buckets after buckets of gravel will require washing and then placed carefully into your tank, this being finished to a depth of 100mm at the rear coming down to a gentle slope with a depth of some 50mm at the front. I would not waste time trying any form of landscaping with the gravel as when your aquaria is fully functional and the months go by the gravel always flattens it self out on its own accord. When using bog wood not only has it to be very clean, it of course must not float. Quite off putting when you fill the tank up with water. If you can purchase your bog wood well in advance and place it in a container and leave it in the garden, not only to check that it will sink, but to allow any dye to seep out of the wood. If this does happen, keep changing the water till the fresh water does not discolour any more. Ideally it would be nice to fill up the aquarium with 50% clean rainwater and the remainder being tap water that has been standing for a week or so. But if this is not possible carefully fill up with tap water, trying not to stir up the gravel and leave to stand for a week or more and with the heaters connected up will allow the temperature to rise to 75F. Place your power filter in position, check that it is placed with the flow of water moving diagonally across the aquarium. End of part 1.



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Amazon Fish (Part 2)

On arriving in Manaus, Chris started the Amazon Association and brought a large section of land on the Rio Xixaua that is now a nature reserve. I returned 18 months later to the Rio Xixaua. It was on this trip that I managed to do a lot more photography of fish and birds. Justino and two of his sons Branco and Tobacco had moved up there and built themselves a house with Joao who was also living there. It was so nice to see them all again and they really made me very welcome. Justino's wife and grandson had travelled up with me from Manaus and would be keeping house. Not long after I arrived, Justino started work building an extension and I started a collection of photographs of all the fish which were caught for eating. At the time I did not realise what a large number of species there would be for me to photograph. After a while I was not sure whether I was taking the same species more than once. I need not have worried, both Branco and Tobacco soon told me if I had already photographed a particular species twice. I laid the fish on a back - ground of leaves, I thought this would help size the fish. Justino's wife was very good cook and after cleaning the fish in the river, she would either barbecue or boil them with a few herbs and served with the local flour called farina. This they made from a tree root, I know it was simply delicious. One morning Justino and his son Branco took me fishing to catch Piranha. We paddled off to a small beach where Branco showed me how it was done. He had only an old can with fishing line coiled round it. The hook was size! and on

it he had attached some fish. Whirling the line round and round he then released it, travelling about thirty meters before splashing into the water. He then started to pull the line in slowly, when he felt a bite he then pulled it very fast. When all the line was finally pulled in there was this rather fine Piranha on the end. Justino said that I should have a go, so I agreed. Nervously I tried and followed Brancos instructions and to my surprise it worked, I had caught one. There are many different types of Piranha, not all are meat eaters. There are fruit eating Piranha as well, Justino called them Paracous. Piranha make good eating, though they are a bit bony and there is great satisfaction in eating something that would have liked to have eaten you. There is at least one species of fish that has learnt to follow the troops of monkeys as they travel through the canopy. As the monkeys eat the fruit they would occasionally drop pieces and as they fell into the water below the fish were there to collect it. Joao used to mimic this, he would make little pellets out of a mixture of fruit and farina attach it to the hook. Then from the canoe right inside the flooded part of the forest he would cast the line close to a tree trunk. If successful, the fish would go in the pot for our dinner that night. Tobacco used a similar technique but used a piece of fish as bait and was out in the open on the river. He would select a spot close to the edge where he thought a fish might be, usually close to a bush, with no rod just an old tin can with a line wrapped round it. He cast the line by twirling it round and round then releasing it. He was incredibly accurate and could drop the bait exactly where he wanted to, Joao had found me a Green Backed

BARILIUS

BY
Paul V. Loisel

The various members of the family Cyprinidae are well represented among the ranks of aquarium fishes. Fanciers of cold water species can look to the enormous number of Goldfish varieties and to the Japanese Koi as well as to such species as the European Tench and Ide, plus the numerous colorful North American Shiners. Keepers of warm water fishes are generally most familiar with various Rasbora, Danio, Brachydanio and Asian Barbus Species, although to a progressively greater extent, African Barbus species are winning the interest of aquarists in Europe and the United States. One interesting and colourful Cyprinid genus which does not appear to have attracted the attention it deserves is the genus *Barilius*. This group of astonishingly Trout like fishes has both African and Asian representatives. While tending to grow somewhat larger than the more commonly kept aquarium Barbs, and Danios, most members of this group of fishes are brightly colored and easily maintained. When on medical leave in the Washington, D.C. area, last January, I noted various *Barilius* species in some of the larger shops, which suggests that some members of this genus are now finding their way into the U.S. The two major source of fish exportation from Africa, in Lagos, Nigeria and Kinshassa and the former Congo Republic, lie in drainage systems containing a

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number of *Barilius* species, and it would hardly be surprising if these were occasionally sent out with better known species on a catchall basis. As the fish export business expands in Africa, it is hoped that exporters will begin to operate in other African countries situated in faunal provinces which have not to date been tapped for aquarium fishes, and that among the various new arrivals to the aquarium scene will be other *Barilius* species. It thus seems an opportune time to summarize available information on the identification, range and habits of the West African members of this genus. As anyone suffering through the present some what muddle will agree, it is better to have some idea of the systematic of a group of fish before a possible influx of new introductions begins. There is a sizable body of literature on African *Barilius*. It suffers from the draw back, for most English speaking aquarists, of being largely written in French. Journals in question are all ready access to most aquarists after a bit of searching. I have thus taken the liberty of translating the best available key to West African *Barilius* species from 'Poissons de Cote d'Ivoire, eaux douces et saumâtres', by Dr. J. Daget. I have also prepared a number of line drawings using modification of the Peterson field mark system, of the species discussed herein. The key, used in conjunction with the illustrations, should allow interested aquarists to identify any member of this genus to date described from West Africa.

