

FISHKEEPERS AND WATER GARDENERS

BULLETIN

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JOURNAL OF THE FEDERATION OF BRITISH AQUATIC SOCIETIES



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The Federation would like to thank all those that contribute articles to the Bulletin but can not be responsible for the correctness or any comments that the authors write.

FROM THE EDITOR

"The Bulletin comes out Fighting" In this issue, yes we have more and more articles to read on *Betta splendens*, yes Mr Snow I blame you, what have you done to our readers. You have even got me at it too! On the serious side all these articles are so interesting not one of them should be overlooked.

At this time of the year the showing season is coming to an end and many Aquarist turn their time to breeding some of the fish they keep. So if you do breed some of your fish let the rest of us know about it.

In the water garden there are just a few more marginal plants to come into flower, however it is time to reflect on did we get the best out of our pond? In the next issue we are starting a guide to installing a "Pebble Water Feature" plus fitting in a ridged (Fibre glass)pond all in one day. The start of two garden "make overs" complete with new ponds and waterfalls, so by the time spring is here you will be ready to sit down and enjoy it.

Most of us are looking forward to "The Festival of Fishkeeping and Water Gardening Weekend" that is being held at New Horizon Holidays in the South Downs at Bracklesham Bay, on the 11th to 13th October 2002. In the day you will be able to take part in the many "Open Show" events that are being held on both Saturday and Sunday. For those of you that have not taken fish there is a top line of speakers for all interests. The speakers are from Europe as well as the best from the UK. Demonstrations on Furnished Aquaria featuring the latest theme of "Mix and Match" you have to be there to see it! I know you ladies will not wish to miss Peter Anderson, talking on Fuchsia's. None of us wish to dwell on the decline of the area festivals through out the UK so give your support to this premiership of Fishkeeping Festival in the UK. today. For those of you that will be staying overnight this venue turns back into a "Holiday Camp" in the evening with plenty of fun if you like being involved, of just like me sitting and relaxing with all my friends for a drink with lots of chatting, contact Grace now on 0208 847 3586 see you there.

Finally I would like to thank Dick Mills for his help with the mag, so it is a pleasure to have a photograph by Dick of his favourite fish featuring our front cover. *Pterophyllum altum*

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FESTIVAL OF FISHKEEPING & WATER GARDENING WEEKEND

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John Snow

writes from Malta

"After reading my so-called talk on *Betta splendens* at Bracklesham Bay last year, I thought I would do a follow-on about the breeding of the Double-tail *Betta splendens*"

May I say, NOT the Split- or Twin-tail as these (if they exist) do not have the double Dorsal ray count. This beautiful-looking fish came from a ? sport, a one-off, which was picked up quickly in the hobby, and improved on.

It is as easy to breed as the normal *Betta splendens*; however, you may not be able to get hold of a pair and if you do they may not breed! So let's have a go at breeding one on one, double tail to normal. As most books tell you, when double/normal tail is bred it will give you all single-tail fish. This is correct. Now all you have

to do is breed an F1 fry back to the double-tail parent, or another double-tail of the opposite gender

If, and when, they breed you will have 75% single-tail and 25% double-tails. This, I might add, is the hatching rate and NOT the surviving rate. Now we breed F2 fry double-tails to each other, brother/sister, and fix the line. You now will have 100% double-tails, as most books will tell you! Now, how do we explain the following?

Single-tail parents giving us 50-50 single/double-tails, and another fact double-tails giving 75-25% double/single-tails. This has happened to myself and another breeder of Fighters. He has told me of the double-tails appearing in his breeding tanks from single-tails. I am now going to tell you my explanation of these two very extraordinary facts. I could be very wrong, but I have not seen or heard of this happening to anyone else. In the case of the other breeder,

his base stock came from me. So my reasoning for this uncommon fact will cover his stock as well as my own. As I always say, I may as well be wrong but they're in the tank as they say. Let's go back to the beginning.

Remember I said to put a single-tail to a double-tail: you get all F1 single-tail lookalikes; F1 fry to a parent and your F2 fry will be 75/25% single/double-tails. We were intent on getting our double-tails going. What did we do with our F1-F2 single-tails? Give them away, sell them, mix them with our other stock or cull them heavily. What I normally do is keep most of my stock for Club members (Juniors) and friends.

Now what I think happened is I have bred F1-F2 fish together and line bred these fish inadvertently getting as expected single-tails. Then, all of a sudden, 50/50 double-tails from single-tail parents. This must be due to a genetic build-up of recessive genes and the same thing has happened with the double-tails, a build up of normal genes. I am now going to breed the single-tail Fighters that have double-tail parents to see what

happens to the fry. I have already bred the double-tails that were born from single-tail parents - they gave me double-tails 100% we will have to line breed these to see if we again get the now expected 50/50 outcome.



Pair of *Betta splendens* in spawning embrace below their bubble nest.

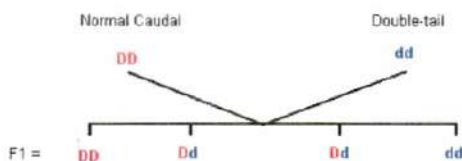
One other point I would like to make is that most of these abnormal hatchlings have been with Cambodians these, in themselves, are recessive, the same as Double-tails.

BASIC GENETICS

As a member of the Judges & Standards Committee, I have had the privilege of reading John Snow's second article on Double-tailed Fighters *Betta splendens* ahead of publication. I will not go into the issue (if whether Double-tailed Fighters are desirable) as that would not be fair, having read the article before it was printed. However, I do take issue with the Genetics as it is not clear to me and may not be clear to others.

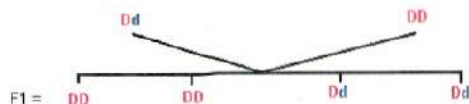
It is a fact that the genes producing the "double caudal" are **recessive** and the normal caudal genes are **dominant**. For the sake of explaining the genetics we will allot the double tail the lower case 'd' as it is recessive and the dominant normal tail the upper case 'D'.

The genetics of the F1 progeny, if crossing a normal tail with a double tailed fish, will follow basic Mendelian Law thus:



This produces 25% with double-tails (which will breed true for double tails), and 75% with normal tails. However, 66% of the normal tailed fish 'Dd' carry the double-tail genes which are masked by the dominant 'D' genes and only 33% will breed true for normal tails. Therefore all normal tailed fishes should be culled out and not sold or given away to others as normal tailed Fighters.

If you breed F1 normal tailed fish that is genetically 'DD' back to a double-tailed parent, i.e. normal tailed and not carrying the double-tail genes then the results would be as above. However, if the normal tailed fish was one of the 66% that are carrying the double-tail genes, i.e. 'Dd' the results would be as follows:



This produces 50% true breeding double-tails and 50% normal tails, with all of the normal tailed fish carrying the masked double-tail genes i.e. 'Dd'.

As one can see, the problem with this type of back crossing is that one has no way of knowing if the normal tail fish used, is carrying the double-tail genes. There is only a 66% chance they are. Again all normal tailed fishes must be culled and, by culled, I mean destroyed.

One final very important point. Breeding fish using genetic equations can only be confirmed with numbers; results can be grossly misinterpreted with small spawnings or low hatching numbers.

Bob Esson

Chelsea and Hampton Court Flower Shows

The Federation was present at both these prestigious events, this is a tribute in its self to our Chairman, there are many groups that would be too willing to take our place, but through his commitment we are seen by thousands of Water Gardeners that continue to ask our advice at these events. The team never came away with an award this year, however Peter said "all those that helped deserved an award each, for all the hard work they put in, the Federation owes them a **Big Thank You**."