Barilius niloticus (Joannis) 1835 is represented in West Africa by the species *B. niloticus occidentalis* (Blache and Miton) 1960. Found in the Senegal, Volta, Niger and Chad

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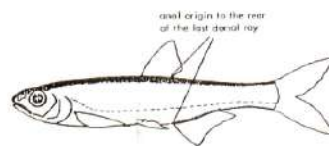
Basins, this small, uniformly silvery species is considered by Daget to be the most primitive member of the genus found in Africa. Although fishes from the Niger Basin do arrive regularly in the U. S. via Lagos, it does not seem likely that this species has ever been included among them, as its lack of color does not recommend it as an aquarium fish.

Barilius guineensis (Daget) 1962 is a small, specialized species known, to date, only from part of the Konkoure Basin in the Republic of Guinea. This area does not fall within the scope of present day exporters of tropical fish and it is thus unlikely that this species has ever been imported into the U.S. As it is coloured like the preceding species, the fact is not likely to be mourned by aquarists.

Barilius ubangensis (Pellegrin) 1901 is a marginal species in West Africa, where it occurs in the Chad Basin, the upper portion of the Benoue River, a tributary of the Niger, and in the Southern Cameroon's. It is properly speaking in terms, Central rather than a West African species and its full area of distribution includes the Congo and Shiloango Basins as well. This species is small and brightly coloured, its attractive pattern of spotting on the flanks setting it clearly apart from any other West African members of the genus. As fishes from both the Shiloango and Congo Basins are regularly shipped to the U.S. from Kinshassa, it is possible that this species has already made sporadic appearances in America and Europe. Its importation is to be hoped for, as it has all the earmarks of a very desirable aquarium fish.

A good example is Ghana, whose western rivers contain some magnificent aquarium species but which, for all

intents and purposes, are terra incognita to aquarists. A note of caution in passing, the Peterson field marks indicated in my drawings are valid for adults of the species in question. Juveniles often differ in details of colour pattern. If in doubt, fall back on the key.



Barilius niloticus (Joannis) 1835. 50mm



Barilius guineensis (Daget) 1962. 30mm

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Barilius nigeriensis Daget 1959 was described from the small tributary streams of Upper Niger and is also known from the northerly reaches of the eastern and central rivers of the Ivory Coast. I have taken it in northern Togo, which appears to confirm its presence in the Volta Basin as well. This species is in all respects a pocket sized version of the larger *B. senegalensis* with a rather more muted colour scheme. Young specimens are not readily distinguished save by recourse to the key included herein. The full extent of this species' range is yet to be determined, but the probability that it might occur in the Lower Niger and thus appear as a candidate for exportation from Lagos must be considered.

Barilius silex Schultz 1942 is found in western Ivory Coast and Liberia. This small species lives in an area that lies outside of the scope of fish exporters, and probably has never been imported into the U.S. or Europe. This is regrettable, as it is a colourful species with a distinctive colour pattern quite unlike that of any known *Barilius* from West Africa.

Barilius steindachneri Pellegrin 1908 is another small, highly coloured species whose range lies outside the scope of present day exporters. This species is closely related to *Barilius silex*, which it replaces in the coastal rivers of Sierra Leone and Guinea.

Barilius senegalensis Steindachner 1870 is without a doubt the most widespread of the eight species considered here. It is known from the Senegal, Gambia, Volta, Niger and Chad Basins, as well as from the northern reaches of rivers in the central Ivory Coast, and is abundant in all of them. *Barilius*

senegalensis is a large, active, colourful species whose range extends into the area exploited by the Lagos exporters. It is probably the most likeliest candidate for exportation of the species found in this part of the world.

Barilius macrostoma Boulenger 1913 is known from the Tano, Ankombrab and Prah Basins of Western Ghana. It is, essentially, a more vividly coloured version of *Barilius senegalensis* and appears to be the only member of the group of large *Barilius* species to have successfully colonized the forest rivers in West Africa. It is unfortunate that its range does not fall within the scope of current exporting activity, as this species is an excellent aquarium fish.

All of the species cited above are fishes of fast moving waters. The typical *Barilius* habitat is a small stream or the headwaters of a larger river enjoying all year around flow. The water is clear, the bottom is of well washed sand or coarse gravel. True aquatic plants are rare, but overhanging grasses and terrestrial herbs are abundant. In such streams, *Barilius* occupy what I refer to as the "Trout niche" living as swift, solitary open water predators feeding upon terrestrial insects which fall upon the surface of the water or drop down to within leaping distance, and upon smaller fish, which are actively chased, over taken and devoured. The trout-like aspect of these fishes extends to their behavior as well. *Barilius* are excellent sport on a very light spinning outfit and despite their small size, give a creditable fight when hooked. They are a bit to small and bony for eating, and I generally release them unless I need material to study. They do not appear to learn very readily

from their experiences, as I have had the same fish take the same spinner three times in succession. It is interesting to note that *Barilius* are most abundant in habitats where the various species of young Tiger fish mainly (*Hydrocynus vittatus*) are. Adults are sporadic in occurrence or absent altogether. Work done on the biology of the various Tiger fish indicates that juvenile and sub-adult individuals have virtually the same feeding pattern as the many various *Barilius* species, and it thus seems likely that in less rapidly flowing water, the *Barilius* are out-competed by smaller specimens of *Hydrocynus*.

One might expect that swift-water fishes such as *Barilius* would be difficult to transport and maintain in aquaria. I have not found this to be the case with either *Barilius senegalensis* or *Barilius macrostoma*. However, two factors must be taken into consideration in transporting these fishes. The first is the size of the fish to be transported. The second is the manner in which the fishes are handled. Very large specimens and very small ones are both to be avoided, the former because they require too much shipping space to make them interesting to transport, the latter because they are very fragile and easy damaged in transit. Six to eight centimeter specimens are far the very best size to choose from. *Barilius* shed scales like confetti, at the slightest provocation, and leap about like prima ballerinas. This is not an auspicious combination of characteristics and it makes handling them a bit tricky. When collecting these fish, I have found that they are best removed from the water with a well wetted net, or even better, gently using a plastic bowl that scoops them out water and all. When one

must move specimens from one container to another. I have found it best to use a very large net to maneuver the fish to the surface of the water, then in turn use a bowl to lift them of this large net. Nets and bowls should always be covered to prevent an exhibition of their leaping abilities. If these small precautions are taken, transporting them poses no problems. I have shipped up to twenty five, eight centimeter specimens, in a five gallon plastic bag within a shipping box with no losses driving over Ghanaian roads whose condition is best left to the imagination!

Plenty of swimming space and some aeration are the only strict requirements of these fishes in the aquaria. They eat anything offered to them, of an animal nature, with gusto, including dried flake food and smaller fish, this should be born in mind when choosing suitable aquarium tank mates. My empirical rule is nothing smaller than two thirds the length of the largest *Barilius* unless I intend the new additions to be expensive food. A tight fitting cover to the aquarium is absolutely necessary, as these fishes retain their penchant for leaping out of the aquarium in pursuit of insects. Some direct sunlight appears to be appreciated, but I do not think it essential as I have kept these fish for many months under artificial lighting. The two species I have kept do not appear over fussed about water chemistry as long as the water they live in is clean, well oxygenated and partially changed on a regular basis. I would recommend soft, neutral water, but what ever the chemistry of the water I can not stress enough the importance of regular partial water changes.

I believe no one knows how these fishes reproduce them-

selves, but the when and where seem clear enough. I have taken large numbers of very tiny *Barilius senegalensis*, together with ripe females, over stretches of bare gravel bottom in small rivers flowing into Lake Volta during the early middle portions of the rainy season.

Barilius macrostoma appears less seasonal in its breeding pattern, as I have taken juveniles and ripe females in April, before the start of the rainy season, and at its peak in July. As often the case the Savannah-dwelling forms appear to have a single spawning period while forest species spawn more or less throughout the year. I would suggest that these fishes spawn very much like the various Brachydanio species, producing non-adhesive eggs that fall to the bare gravel bottom where they complete their development.

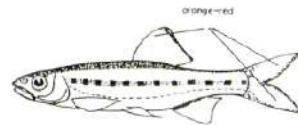
The spawning trigger for *Barilius* is still unknown to me, but I doubt that the breeder would be far from the mark if they were to replace part of the water of the breeding tank with softer, cooler water in attempt to stimulate a spawning. Stream temperatures here in Ghana often drop by as much as 4°C (about 7° F) after a heavy rainfall, hardly surprising when one considers that as it falls, rain is frequently 19°-20°C (64/68°F) whereas the small stream into which such a deluge pours are between 26;/33°C (78°/99°F). The influx of virtually mineral-free water pushes the hardness down somewhat also, but this effect is less marked as the mineral content of most West African waters is already minimal. The approach might also prove fruitful for many of the African Characin and Barb species which have proven difficult to spawn in captivity.

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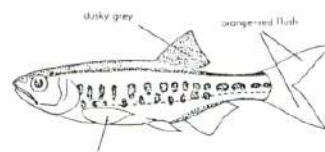
Reference: Blache J. 1964 LesPoissons du Bossin du Tchad et du Bassin Adjacent du May Kebbi. Etude systematique et biogeographique. Memoires O.R.S.T.O.M. Paris.

Daget J. 1962 LesPoissons du Fouta Dialon et de la Basse Guinee. Memoires I.F.A.N. 65 daker.

Daget J. 1965 Le Poissons de Cote d'Ivoire, eaux douces et saumâtres. Memoires I.F.A.N. 64 daker.



Barilius ubangensis (Pellegrin) 1901. 30mm



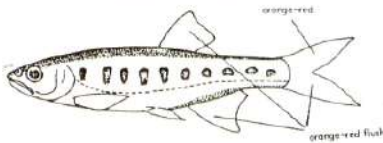
Barilius silex (Silex) 1942. 40mm

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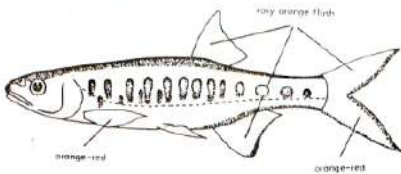




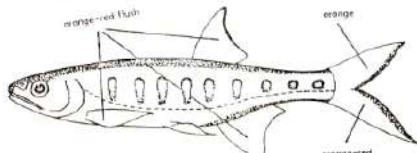
Barilius steindachneri (Pellegrin) 1908. 60mm



Barilius nigeriensis (Daget) 1959. 70mm



Barilius senegalensis (Steindachner) 1870. 90mm



Barilius macrostoma (Boulenger) 1913. 90mm

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WHEREFORE ART THOU, CATFISH.