TWO LUCKY WINNERS!!

The winners of our Interpet-sponsored Competition featured in the March issue of the Bulletin (Volume 5, Number 5) were:

Jayne Verrall
10 Jellioae Close
Poole
Dorset BH14 OPX

Mr Paplin
99 Kingsley Avenue
Kettering
Northants NN16 9ES

They each win an Interpet Thermo Filter 2.



The correct answers were:

1. Proportional Temperature Control
2. Powerhead, or as a pump for an additional filter unit
3. 4 adjustable controls.

The Bulletin thanks Interpet for its generous support in providing prizes for its Competition.

NEWS FROM THE SHOWS

With the current trend of down-sizing in entries, it's refreshing to get some upbeat news from the Show Scene.

On the 12th May 2002, Corby & D.A.S. Open Show boasted no less than 401 entries and it wasn't just quantity on display either.

42 of the single fish entries gained the coveted '20 FOR SIZE'

Big entries and big fish always make the news but so should the 'tiddlers' - in this case Junior aquarists to whom we look for the future of the hobby.

Here you'll see two youngsters receiving their well-deserved awards from the Deputy Mayor of Corby, Councillor William Latta, as Dave Page looks on.



Highest pointed Junior in Show
Michael Sambrook, Corby & D.A.S.



Best Junior Exhibit in Show
Ricky Snell, Southend, Leigh & D.A.S.

IF YOUR SOCIETY HAS SOMETHING TO BRAG ABOUT,
TELL THE REST OF US THROUGH THESE PAGES

Betta sp. Mahachai



Story and pictures by
Nonn Panitvong April 2002
<http://www.panitvong.com>

One late afternoon in October 2001, I and my two good friends were standing on the shoulder of the highway in Mahachai area of Samutsakorn Province, Thailand. In front, was a swamp forest of *Nypa fruticans*, a palm that only grows in brackish water.



The water was very muddy. We didn't even know how deep it was. Being so close to the city and industrial area, we were not surprised by the presence of so much junk. There was everything from a small plastic bag to an old chair. I doubted that any living organism

would be able to thrive in that water but those little *Aplocheilichthys panchax* I saw swimming proved that fish can live here.

We came here today to search for what many Thai fish experts believe to be a new species of fish in the *Betta* genus. I've seen the fish with my own eyes and there were enough differences in their appearances when compared to the known species of *Betta*. Still, I wanted to see the fish in their natural habitat to believe that they are really a new species, or whatever they are, but not a captive hybrid. Some said this fish is a released hybrid but if I can prove that their distribution is wide enough, we should have a new species of *Betta* right in front of our door. Mahachai is only 30 minutes drive through the express way from Metro Bangkok - where 10 million people call home.

I started my search early in the morning when I visited a local *Betta* breeder's house. After a long conversation to convince him that we want to see the fish for the science's sake and that we have no intention to collect the fish in large quantity, he revealed to us the place where we could find the wild *Betta* of Mahachai.

Back to the swamp, I finally decided to get into the water. We had come such a long way and it was no point turning back. Each of us has a big dipping net in our hand. We had no wader, a pair of sandals was all we have. To my surprise, the water didn't smell as bad as I expected. From my previous experience with *Betta* sp. in natural habitat, I found that they like to stay close to the bank where grasses and vines help them camouflage.

We started there. After several dips we managed to catch a few *Aplocheilichthys panchax* - Orange colour morph with black edging unpaired fin (simply striking!), *Trichopsis vittatus* and some small shrimp. We were not very impressed although the *A. panchax* was very nice.

After 15 minutes of dipping we got tired. I started to think of the information the group had gathered. We were told that this fish build their nest in between the palm petioles so, we started searching for the bubbles.



That was when I saw three local kids standing on the road shoulder and giggling at us. I could hear they say something like "Those city people will never be able to catch the *Betta* with those dipping nets."

"Ok, if you know how to catch them why don't you show us how?" I said to them.

They agreed and told us to help them look for bubbleness of the *Betta* between the palm's petioles. They said that the nest of the *Betta* would be quite small and compact, if we found a big nest then it belonged to the *Trichogaster trichopterus*. So we started the search. After a while, one kid found a nest.



To my surprise, he managed to catch the *Betta* with his bare hands! I was very excited to see the wild *Betta* of Mahachai from their natural habitat for the first time. They look very much like *B. imbellis* with iridescent green colour at first glance, but a closer look revealed several obvious differences (more on that later). What I didn't understand, what were they doing in this central plain area supposedly belonging to *B. splendens*? Perhaps taking the ecological niche left empty by *B. splendens* that could not tolerate brackish water?



The kids' method of catching the *Betta* was simple. He would close the nest entrance with his right palm. With the other free hand, he used a little stick to scare the *Betta* out of the nest. That way, the fish simply swam into his

Today's Fishkeeper

palm. The way they built their nest, so effectively guarding their nest from larger predator, became their trap with only one entrance. It sounded simple enough but it was not easy. Finding the nest was one thing - that was difficult enough - but catching them bare handed was even harder. I shamelessly admit that after several hours of searching deep into the swamp where we couldn't even hear the noise of the 10 wheeled trucks rumbling on the road, I couldn't catch a single *Betta*!

We spent probably almost three hours in the *Nypa fruticans* swamp. There were variety of birds, weird spiders and some insect that did bite! In the water, we caught *Betta* sp. Mahachai, *Channa striata*, *Trichopsis vittatus*, *Trichogaster trichopterus*, *Anabas testudineus* and *Aplocheilichthys panchax*. Most of these fish, except the Panchax which is a Killifish, were Labyrinth fish that have the special organ to breath air instead of breathing in water with low oxygen content. We also met with locals who also come to the swamp for the *Betta*. Obviously, this place was no secret for them. Most of the people said they will use them in fish fighting. I noticed that everybody seems to be using the same method that our kids used. That is catching the male from its nest. Most of the fish we saw in their bags and bottles were males. I assumed that females must not be so far away so I used my big dipping net to swoop under the leaves and vines. In the process, I caught many of the other fish I mentioned above but no sign of a female *Betta*. It was weird how difficult it was to find a female.

On that day, we went home with nine *Betta* sp. Mahachai and a lot of

scratches here and there on our legs. To my delight, we later found that one of the *Betta* was a female. The water sample I took home had pH of 7.8. With a little salt in the water, *B. sp. Mahachai* is as easy to breed as all other *Betta* in the *splendens* complex. My one and only female would later breed to one of the male and some of the offspring have been distributed to some of my close friends. I later met with a guy from Mahachai who shared the passion in this wild *Betta*. We swapped our fish to increase the gene pool and the fish is now being distributed, quite the world over. Some wild-caught fish also find their way on to the shelf in Bangkok fish market occasionally. I gave some of my wild-caught fish to the expert at the fishery department for identification. It was later confirmed to me that this distinct population of *Betta* is very likely a new species but more "samples" have to be taken before the description process can begin. For good reasons, it is unacceptable to use captive-bred fish for describing a species or sub-species.

Anyway, it is still unbelievable to many experts how such stunning fish manage to escape the science world for so long. Some argue that given the popularity of fish fighting in the area, this *Betta* might just be a hybrid of *B. splendens* and *B. imbellis* that have been released into the area. However, my local friend confirmed to me that the *Betta* is present in a quite wide area and they can be found not only in the *Nypa fruticans* swamp but also in several other types of habitat.