By Dr Peter Burgess
Aquarian Advisory Service



The murky depths of an African lake seem an ideal habitat in which a fish can go about its daily routine, without ever being detected by the gazing eyes of man. Many freshwater habitats have poor water visibility due to various reasons, for example, they may contain large amounts of suspended solids, or be heavily stained with organic compounds (as occurs in the Amazon blackwaters), or harbour dense vegetation. This makes it almost impossible to directly observe the fish fauna within. Its no wonder that little is known about the natural behaviour and movements of many species of freshwater fishes. But this situation is changing. Advances in electronics technology now make it possible to "listen in" on the private lives of individual wild fish. Even under conditions of zero visibility. The technique, known as radiotelemetry, has been used to study the movements of wild catfish in Lake Ngezi, Zimbabwe. Radiotelemetry has been used for many years to track terrestrial animals, particularly those which are shy or live amongst dense vegetation. Its use in studying fish has mostly focused on marine species, notably the economically important food - fishes. The animal to be studied is caught and usually sedated so it can be fitted with a harmless

transmitter, weighing as little as a few grams. The transmitter is tuned to emit signals at a particular frequency which can be detected by a portable receiver. The tagged animal is then released back into its environment and its movements tracked. Tracking is generally the difficult part, typically involving enthusiastic (and grossly underpaid!) biologists who rush about the country whilst rotating a hand - held aerial in attempts to pick up the signal. (This is similar to situations when the TV reception becomes weak and you dash around, antenna in hand, trying to catch the final nail - biting minutes of Brookside!).

The "radio stars" for the Ngezi study were *Clarias gariepinus*, commonly known as the Sharptooth Catfish. The selected fish were large, around three kilograms, and each was tagged and subsequently tracked for several weeks in order to determine any daily or seasonal activity patterns. Some interesting results emerged. In particular, it became evident that the six catfish did not travel predominantly at dusk or night - time; in fact their movements were common during mid - day. This was surprising, for although Clariids are opportunistic omnivores, they also exhibit predatory behaviour which is considered to be most effective during periods of low light - many aquarist will have observed their *Clarias* (and other predatory acts) being most active in late evenings, when the tank lights go off. Perhaps there was something unusual about the Ngezi catfish population, or was it simply that radiotelemetry is revealing the true behaviour of fishes in their wild habitats. The findings also revealed significant

differences between the six fish in terms of the distances and timings of their travels. During the study period, one individual catfish explored the whole lake, over five square kilometres in area, and migrated several kilometres up the Ngezi river, in contrast, other individuals stayed mostly within one region of the lake. Another was clearly the Lynford Christie of the catfish world, clocking up swimming speeds of almost 500 meters per hour over several hours duration. It seems that catfish are just like humans, some are very active and others simply bone idle! However, none of the six fish did what clarias are famous for - namely leave the water and go "walk about" on land, evidently, the lake suited them well and so they had no reason to search for more favourable environments. The study suggested marked seasonal patterns in the fishes movements with two peak periods of long - distance swimming, the first occurring in late June - July and the second shortly after the December - January rains. The January peak was probably in response to the flooding of the Ngezi river, and may have heralded spawning behaviour. Variations in temperature did not appear to affect the catfish's activity, even during the coldest months of June and July when surface waters fell to 15°C. Overall, the study revealed that clarias catfish movements are unpredictable and complex, being influenced by daily requirements such as feeding and rest, as well as seasonal responses to climatic changes and reproductive urges. Most of all, the results confirm something we aquarist have known for a long time: catfishes are very individualistic,

39

each with its own quirks of behaviour. And that's what makes them such interesting aquarium fish!

References: Bruton, M.N.(1979). The food and feeding behaviour of *Clarias gariepinus* (Pisces: Clariidae) in Lake Sibayn, South Africa, with emphasis on its role as a predator of Cichlids. Transactions of the Zoological Society of London, 35, 47-114.

Hocutt, C.(1989). Seasonal and diel behaviour of radio-tagged *Clarias gariepinus* in Lake Ngezi, Zimbabwe (Pisces; Clariidae). Journal of Zoology, London, 219, 181-199.



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Know your Fish

Sarotherodon galilaeus (Linnaeus)

Cichlid from Upper West Africa through out the Equator.

Body and Colour

A deep-bodied species with a depth of 43/50% of the standard length (SL). Usually pale, silver- grey in colour with fins uniform or inconspicuously marked except for the pink margin of the caudal. Melanin pattern of flanks either absent or forming vertical bars from dorsum to below middle of height, irregular in outline and sometimes represented by fragments on a melanic base. Small mouth and lower jaw with very small teeth.

Size

340mm.

Remarks

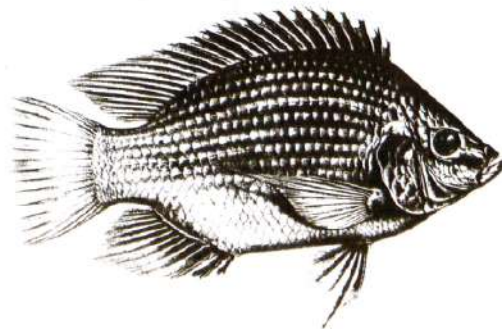
Sarotherodon galilaeus is typical of this family of fishes from Africa, being a mouth-brooder, with males being the larger fish. Male and female fish that spawn become a bonded pair for life, in their native habitat they spawn often twice from the end of March to August. The eggs are laid in a depression near the shallows of the shore and both are most active in defending the mating territory. The eggs are olive green, 3mm in diameter and laid in batches of

41

20/40 being fertilised by the male as they are laid. Both male and female are good parents.

REF: Ethelwynn Trewavas (Tilapine Fishes)

British Museum (Natural History) ISBN 0-565-00878-1



Sarotherodon g. galilaeus (Boulenger) 1907

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Mylossoma duriventre (Cuvier, 1818)

by

Stephen Pritchard of Dunstable and District A.S.
Catfish Study Group (UK).

Bringing the hand net sharply up beneath the floating 'grasses' and quickly bring it out into open water revealed many different species small tetras, small sucker mouth catfish of the Genus *Hypoptopoma* and the odd Silver Dollar.

Sliver Dollars; just like all silver Characins, had not really interested me to this point in my fishkeeping, but in one net I caught what was the smallest Silver Dollar that I had seen on this trip (Peruvian Amazon 1998). I had been throwing back many during the week, all around two inches in diameter but this one was no bigger than a 10 pence piece and it had a small grey mark beneath the dorsal towards the head.

The photograph in Baensch Aquarium Atlas Vol. 1 page 357 is a very fair representation of my fish as it is today.

While generally described as vegetarian, my fish loves its earthworms. It's not in a rush, the worm is wriggling across the gravel and the *Mylossoma* sees it and begins the slow cruise from under the floating plants (a mixture of *Hygrophila* and *Riccia* with the inevitable duckweed thrown in for good measure). Out into open water where the worm awaits. A quick look and back to the refuge of the floating plants then back again to pick up the worm. I have seen this behaviour time and time again.

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When doing the weekly water change, I use a watering can, without a rose, to refill the tank. The force of the returning water starts the floating plant to spin and as it circles the *Mylossoma* goes with the flow, circling with the plant, bringing the fish out into view. It makes no effort to hind itself it just plays dead, just another piece of flotsam in the water.

My *Mylossoma* is a very shy fish (you can ask Ian he did not see it at all last time he came round) and I only see it fully when its feeding time it swims forward towards the food, takes a piece and turns sharply back towards the protection of it's floating plant, the turn causes such a current as to lift food from the gravel (most of the food in this tank is intended for the Cory's) exciting the *Mylossoma* to return and grab some more.

In December 1999 I put *Mylossoma* into a new tank in the fish house 80 x 24 x 24. It was a fight getting the fish to go calmly but once in the tank it seemed to take a good stretch and flex it's muscles as it quickly explored the freedom of it's new domain. After a good swim round *Mylossoma* reverted to it's usual hiding under floating plant (put in specially for the purpose) preferring to move around the tank when the main lights were out.

Having seen this fish grow I have taken more notice of the Silver Dollars in the shops and when I have more room (the fish house is another story) I'll be adding to my collection.

Catfish Study Group: Secretary Mrs Ann Blundell
E - Mail dannyblandell@care4free.net

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The Pond in Spring

by

Bill Rundle

It is now April, the days are getting longer and our ponds are waking up from the winter rest. On the odd sunny day fish are seen again at the waters surface, but the temptation to feed them must be resisted for a while yet, as the water temperature is still very cold.

For the small to medium size pond owner now is a time for decisions and actions. Ponds in this category benefit from a full clean out every three years or so and container grown water lilies do need to be repotted and possibly divided every three years. This will provide fresh nutrients and also keep the size of the plant in proportion to the size of the pond.

Marginal plants growing in containers on the ledges will all need some attention. Some of the more prolific growers require thinning out every other year at least, this prevents them from taking over the pond.

Water Irises, the attractive variegated *Phalaris*, our hardy Umbrella plant *Cyperus longus* and the Reed Maces are all desirable useful plants around the margins but you do have to be ruthless and keep them in their place.

Cleaning a pond is not the most enjoyable job in the garden, and if all the Lilies and marginals are repotted at the same time, it becomes quite a task. This year I have decided against an all over clean, but I will replot the Water Lilies, this will make things easier then if I go a clean out next year.

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The plants in need of attention are accessible if the water is taken down to the level of the ledges before starting, the Lilies are more accessible and a better view is had of the marginals and what is required.

Water Lily rhizomes are mainly in two forms, the *Odorata* and the *Tuberosa* types that creep along the top of the growing medium similar to Irises, where as *Marliac* varieties grow vertically.

When replanting these wash off all the spent medium, trim off any old large roots and divide the plant if required. The *Odorata* and *Tuberosas* are then planted with the back end of the rhizomes against a side container, not more than an inch deep and with the growing tip above the medium, it will then creep across the container as it grows.

The *Marliac* or *Pineapple* rhizomes as they are now called are planted in a container as they grow more or less upright, again the growing tip must be above the medium. The only medium suitable to plant lilies into is good quality top soil or garden loam, and nothing else. Gardeners used to prepare a "turfy loam" by stacking turf's upside down, allowing the grass to rot down for the next season, this would-be really ideal. Peat based or any of the light textured compost available are of no use whatsoever, indeed they very likely will kill the plant.

Various additives are recommended to be mixed with the soil, bone meal, rotted manure ect. But I find none of these are needed and I still have two *Marliac* varieties, "Attraction" and "Mrs Richmond" that I purchased over thirty years ago.

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After planting the lily in the loam, cover this with a layer of stones or shingle, ensuring again that the growing tip is clear, and replaced into the pond. If the plant has already produced some leaves, then these must not be submerged as Water Lilies breathe through the upper surface of the leaf, so treat it as one would a new lily. If necessary place a brick or pot under the container to maintain the correct height required. Water Lilies are graded into four size groupings; large, medium, small and pygmy, these groupings are based on the spread of the foliage at the pond surface and when offered for sale the label usually gives this information.