It is impossible for a hybrid population, that look exactly alike, to be that widespread, in my opinion.



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Ever wondered which sex your Corydoras are? Jan Fuller explains how to tell the boys from the girls.

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As autumn closes in, our ponds needs some care and attention so the fish will survive through winter.

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Impet explorer Oliva Lorenz asks the aid from a Colombian fish dealer to track down new fish for



Anyway, their distribution range has to be determined before I can say anything further. It is, however, pretty much confirmed that to the East of Mahachai is Bangkok where *B. splendens* were once found in every body of water.



Further inland is Rachaburi province, where I collected *B. splendens* last year. The only possible place that we might be able to find the *Betta* is the shore line, west of Mahachai - Samutsakorn province - in the province of Samutsongkran and Pethburi.

Plotting their distribution range will give me a very good reason to visit this area once again in the near future.

Their future:

I stated earlier that Mahachai is only 30 minutes away through a six-lane express-way from Bangkok metro. This area has gone under rapid development in recent year. Actually, the fact that the local kid was wearing Mc Donald's shirt and holding a plastic soda bottle in his hand should be evidence enough! Anyway, the swamps were filled and the factory is being built. Then factory waste water from the is discarded into the nearby swamp. The swamps are

also being cleared out for shrimp farming which has become one of the largest export item for the country.



The area is undoubtedly under going a very rapid development and unless some kind of protection effort is being made to save the habitat of this unique *Betta*, the only place we can see them will only be in jars.

Direct impact on fish population is also under way. The way that the locals catch the full grown breeding adult males from their nest, sometimes destroyed the eggs and fry in the process. If this continues it will put a lot of pressure on the breeding success of the fish in the habitat. A small population is also being isolated in a small local pond. I imagine that in the past, floods should occur in this river delta area every year. However, with several dams being built up-river and the road irrigation system, this flooding is not that common anymore. In the long run, without new genes getting into the population they will get weaker and subsequently die off.

The other issue is hybridization with domesticated strain of *B. splendens*.

In captivity, this fish can be freely cross-bred with *B. splendens* and give viable fry. Imagine what is going to happen if someone in the area gets bored or has too many *B. splendens* and decides to discard them into *B. sp. Mahachai*'s habitat! Although the water quality will not really suit their like, some might survive and hybridization will occur. This is how we lost so many populations of wild *B. splendens* and *B. imbellis*.

It is very important to notice that this *Betta* can freely crossbreed with *B. splendens*. It shows that they are a very close species, just like *B. imbellis* to *B. splendens*. There have been long arguments about the validity of the *B. imbellis* name is. Some argue that they might very well be just a colour variation of *B. splendens*, or at best they are just a sub-species. Could *B. sp. Mahachai* be the link to these two species or maybe *B. imbellis* and *B. sp. Mahachai* are only sub-species of *B. splendens*? I will leave that to scientists to decide.

Another threat to this fish is the introduction of alien species. Under a government agency's mosquito control program, they foolishly introduced the Guppy, *Poecilia reticulata*, into the area (like the *Betta* is not enough for that). The fish adapted well to their new environment and are now breeding in large quantities in some of the ponds in the area. So far, I noticed that the *Oryzias melastigma*, the local egg-laying fish sharing the same ecological niche with the Guppy, has completely disappeared from the pond where the Guppy is present. The Killifish and the *Betta* still hold their ground, but it is just a matter of time before the Guppy will dominate the water and drive the local fish to extinction.

Below is the comparison chart between four bubble nesters that can be found in Thailand from my personal observation. I'm not a taxonomist so please bear with me.

	<i>B. splendens</i>	<i>B. imbellis</i>	<i>B. ornaragdina</i>	<i>B. sp. Mahachai</i>
Gill plate	2 red vertical bars	2 blue vertical bars	almost entirely cover with green scales	2 green/blue vertical bars
Body	standard	standard	longer compare to the first 2 species	longer compared to the first 2 species
Pelvic fin (first ray)	black with white tip	black with white tip	black with white tip	blue/green with white tip
Caudal fin color	blue and red, with red border the tip	blue and red, with red border the tip	blue and red no red border the tip	blue and red no red border the tip
	no dark dot marking	no dark dot marking	some population with dots	often with dots
Size of unpaired fin	standard	standard	larger than the first 2 species	larger than the first 2 species

Echinodorus (L.C.Rich)

Plants of the genus *Echinodorus* are well known to both experienced, and novice aquarist a like in the form of the "Amazon Swordplant". *Echinodorus* plants are widely distributed in tropical America, with large concentrations of the genus being found in Brazil, South America. These beautiful plants require a well lit aquaria and given the right conditions may well flower above the water level. The flower blossoms of *Echinodorus* are bisexual, in having the stamens and pistils growing within the same flower head. Most *Echinodorus* plants growing in their natural habitat are swamp plants with a strong root system being sustained in mud. Many of the *Echinodorus* species including those that are grown within our home aquariums, have not been sufficiently studied, to correctly identify them, and their descriptions have never been truly established. True descriptions of the Genus vary in numbers, from 31 to 53

depending what documentation you are reading. Being marsh plants having started their growing with submerged leaves, by the time they have grown well beyond the waters surface, the leaves that develop are unrecognisable from those we recognise growing in the water within our aquariums. The most common underwater Swordplants that we purchase have ribbon shaped leaves varying from a few centimetres in length to over 30cm, depending on the species. The colour of the leaves are often pale green in many of the species, but there are many shades and markings that can help as to identify some of them. Leaves that grow with the plant out of the water are coarse, darker in colour and much wider often being 20cm at their widest contour. These leaves develop on long stalks, some 30cm in length. These stalks are incredibly strong and tough, even when the leaves die on my own plants I cannot break them off, and require a pair of very sharp scissors to cut them back. Not all *Echinodorus* are large specimen type plants, *Echinodorus tenellus* is the smallest species in the Genus reaching only 30 to 40mm in height and make wonderful

foreground plants. This small pigmy chain Swordplant propagate vegetatively from root runners that grow similar to *Vallisneria*, hence its common name of "Pigmy Chain Swordplant". In ideal conditions the plant soon covers the bottom of your aquaria with a fine, fresh growth of plant, here we can supply it with sandy or fine gravel and plenty of light. However this species likes the temperature to be in the lower 70's f. I have grown these plants successfully in aged tap water at a temperature of 75f. in my community aquaria, with the overhead lighting being 60w tungsten bulbs. In recent years we have seen the introduction of new *Echinodorus* species and one of the most beautiful is *Echinodorus horemanii* being at present, only found in submersed conditions, whilst the leaves resemble those of the larger form of Swordplants the surface colour differs, being dark olive green, very glossy, with undulate margins. This very decorative plant requires clear water with a gravel substrate, aquarist say this plant grows very well even at temperatures of 80f but in nature it grows in cool running streams. Larger *Echinodorus* species grow

best in the larger Bio - Tropical Aquarium among many different types of plants and fish that are found naturally, in the American tropics. Their best growing temperature, ranges from 64 to 77f, but many aquarist do not realise that even tropical plants have seasonal changes. Plants from many genus not only like, but require rest periods similar to those from our own native waters. *Echinodorus* are no exception, resting is important, conforming with nature to the climate of their habitat. This means that they rest in our winter season from December to April. So if your swordplants seem to be throwing off their leaves at this time of the year, and look as if they are dying back, its not your fault. Do not turn up the lighting, in fact reduce the lime your aquarium has the lighting on during this period. Also if the fish in your aquarium will allow, drop the water temperature by up to 5f from its normal temperature, possibly to as low as 70f. If this is not possible you may well be able to transplant your best specimens to a separate aquaria returning them during in the late March or early April to the warmer conditions. *Echinodorus* grow well in terracotta pots, housing one plant

within a mixture of sand, clay and over layered with gravel. The whole pot housing your specimen plant can be buried in the aquariums substrate, you can move them whenever you like, without disturbing the roots and subsequently losing time for your plants to re-establish them selves. *Echinodorus* grow into a specimen plants like the *Echinodorus cordifolius* now growing in my own aquaria. This plant is growing in a substrate of aquarium gravel with some small amounts of clay and sand mixed in, with a top layer of gravel. The water hardness being neutral, at a pH of 7.0 with a water temperature of 73f, the lighting is by natural sun light coming through a glass roof. This plant produces bisexual flowers, these are white and growing on "floral stalks" at intervals of approximately 7cm. The small leaves surrounding the flowers turn into individual plants making their own root systems and these plants grow progressively along the flower stalk. Don't be too keen to plant your new plants, leave them till the leaves are well established, to height of 7 or 8cm. Cut them and place individually in separate pots to grow on, these pots can be easily



moved around your different aquariums, that is if you are lucky to have more than one. Within a few months providing the conditions are correct you will have fantastic Amazon Sword plants, these can be the focal point of your best furnished aquaria.

Malcolm L. Goss

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TEL may have, a year in Spain as m. of Barcelona, but cl. he picked up some of customs. Why else wo. he be busy waving a a ball - especially us by reputation as layers?

Venables has th- United's Bagg or has im i, but the block is the e as Huddle r at least

is still m the painful he midfielder r Blackburn We are a es away ng the hip, because as been able to buy rs that you come gain is.

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le, striker ringham!... he wants to laying on the al stage. ear-old said: oying for nd you are a finished. As a manager ng me I will ntinue."

took Ierck, of course, have never. stration about short of personnel who can mix it a condition. is and despite the potential damage this mounting can cause, Venables is adamant he be fitness of ne his first He said: "Alan Smith cares, and you ter agree-

Wolves' door

WOLVES hope to complete the free-transfer capture of former Manchester United face in time



HAVE I GOT NEWS FOR YOU

Many *Echinodorus* are Bi-sexual

It is believed an undescribed Killfish is to be found in Dunn's River Falls, Jamaica.

"Hagen" are launching a new Pond Video in Sept.

Many species of *Melanotaenia* (Rainbowfishes) lay eggs almost every day

Congratulations! Peter & Sylvia of Hounslow Club on their Ruby Wedding Anniversary

Chenies Aquatics a "Gold" at Hampton Court

Carvings of fish in stone were made by the Australian Aborigines 50,000 years ago

Malcolm has become a "Film Star" (Autograph request by letter only please)

I found snow in Malta! (Read your Bulletin)



AGONISING: Yobo is treated back

to put the blocke Owen in the Wor? has not been unable, resume full training Yobo, who feels pain joint when he attempts had a series of tests yesterday to determine the seriousness of the damage. Moyes is hoping the diagnosis will be positive and that the defender is not facing

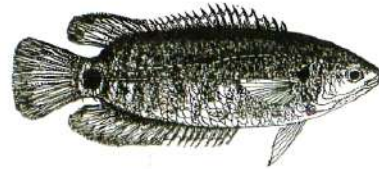
Tu

By How Y

ENGLAN and Alex how fast when Yu in today Gloucester at Health Surrey the match Old Trafford after to Laohans a flat feet still being being over contract. We will started to much, whi

Know your Fish

Anabas testudines (Bloch) 1795



Anabas testudineus (Bloch)

Common Name: Climbing Perch

Distribution: India, Malay, Philippines and South China

Description: Perch-like in shape, Body elongate, moderately deep. Head blunt and hard in appearance. Gill covers have backward projecting spines. Body colour, grey-green grey-silver, fins translucent or having shades of brown. Size: 250mm

Remarks: These fish are found in rice fields and ditches, but they prefer swampy areas with vegetation. Dr Meinken states this fish is not a bubble-nester, but the eggs are laid at random and rise to the waters surface resting in floating vegetation, this hatch within 24/36hrs It is reported these fish can leap out of the water.

TALES OF BLACK MAGIC AND

ADVANTAGE DEVELOPMENTS

I remember vividly, long ago as a small boy, being first introduced to an amazing piece of new aquarium technology called an undergravel aquarium filter, whilst on my weekly visit to the local pet shop to spend my pocket money. I was more than impressed that this crude piece of equipment, powered by a single air pump and diffuser, could help me harness the forces of masses of beneficial bacteria in the aquarium substrate exactly to my bidding and in so doing create a pristine healthy aquarium. Aquariums to that point had always been managed by achieving a balance between the fish and plants in the aquarium, the measure of success being the length of time your tank could remain stable without a partial or total water change.

My only other experience with high tech aquarium keeping in those early days had been an angle iron framed 24" x 12" x 12" aquarium that I had received shortly before on my eighth birthday. The glass was attached to the frame with a brand new product at that time called Black Magic Aquarium Cement which according to the advertising in "The Aquarist" magazine (my bible in those days) banished all problems with leaky tanks. This seemed a huge advance as hitherto tanks had been glazed using plumber's window putty which soon dried out causing leaks that required several coats of a varnish called 'goldsize' to repair and at least 24 hours to dry before the tank could be refilled. Leaks always seemed to occur with amazing regularity and I remember being chastised by my Mum, first for the damage to the

polished surface on my bedside cabinet, where the aquarium held pride of place and again when I needed to commandeer the family bath for 24 hours as alternative accommodation for my collection of goldfish whilst the repair cured.

Today, as an aquatic consultant, I am often reminded of those early days when the first signs of technological advancement were occurring and how simple but revolutionary advances did so much to improve our aquarium keeping. Not only were the advances pretty spectacular at the time but they have also laid down the foundations for the trend of rapid development which has continued to the present day. These days there is a whole mass of equipment, additives and aids now available to make aquarium keeping both easier, more pleasurable and, most importantly, totally successful.

Rolf C. Hagen is a Company that has been very active over the past two or three decades with innovative research by highly qualified technicians, consulting chemists, aquaculturists and veterinarians into developing one of the most comprehensive ranges of aquarium products available world-wide.

The Hagen Fluval and Nutrafin brand names are well established and most of the product ranges have been best sellers and market leaders for a number of years. Hagen product ranges, like their filters, aquariums, lighting and foods have, therefore, had the benefit



of long term use and input regarding their value from both researchers and you and I that use them.

of long term use and input regarding their value from both researchers and you and I that use them.



The new Fluval Aquarium Sets are, perhaps, a good example of the benefits of long-term developments and research into consumer needs. Research indicated people want an aquarium which fits their lifestyle and décor, which these days is often minimalistic and modern. The new Aquarium Sets with all new Light-Glo canopies were designed to compliment any modern home with their clean lines and uncluttered design.



The new canopies are available in single or dual light tube modes and have a new form of PVC reflector which creates a more uniform light distribution than conventional reflector designs. They are also completely free from any potential oxidation damage so their effectiveness remains over time. Fully compatible

with all Fluval filter models the canopy design also gives greater accessibility, making feeding, treating and water changes simple and fast. The sealed lighting compartment received the most rigorous testing: the canopy was immersed a metre deep in water for 30 minutes and didn't let a drop of water penetrate any sealed part of the canopy. Several innovations include an anti-drip design that prevents water dripping down the outside of the tank incorporating an anti-capillary barrier.