It will also state the depth of water that is required over the top of the container. However, I would suggest that, especially with a new lily, the plant will be happier and more free flowering if it is brought up closer to the surface in the first instance. They are sun worshippers and with what goes for an "English summer" these days they need all the light and warmth they can get.

Typha are generally called Bulrushes, but they are really Reedmace, a name with a nice feel to I think, the largest species in the genus *Typha latifolia* that we see growing wild in our marshes and wet ditches. This is only suitable for very large pond or lakes and certainly is not recommended in a pond with a liner. Happily though there are other smaller species available such as *Typha angustifolia* that grows to a much more manageable height of four feet. This has the same typical distinctive flower spikes, bearing the rather insignificant male pollen being part at the top of the handsome brown female part. Every small pond or even a patio tub should have the delightful *Typha minima* at

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under two feet high with slender foliage and small round flowers about an inch or so in diameter, it really is one of my all time favourite marginal.

Last year at the FBAS stand at Hampton Court we had a species that I can find no reference to, it was labelled *Typha gracilis* and appears to be in between the two smaller species which I have just mentioned, after introducing it into my marginal area I am eagerly awaiting a flower this year. The RHS Plant Finder list a *Typha minima* var. *gracilis* that has not been available since 1996, so who knows. *Caltha palustris*, var. *flora plena* is the double flowering Marsh Marigold and is much preferred to the wild rather untidy species, it is already in flower and will sit in an ordinary pot, like a dense yellow cushion just above the water surface.

Caltha palustris is the "Bog Arum", this charming plant, distinctive in appearance is planted in a pot or planter covered by two to three inches of water, where it will creep around the margin growing about six inches high. I am now running out of space and would like to end with a cautionary word, any gentleman who might have cut back their water lily's, it might not be a good idea to leave any surplus rhizomes lying about where the ladies might get their hands on them, as they have for a very long time been used anaphrodisiac, that reduces the libido. You have been warned.



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Mrs Richmond (Lalour-Marliac, 1910)

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ALAN BENSON

For those members without long memories, the Federation was not always so prominent in the public gaze nor was its representation in water gardening circles. That it has achieved such status is very much due to Alan Benson, whose sad loss we mourn.

Alan first came to the Federation's notice as an expert in filtration systems; he was, in his own description, a water engineer and indeed brought great expertise in such matters. The 'knock-down' hexagonal ponds and gazebos soon became Alan's trademarks at exhibitions and on the Federation's Show Stands where they attracted the public's close attention.

As well as Alan's expertise at setting up systems at the Federation's involvement at garden shows was an equal expertise at getting all the equipment to and from the event, with what has to be admitted was not always the most reliable of transportation! Alan, elected a FBAS Council member in due course, quickly became a valuable part of the exhibitions team and played a great part in such events as Hampton Court Flower Show, BBC Gardeners World Live.

In recent years, Alan's health suffered quite seriously; as a diabetic, he was not always true to the strict self-treatment discipline required and this

became a matter of concern to his colleagues. Soon his vision became impaired too, which meant he could not drive as often (certainly not in any kind of tailing light) as he would have liked, thus depending increasingly more on Jan his wife. Although by now, he was forced to retire from Federation duties - Alan was also P.R.O. - he kept in touch with the hobby as a member of Ilford A.S., who have also recently lost another member, Den Seaman. It was sad to see Alan slowly decline but he was always chatty when he met you - once he recognised your voice and realised who he had met, even though he could not quite make out your physical features.

We remember his large all-glass aquarium 'cube' of pond fish at Hampton Court and his specially designed filtration system for keeping duckweed off a large pond at an Esher hospice. Also memorable was his lively conversations (often quite argumentative!) during build-up periods but, above all, his willingness to get involved for the benefit of everyone.

Fishkeepers (and water-gardeners) everywhere will join us in our sorrow and extending our condolences to Jan.

Dick Mills

LAZY, HAZY DAYS OF SUMMER

At this time of the year we all like to get out of doors and enjoy the nice summer weather in the garden, perhaps the odd barbecue to while away the long summer evenings or just sitting and relaxing. For many aquarists, of course, the garden also becomes a place where our fascination for fishes can be extended to the outdoors with a shimmering pond full of exotic and colourful residents.

Unfortunately, though, the reality doesn't always match up to our expectations. The delights and tranquility of a pond or water feature often become marred by a whole series of problems that are heralded by the warmth and abundant sunshine of the summer.

'When are you going to do something with that pond' is often the plaintive cry from the less-enthusiastic water gardeners in the family as they survey your jungle-like waterhole with masses of plants competing one with the other, accompanied by pea soup coloured water and rampant blanket weed. Then there's, 'that pond of yours don't half pong', a complaint that doesn't go unregistered as you try to enjoy your charred sausage fresh from the barbi with a strong pungent odour issuing from said pond, close by on the edge of the patio.

It's about then that you realise that it's not quite as easy to keep a 1,000 gallon pond in pristine condition as it is your 10 gallon trop tank in the living room and start searching for your waders. Why then, you ask yourself, can't the pond that I've carefully built, complete with filter and trickling stream and nurtured with plants and fish become a balanced work of nature? The

answer.....lots of reasons but the main truth to recognise is that a garden pond is a confined space. As such it's biological equilibrium can be established, initially, on a scientific basis but will always need your intervention in maintaining this balance because as your pond is exposed to the elements out in the open garden it, naturally, is very much influenced by environmental conditions.