The aquariums in these sets are a refined version of the floating base design, comprising 7 models each coming complete with the choice of compatible single and dual canopy alternatives and integrally designed cabinet to allow the aquarium to be free standing. The package also contains Glo-Light tubes, Fluval Plus internal filter, Tronic or Thermal Compact Heater and a range of NutrafinMax food and treatments.



You would have to be living out of the country not to be aware of the new 4 range of Fluval External Filters which, incorporating the most advanced pump technology and media handling technology presently available, a new Fluval Plus range of

internal filters was also recently launched and received equally high consumer report ratings plus indications that these popular filters are superior to advance in this area was the introduction of a highly comprehensive range of user friendly, very accurate Aquarium Test Kits.



The well established Nutrafin Max Premium Fish Foods range was further extended with the addition of six new food types. These include new foods targeted at marines, freshwater bottom feeders and small tropical fish types as well as Spirulina-based foods for marine and fresh water fishes.

Attention to detail is a definite Hagen company trait. A number of products have recently emerged which help with little refinements that ease the way we conduct our aquarium keeping. The new Hagen Giomat range of fluorescent tube control units, for example, come either in single or double unit form with models suitable for 20, 30 and 40w tubes. These versatile control units permit easy custom installation of fluorescent lighting in a variety of places and the splash proof tube holders, although



not totally waterproof, do add to safety over uncovered tanks. Installation is also simplified by using GIo-mat plastic tube clips to attach tubes to a convenient surface. The low density of freshwater does not



make protein skimming (common in marine aquariums) using venturi action a viable method in the freshwater aquarium. Oily proteins do, however, still collect on the surface of freshwater tanks attached to the surface film and are not filtered away by most forms of conventional filtration. The Fluval Surface Skimmer is a cleverly designed little gadget which attaches

to the intake of external filters and effectively skims away surface protein.

Not only good water quality, but precise management also of its characteristics in terms of its chemical makeup, is often necessary in order to keep subjects like Lake Cichlids and Discus.



A whole new range of pH adjusting and buffering products plus Cichlid water conditioners that are very effective in maintaining the correct levels of water hardness to cater to this need.

In reviewing all of these new high tech improvements within the hobby it does once more remind me of my childhood when things were much simpler regarding aquarium keeping. The only time that my father ever actually, physically punished me was because of a misdemeanour regarding my low tech attempts to illuminate my aquarium. I decided one dark winter afternoon to add some lighting to my coldwater aquarium which at the time didn't have a light hood. I carefully

arranged six candles behind the aquarium and once lit they provided a delicate ethereal glow that complimented beautifully the golds and silvers of my goldfish. The problem was that I decided to go out to play and forgot to snuff out the candles! The candles burned down to the point where the flames could ignite the cloth covering the cabinet on which the tank rested. I was summoned back indoors by my very angry father who, fortunately, had been passing my bedroom when my aquarium burst into flames and was able to prevent what could have been a disaster. He persuaded me, by a good thrashing, not to involve myself in similar shenanigans in the future.



Thankfully my ultimate fear that my aquarium keeping would be banned from that point on did not materialise but from then on in my father's eyes the aquarium hobby was definitely regarded as a high-risk pursuit as far as I was concerned.

The Bulletin would like to thank **Rolf C. Hagen** for this article

Faces from the final Frontier

The floor of the ocean is deepest, most mysterious place on our planet.

How are scientists starting to unlock its secrets, asks Anjana Abuja

It is being inhabited by fantastical life forms and littered with untold riches, but what secret worlds really lie at the bottom of the oceans? Certainly not what the average marine aquarist would keep. These "dark unfathomed caves" as the poet Thomas Grey was moved to describe them, are regarded as the great unknown. When in this jubilee year we know humans have smashed the atom, climbed Mount Everest, and landed on the Moon, our ignorance about what's on and

lives at the bottom of our oceans is a breath-taking gap in science.

There has been a collection of expeditions during the past couple of years that has promised to end some of our unawareness of what is at the bottom of our oceans.

Japanese researchers broke their own world record by sending an unmanned submersible to almost eleven kilometres beneath the Pacific and sending back video footage of life in the depths of the Mariana Trench, the deepest point in the ocean. During the summer of 1996 European scientists, including a British contingent, sent a fleet of robots to scour the bottom of the Atlantic.

The three meter long submersible "Kaiko" meaning "trench" in Japanese was suspended from a parent submersible and touched the bottom of the Mariana Trench at a depth of 10,698 meters. Mount Everest is 8,800 meters high!

Because sunlight cannot penetrate beyond a depth of

1,000 meters below the surface, halogen lamps onboard Kaiko was used to illuminate this dark world. Images were sent back via a cable containing optical fibers interwoven with metal, and filled with oil to counteract the huge pressures in the trench. The submersible itself is also filled with oil.

A brief but excited fax from the mother ship described the scene captured on Kaiko's camera "The bed of the Mariana Trench was filled with a fine mud of reddish brown particles". There were no rocks or cracks at all and it resembled a desert. However, very unusual organisms were observed here and there. In a later fax researchers attempted to characterise the mysterious creatures. They described them as types of sea urchin, lugworm, crustacean, and what looked like the excrement of sea organisms. Manoeuvring of the submersible disturbed the mud and "under these clouds one had tantalising glimpses of strange organisms buried beneath".

Professor Koki Horikoshi leading the expedition stated "The

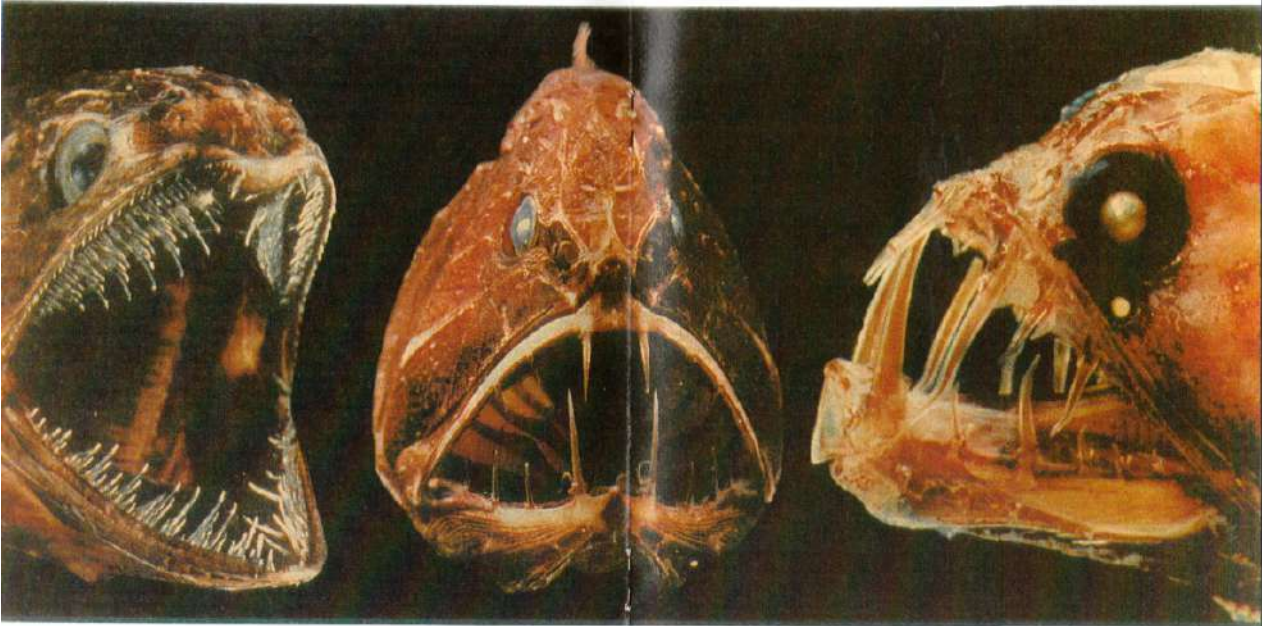
ocean bed looked like a completely smooth brown desert" adding "It was incredible, because nobody has seen such a colour in the sea before. We are used to it looking grey or even black, like the Moon, but this was entirely different. There was absolutely no current, it is quite remarkable because at a depth of 8,500 meters, the current is about 1.5 knots and that is pretty fast". At the time the submersible had scooped out a sample of the sand/mud but on returning to the exact spot some days later, the hole was still there, proving that the bottom of the trench was indeed, a motionless pit.

However there was many and amazing life forms to be seen during the decent and at or very near the sea bed.

There was translucent white jelly-fish about 5 centimetres in length, moving fairly fast. We also saw a shrimp that was moving so fast we could



Faces from the Final Frontier



Creatures of the deep: from left, the Pseudoscopelus, Fangtooth and Viperfish
Such creatures are found in midwater above the ultimate depths of the Mariana Trench

only tell it was white and about 3 centimetres long. There was a kind sea cucumber, which was the same size as the jellyfish, and looked like a gherkin.

Professor Horikoshi expected only to see creatures smaller than a centimetre. The sparse community of creatures on the floor were less bizarre-looking than the miniature monsters patrolling the mid-ocean layers.

As they have adapted to the enormous pressures of the deep ocean life, caused by the sheer weight of water above, they would explode if brought to the surface. Even now, researchers looking at much smaller micro-organisms in the mud/sand samples have to culture them at 1,000 atmospheres (a thousand times atmospheric pressure). The pressure at the bottom of the trench is about 1,100 atmospheres.

Some micro-organisms are impossible to grow at all, and in these rare cases the organism's DNA profile is recorded. The Kent University and the Science Museum in London are

classifying these astonishing discoveries.

Aberdeen University is a participant in the European Union funded project, which includes six other countries. This is in order to look deeper than one kilometre that needs new technology. Dr Monty Priede head of Deep Ocean Research Laboratory at Aberdeen University we have the ability and use of equipment to a depth of six kilometres, that covers everything except the deepest trenches of the Pacific. The project does involve biologist, chemist, engineers, physicists and geologist. This alone illustrates what a feat of co-ordination organising deep-sea research is.

Dr Priede, a zoologist himself is studying the community of deep-sea fishes which live on the ocean floor. In his work he has discovered several hundred species and believes there are many more. "The oceans nearly occupy three quarters of the Earth's surface, these are among the most abundant areas of undiscovered species in the world" said Dr Priede.

Their eating habits are a mystery and all their food must come from the surface in the form of dead animals falling to the ocean floor "The Science of Life" co-authored in 1929 by J. S. Huxley and G. P. Wells, called this nourishment 'a rain of death'.

The oceans are an important sink for carbon dioxide, which is absorbed by algae in the surface layers. These algae are eaten by plankton, which in turn become fish fodder. Dr Priede adds: 'A study of what then happens in the deep sea may help us to discover whether the carbon remains locked in the ocean or is recycled to the atmosphere. The research therefore has implications for global warming.'

There are others reasons for looking at the ocean floor. We need to predict what would happen if disused oil



rigs where being dumped down there. Apart from the floor underneath the rig getting squashed, would it do any harm? Dumping waste of this type is so easy, out of site out of mind, but will our future generations blame us for being irresponsible. Speed is needed in finding out because the ocean could become the ultimate dumping ground for human waste. What now seems to be way back, in the summer 1996 we had various exhibitions around Britain on deep sea research at that time as part of a National Science Educational Program but "dumping" was only touched upon. A number of oil companies including BP and Shell have these items constantly under review. Their quest to carry out further explorations of the Atlantic Ocean is in their bid to find oil. Oil that we demand, will increasingly see the over use of our planets resources. Is time running out, or just starting at the Final Frontier.

Original article first published :
The Times 18th March 1996.

Photos courtesy of :
Planet Earth Pictures.

IT'S A LONG TIME 'TIL SPRING

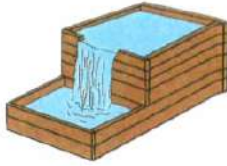


Everything in the garden has died down or hibernated. So, what can the budding water gardener get up to between now and next Spring?

Plan ahead for one thing. Maybe you've always wanted a pond but have limited space (as well as finances!), perhaps you want water in the garden area but don't want fish? Maybe you're getting on in life and find the thought of bending down tending to a pond more than a little discomforting. Well, we've got news for you. It is possible to cover most of these eventualities and still enjoy some form of water gardening and, what's more, do it safely too.

A raised flowerbed is nothing new and many green-fingered folk find that old age or other infirmities pose no problems when flowers and even

weeds are within easy reach. The same arrangement can be done with the water garden - just replace the flowering plants with water!



The basic principle is to build a box above the ground (this one's built with sleepers), line it with a suitable water-tight material and you have the makings of a raised pond.

The raised pond has only one slight drawback, because it is above the ground, it will be more exposed to cold weather than its 'in-ground,' better-insulated counterpart. This can be overcome, should you live in a particularly cold area, by building the containing walls on the traditional cavity, double-skin principle and filling between the two surfaces of brick with insulation material such as rockwool.

The same construction principle can be adapted to other 'wet' garden features: instead of a pond, why not have a bog garden instead? Bog gardens are meant to be permanently moist rather than truly wet; plants like to have water within easy reach of their roots but don't always need to stand up to their ankles in it. Build the enclosure, line it, but this time make a few perforations in the bottom so that the bed doesn't just become a stagnant waterlogged area. A good tip is to partially fill it with water and then add the earth or compost. This means you won't wash out the compost as would be the case if you put a hose on to it and there won't be any 'missed' parts of the bed either.

So far we have only hinted at the advantages of such systems but now for the details.

The important advantage in these designs - even outstripping convenience - is safety.

Where there are children and the infirm, the pondside is always potentially dangerous. Slippery, uneven, surrounding paving slabs can easily lead to a disastrous fall or a tumble into the water; children are

attracted to water as if by a magnet and, indeed, the pool holds many attractions from many points of view.

A raised pond or bog garden manages to circumnavigate many of these dangers. Similarly, drowning in a pebble fountain calls for more than a certain degree of determination on the part of the unfortunate person driven to such lengths, and it's pretty impossible anyway!

Because of their often small proportions, any fountain in a raised pond will only need to be of modest power; here again, safety is another side-effect for many of the lower-powered models are now available as low-voltage models. This means there is no danger from electricity, often lethal when in the proximity of water. The supply cable is simply run out from the transformer (safely located in the conservatory, house or garage) and hardly needs any protection except perhaps against someone tripping over it.

Turning to convenience, it is a simple matter to incorporate into the brickwork design the facility for a seat. This doubles both as a welcome resting place and as a place to work from - most of the plants, fish and equipment will probably be well within arm's reach. If the seat has a removable lid/seat then the space beneath can house filtration equipment, necessary water gardening tools or even a bottle or two of refreshing drinks in a cool box!