Sunshine, for example, is always welcome in the summer months but if excessive will soon start to encourage rampant plant growth in a pond. As there is little chance that a truly natural balance will be achieved in the crowded environment of a small pond excessive amounts of organic wastes are sure to be present, which means that there will be ample nutrients dissolved in the water. Here we have classic conditions to encourage luxuriant plant growth especially filamentous algae and the single celled forms, which produce green water.

A means of preventing excessive light reaching the pond is therefore needed to put you back in control. Fortunately, optimum light levels can be maintained quite easily by only allowing a third to a half of the surface of the pond to be exposed to light during the sunny summer months simply by introducing plants with floating foliage such as water lilies, potamogeton and *Stratiotes aloides* (Water Soldier). However, avoid invasive plants like Lemna species (duckweed) or Parrot's Feather (*Myriophyllum proserpinacoides*) or you will just be trading one problem for another due to rapid colonisation of the pond by these plants.

Higher water temperatures in summer can also lead to quite massive evaporation losses. Although rainfall will compensate to a certain extent, tap water usually still needs to be added on a quite regular basis. Unfortunately the water from the mains is often high in nutrients such as nitrates and phosphates and it

can be a little like topping up your pond with a weak liquid fertiliser.

Phosphates, especially, are a problem as only very low levels are necessary to encourage plant growth. It is common practise though for many water authorities to add phosphates in the form of soda ash to combat water impurities caused by old lead water mains.

Short of pulling up stakes and moving to another area where the mains water is less charged with nutrients there is no real alternative therefore but to use this unsatisfactory source. Introduced nutrients such as nitrates and phosphates once in the pond can be reduced by planting strong growing species of reeds and other hungry plants as marginals but as most of us don't have sufficient room, a nitrate and phosphate reducing compound usually needs to be the answer.

The oxygen content of the water also varies considerably in the summer as water temperature has a direct influence on oxygen content. Oxygen saturation levels can reduce from 100 to 50% according to season diminishing as water temperatures increase. Added to this the fish in the pond will also become far more active with the increase in temperature and may well be a further contributing factor. They are likely to be feeding heavily and creating pollution which adds to the problem as large quantities of oxygen are used by the decomposition of organic materials. The imbalance caused will eventually lead to poor oxidation of surplus organic waste materials causing the kind of foul odours associated with neglected ponds. Added to this will be a great deal of discomfort for the fish which will come to the surface gasping for air as the oxygen content will be insufficient. This will be most apparent on hot summer nights when pond plants cease to photosynthesise and produce carbon dioxide rather than supplementing oxygen levels.

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The most immediate remedy is to oxygenate the water by keeping it moving using a pump to power a fountain or small waterfall. Further improvements can be gained by looking at stocking levels which may be too high and require reducing and often overfeeding is a further problem so reduce quantities. In summer goldfish and Koi, especially, have insatiable appetites and will always rise for food. Keep to a regime, therefore, where quantities of food that are offered are cleared easily within two minutes and limit feeds to twice a day.

It's very easy for us to blame environmental factors for all of the ills befalling our ponds but by regularly checking a few parameters it is possible to prevent many types of accidental imbalances which can occur and by correcting these as they arise avoid having to resort to more drastic solutions. Regular tests to monitor pH levels and those for Ammonia, Nitrite, Nitrate and Phosphate using a reliable set of test kits like those in the Hagen range can act as an accurate early warning system of any problems that might be about to occur.

Let's look at some likely scenarios that might crop up from your tests and the recommended remedies.

pH the most likely problem here will be acid water conditions (pH4 - 5.5) which can be very damaging to the mucus layer as fishes and is a sign, usually, of large amounts of decomposing plant material in the pond.

Good housekeeping to ensure dead pond plant material is removed regularly and covering the pond in autumn with fine mesh net to prevent leaves and pine needles falling into the water and accumulating will largely overcome the problem.

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A 50% water change will remedy an already deteriorated position combined with a good clean out of the pond. A biological pond treatment to remove organic sludge such as Laguna Pond Clean is also advised.

Ammonia, nitrite and nitrate are usually formed in the pond as organic material decomposes. Ammonia is particularly damaging to fish even at the lowest measurable levels and can call for immediate action to rectify the situation. Nitrite and nitrate are less dangerous but persisting high levels should also be avoided. Overfeeding, overcrowding or a malfunctioning filter are common causes.

A 50% or greater water change plus attention to the cause of the pollution are called for. Filtration can also be improved by using a biological detoxifier such as Laguna Pond Detox.

Phosphates (one of the main causes of algae) are produced in very small quantities as a result of the decomposition of organics but more usually are introduced in processed foods and as mentioned earlier in the mains water used to replace water lost from the pond due to evaporation.

To avoid high phosphate levels choose pond foods with a high nutritional profile, which are low in phosphates. Laguna Goldfish and Koi Food pellets and sticks are processed using low phosphate containing fish meal and are highly nutritious without containing bulking agents or whole fish products.

Phosphates can be reduced using Laguna PhosX phosphate remover, which also effectively removes nitrite and nitrate within its matrix.

58

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New Horizon Holidays
South Downs Holiday Village
Bracklesham Bay Near Chichester Sussex



Hotline Bookings/Pluses contact Grace Nathorvall
8 Acacia Avenue Brentford, Middlesex, TW88NN
Tel/Fax form direct to: 020 8847 3586

Know your Plants

Ottelia alismoides (Pers)

Distribution: Tropical and Subtropical Asia, North Australia, Egypt.