Many people worry about m of getting a liner of the correct size and shape. With a simple oblong 'box' all that is necessary is to obtain a liner

whose dimensions are (Length + twice the depth) x (width + twice the depth); this will ensure you have enough liner to drape over the top. With 'L' - shaped ponds then it is more difficult to fit the liner without having to have folds somewhere but these can usually be hidden behind a log feature or some suitably bushy marginal plant or two.

Much of the hard work has been taken out of building brickwork as pre-fabricated 'sections' of brick are available which simply lock into each other, so your box soon takes shape ready for liner.

If a pond or bog garden isn't your thing (or even practicable in your garden space) then why not have a water feature instead?



These self-contained units are suitable for both indoor and outdoor situations. A pump sits inside a separate reservoir inside a decorative pot, with a supporting tray on which gravel and potted plants are placed. Water is pumped up through an overflowing jug or even a decorative tap to run back down

through the gravel into the reservoir where it starts its journey once more.

Here again, a low voltage, low-powered pump is all that is needed. The potted plants can be replaced as they go out of season (or outgrow the tub!) although you needn't have plants at all. If cultivation of plants of any sort is not for you but you would like the sound of water in the garden then try a pebble fountain?



This time the enclosure can be much lower (even ground level); again it is lined, the pump sitting in a sump into which the water drains to be recirculated again. The liner is important to retain the water which would otherwise drain away. If a multiple-fountain is desired then a central pump (of sufficient power) can work multiple nozzles all connected to the pump by radiating pipework hidden beneath the pebbles or small boulders.

Maintenance of these water features is simplicity itself. Some designs have a built-in water level indicator so you won't lie awake wondering if the pump is going to run dry overnight. Should algae build up on the gravel or any rocks then remove the potted plants and add some household bleach to the water; this will kill the algae quite quickly and

restore the rocks and gravel back to their original conditions again.



A variation is the constantly pouring pump into a half barrel or similar container. However such containers are not suitable at all for fishkeeping



A small Water-lily (such as *Nymphaea pygmaea helvola* or *N. pygmaea rubra*) is a possibility but even these lilies may not survive if there is too much water movement.

Now we've have got you thinking about next year here's a final comfort: if should you move house you can always take the water feature with you!



You hear it so often - "There aren't the characters around anymore," and our particular area of interest - fishkeeping - has just lost two.



Jack Stillwell

Anyone dealing with Portsmouth A.S. since 1945 will have met Jack. Aquatically or socially, you couldn't miss him - he was usually in the middle of a heated debate or expertly leading the dancing.

To many people, Jack was Portsmouth, heavily involved in all the Society's activities, especially its Annual Exhibition each summer.

Jack's ponds and tanks always had something of interest in them - he was a regular supplier of *Elodea* to many. There was a rumour that Jack had 'FBAS' marked on every item of his clothing (probably

Doris Cruickshank

Doris was one half of the well-known showing team on the Show scene some years back (Terry was a Catfish man) and fiercely proud of her Barbs.

Together they were members of several Societies, Kingston, Ealing and the CAGB are some that spring to mind, before

engraved on his heart too) such was his loyalty to the Federation. A mere mention of any rival organisation was enough to rouse Jack in defence of his beloved FBAS for whom he had been a longstanding Minute Secretary, Coldwater Judge, FBAS President for a term and a Life Vice-President.

Strongly connected to ASAS, Jack was always in the thick of things, greeting visitors and Speakers, arranging Furnished Aquarium Competitions etc. His trips in his three-wheeler were legendary but in later years he travelled with Wally Ryder to various Federation events.

Understandably, since losing Joyce a few years back, Jack hadn't been the happiest of men and when ill health set in things became that much worse.

It won't be the same without hearing his voice or seeing him chomping on his Wotsits.

Our thoughts are with his family at this sad time.

they moved down to Cornwall.

Often seen around at major aquatic events, Doris could hold her own in any aquatic conversation and was never happier than striding up to claim her numerous 'Cards' whatever the value - although it was usually a 'First'. Our thoughts are with Terry in his time of loss.

DIARY DATES 2002

FBAS	<i>Assembly</i>	7th September
Kent Association A.S.	Open Show	8 th
Alden A.S.	Open Show / Auction	8 th
BKA - Killifish	Auction (<i>Weybridge</i>)	8 th
Hounslow D.A.S.	Open Show	14 th
Olley A.S.	Open Show / Auction	15 th
Catfish Study Group	Open Show / Auction	15 th
South London A.S.	Open Show	15 th
Port Talbot D.A.S.	Open Show	21 st
Huddersfield A.S.	Open Show / Auction	22 nd
Scandinavian Killifish (Copenhagen)	International Show	27 th -29 th
N.G.P.S. (Goldfish)	Open Show / Auction	28 th
Fair City (Perth) A.S.	Open Show / Auction	29 th
Goldfish Soc. G.B.	Open Show / Auction	5 th October
Basingstoke A.S.	Open Show	6 th
Grangemouth A.S.	Open Show	6 th
Halifax A.S.	Open Show / Auction	6 th
Festival of Fishkeeping and Water Gardening		11th-13th
Bracklesham Bay. Events include:		
G.S.G.B. Goldfish	Open Show	12 th
Catfish	Open Show	12 th
Auction of "Home Bred Fish"		13 th
Livabearer Convention		13 th
"Supreme Championship" Final		13 th
"Hagen Masters" Open Show		13 th
Bookings / Inquires: 0208 847 3586		
Doncaster A.S.	Open Show / Auction	13 th
Washington A.S.&P.	Open Show / Auction	20 th
British Aquarist Festival Exhibition/Open Shows		2 nd 3 rd November
Bradford A.S.	Championship Final	10 th
	Open Show / Auction	
F.S.A.S.	Council	1 st December
FBAS	<i>Assembly</i>	7 th

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

FBAS
help
&
advice

- Q. I am new to the hobby and while I was looking into a fellow fishkeepers tank I noticed that even to me he had some very strange plants. When I asked what they were, he replied, they are weeds out of his garden. Can these plants live in the aquarium? If they can, will they harm the fish or foul the water?
- A. Unless his garden is under 2ft of water, it's safe to say that these plants will give him plenty of trouble. One they will not grow, and when they die off, they will pollute the water. Also if the plants have ever been sprayed with pesticides the danger is even greater.
- Q. Could one of your experts tell me the sex differences of the Butterfly Fish? Also how they spawn and their requirements.
- A. Thank you for calling our team

Experts we are very flattered. Adult male Butterfly Fish, *Pantodon buchholzi*, have a deep notch in the anal fin females have no such feature. This species coming from Africa likes a well planted tank, spawning occurs with the eggs being released and floating to the surface of the water. The male squeezes the female with his ventral fins in a protracted spawning ritual. The young are difficult to raise, with difficulty in feeding them (very small food is required). Even adults are troublesome in getting to feed and live food maybe a must for these fish.

Q. I have three Kuhli Loaches, together with several of my other tropical fish in a 3 foot aquarium. Will the Loaches breed in this community tank.

A. I am pleased that you see your K. Loaches *Acanthopthalmus Kuhli* in your aquarium when ever I have kept these fish they completely disappear. However it is reported that they lay a scattering of non-adhesive eggs after a wild mating chase from one end to the other of the aquarium. It is only when a female is in spawning condition, being much fatter than males, can it be truly attempted to tell the sexes apart.

What does it take to convince you there's no better fish food?