Description: Submerged water plant. Juvenile leaves narrow, but soon broadening. Adult leaves measuring 12cm or more in length and at times equal in width forming a spoon like shape. Leaves are very light green, membranous, undulate and regularly bullate between the veins. Flowers solitary, floating on the waters surface with three petals being greenish to white. Seeds being submerged.

Remarks: A beautiful and rare plant introduced to North Vercelli, Italy, where it grows in rice fields. Challenging plant and should be kept at a temperature of 22/28c with water soft and clear. Pot in a container with third part loam, one half sand and one-sixth peat. Plenty of light is required, around 12 hours a day plus.

Ottelia alismoides is truly a show plant being unsurpassed when grown to maturity.

Remarks by Malcolm Goss.

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Ottelia alismoides (Pers)

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DAIRY DATES

Bristol Tropical FC. <i>Open Show</i>	10 th June
York DAS. <i>Open Show</i>	24 th June
KOI 2001 <i>Open Show</i> (See Advertisement)	30 th June 1 st July
FBAS/Interpet <i>British Open Show</i> (See Advertisement)	30 th June 1 st July
Exhibitors Bookings 01226 740577 Sheila Sanderson	
Dinner/Dance Bookings 01226 740577 Dave Scriven	
Royal Horticultural Society	
Water Gardens Day (Speaker Barbara Davies) RHS Wisley	
Booking Tickets 0207821 34080 (Monday to Friday)	13 th July
Port Talbot DAS. <i>Open Show</i>	14 th July
Salisbury. <i>Open Show</i>	12 th Aug
KAAS. <i>Open Show</i>	2 nd Sept
Hounslow <i>Open Show</i>	15 th Sept
Festival of Fishkeeping & Water Gardening	
Fun weekend - Fish Shows - Games - Competitions.	
Bookings Tel/Fax 0208 847 3586 Grace Nethersell.	
Bracklesham Bay Sussex.	19 th - 22 nd Oct

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THE ROYAL
HORTICULTURAL
SOCIETY

WATER GARDENS DAY

at RHS Garden, Wisley,
with Guest Speaker Barbara Davies from
Stapeley Water Gardens

Friday 13 July 2001
10.00am-4.30pm

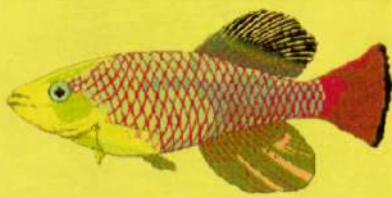


Organised by the RHS Education Department
RHS Garden, Wisley, Woking, GU23 6QB



2001

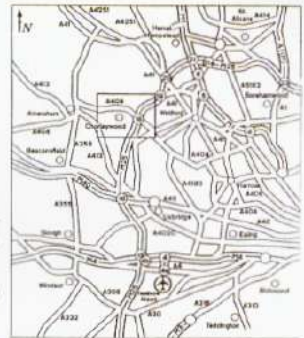
**NATIONAL SHOWFISH SIZES
AND TECHNICAL INFORMATION**



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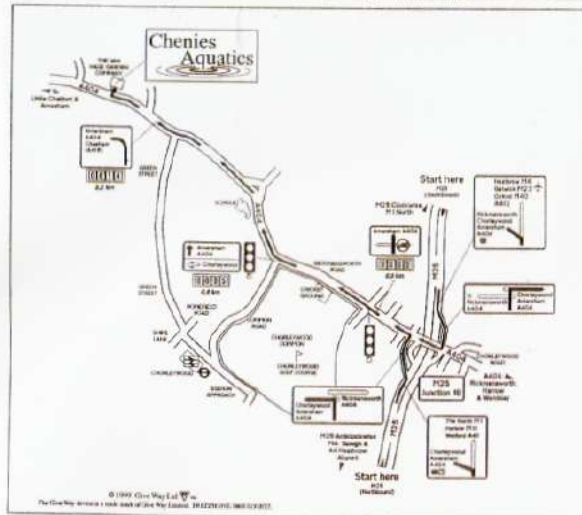
**Chenies
Aquatics**

Chenies Aquatics Ltd
The Van Ruge Garden Company
Chenies (AON), 10 Rickmansworth, Hem, WD3 5EN
Tel: 01494 763481 Fax: 01494 765783



Public Transport

- British Rail**
Cherleywood Station
Situated on Station Approach
A 5 minute taxi ride
- London Underground**
Cherleywood Station
(Occupation line) Situated next to the rail station on Station Approach.
Taxis available outside.
- Bus Route**
There are no bus routes to The Van Ruge Garden Company
- Motorway Access**
Head on to the M25 at junction 49 (M25 junction 17) head northbound on the M25 following signs to Watford. At junction 18 turn off onto the A404 and follow my track.



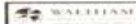
**The range top
aquarists recommend**



To stay healthy and active fish need a range of nutrients. The best and easiest way of providing these is in a complete balanced diet such as those in the **AQUARIAN** range.

- **AQUARIAN** Flakes - A range of highly nutritious diets, for all tropical, marine and coldwater fish.
- **AQUARIAN** Tropical Granules for all community fish.
- **AQUARIAN** Tropical Floating Sticks for larger tropical fish such as Cichlids and Oscars.
- **AQUARIAN** Floating Pellets for all goldfish.

ALL **AQUARIAN** PRODUCTS ARE THE RESULT OF EXTENSIVE RESEARCH AND DEVELOPMENT WITH:



FOR FREE HELP AND ADVICE on all aspects of fishkeeping, write to the **Aquarian Advisory Service**, PO Box 67, Elland, West Yorks, HX5 0SJ.