Can you start your monthly fish as a daily feed with your own differences. TetraMin Pro is the most advanced food available for Tropical Fish. It has a higher vitamin content than ordinary feeds and contains energy levels. In addition, the patented manufacturing process ensures inclusion of metabolite boosting L-Carnitine, more Vitamin B12, vitamins and energy are better absorbed. The high protein content helps with swimming tank maintenance and provides the essential nutrients for further information visit the website on the back of the jar. For more information visit the website on the back of the jar. For more information visit the website on the back of the jar. For more information visit the website on the back of the jar.

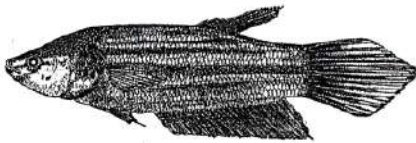
Tetra
www.tetra-fish.co.uk

Straight from the Wild!

By
M.Goss

One can be excused for saying have we not seen and read enough about the fighting fish *Betta splendens* (Regan). However the fighting fish we see today and have as the Federation's emblem on its badge is a very different looking fish to the species first introduced from its original habitat.

The fish is native to Thailand and was introduced into Malaysia by the aquarist and fish fanciers who once kept them for their fighting prowess. *Betta splendens* prefer to live in rice field areas rather than streams or forest pools.



Betta splendens Regan

Their body is elongated, dorsal fin sail-like, the pelvic fins are long and narrow. Colouration of wild species is variable, usually greenish brown to green with obscure dark lateral

bands. Some of them may have some metallic spots arranged in rows. The dorsal fin is reddish with brilliant green stripes and the caudal fin is red brown with an orange edge. Anal fin blue green with red stripes and pelvic fins being red with white tips (Museum specimens that are preserved lose most of their colour and become white).

The *Betta splendens* has always been popular with local people because of its extraordinary pugnacity of the rival males. Like horse racing, the Sepital fight was very popular in Thailand. Well known and documented are, that two males cannot be reared in the same aquarium. Even if they are put in different aquariums that stand side

by side they can be seen desperately trying to get to each other. When two males meet in the same area of water both the fins and gills spread out. The pharyngeal cavity swells up

and the fishes become brilliant red. The fight will never end unless one fish becomes completely exhausted and surrenders. However, the fight does not end in death to either one of the fishes. Sepital fights were often exhibited in public places in Thailand and the species was bred on a wide scale for this purpose. Along with the breeding industry, the rearing of mosquito larvae is also a lucrative business with fighters preferring mosquito larvae while they are young. In the wild fighters eat almost all kinds of insects.

Breeding even in the wild resembles the behaviour of most Anabantidae. The male builds a loose bubble nest among the plants and debris, then drives the female underneath it, embraces her and turns her back. After several pairings, the female will have laid hundreds of eggs. The male then spits the eggs into the nest and takes charge of the brood. The male rushes at the female making her retreat before she tries to eat the eggs.

In the aquarium these fish are fascinating to watch when spawning but the female must be removed immediately after or the male will harm her.

From its native country Thailand it was introduced into other Far East countries as it was so popular.

REF: Freshwater fishes of Peninsular Malaysia.

A.K. Mohammad Mohsin
Mohd Azmi Ambak.

**YOU
OR
YOUR
COMPANY
COULD
BE
ADVERTISING
IN
THIS
SPACE
FOR
LESS
THAN
YOU
THOUGHT
IT
MIGHT
COST
!
CONTACT
(ADVERTS)
DETAILS
from
THE
EDITOR**



Synopsis of Filtration

by Alan Benson

Part Two - Q & A

The more commonly asked questions, particularly from the enthusiast new to the hobby are:

- Do I need a filter for my pond?
- What size filter do I need?
- What size pump do I need?

In this section I will endeavour to cut through the technicalities and establish a few constants on which to base a realistic answer to these questions.

We will assume that we are dealing with

an existing pond, with an average quality water supply.

Contrary to popular belief YOUR FISH do not of necessity need filtered water; in nature any reasonably-sized body of water will reach maturity with a balanced eco-system of plants, fish and other life forms. In practice neither you nor I would be satisfied with the quantity or size of fish that an average garden pond would be capable of supporting naturally. Hence for YOUR BENEFIT filtration is needed to re-establish the life support system of your vastly overstocked pond!

Here, it would be well to note the "Life Support System", because in any intensive system, aquatic or otherwise, what we are doing is to manage the environment to enable the livestock to survive!

If a filtration system is needed,

the question of size arises: to answer a question with a question or two - What size is your pond, what do YOU want to achieve?

Always remember that you cannot over-filter a pond and if some old soldier starts talking in terms of "a third of surface area", remember that in his/her day Undergravel Filters were the vogue and such calculations are specific to these and in no way refer to External Filters.

Size comes down to your own convenience, in theory a small four gallon header tank type filter will clear a 2,000/3,000 gallon pond but only if

YOU CLEAN OUT THE MEDIA ON AN HOURLY BASIS!

If the media's doing its job, it will block.

To filter a pond you must carry out various functions:

- SEDIMENTATION** - removal of basic fish waste and other obvious detritus.
- MECHANICAL FILTRATION** - removal of the more obvious suspension in the pond water.
- PURIFICATION** - removal of the chemical elements of fish waste such as Ammonia and Nitrate, usually achieved by biological action but could equally be chemically orientated.
- CLARIFICATION** - a by-product of (a),(b) and (c) but is usually achieved nowadays by UV or Electro-magnetic means.

From experience, no individual filter can be all things to all men and the majority of single chamber filters are of little use for ponds above 1,000 gallon capacity. In general, each of the above functions should have its own "chamber."

The question of pump size is somewhat easier to answer as there is a basic rule of thumb for the efficient operation of a filter - i.e. The contents of the Pond should be passed through the filter around once every two hours. Hence a 2,000 gallon pond would require a 1,000 GPH pump to feed the filter. Always allow a little extra for fountain, waterfalls, etc. The answers are therefore:

- A filter is required if you intend to stock with fish beyond Nature's norm.**
- The size of the filter depends on the amount of space available - the bigger the better!**
- The size of the pump depends upon the size of the pond plus allowance for height of 'lift.'**

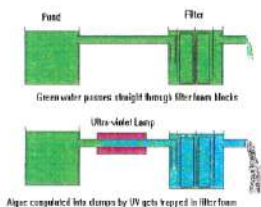
When writing articles on Aquatic Filtration for the initial copies of Fish World I was worried that my approach could appear patronizing to the more experienced fishkeeper. It would seem from the comments and queries expressed on the FBAS Advisory Stand that I could not have been more wrong. Those who have been in the hobby for some time, tend to assume a certain level of basic knowledge when talking to others and this tends to scare off a proportion of prospective hobbyists.

Now, as the objective is to attract new blood into the hobby this is obviously counter-productive. In an

effort to redress the balance therefore, I am now going to leave the University and High School education to others and endeavour to put across the primary level of information required by newcomers to the hobby, who are happy to admit that they don't know their Venturi from their Back-flush.

Having said this, the first comment does in fact concern the more "High Tech" end of the subject, Ultra Violet Units. Since such units were first introduced into the Coldwater section of the hobby, there has been a tendency to call them UV Filters and it has been noted at recent Shows that certain dealers are not only using this product description but also advising hobbyists that a UV Unit, used in isolation is a "FILTER". **THIS IS NOT SO** and, in certain instances, could result in the loss of fish.

The basic fact is that such units are not filters. The use to which most Aquarists or Water Gardeners put such units is as a **FLOCCULATOR** in that the unit will join (or flocculate) minute algal particles into larger ones capable of being removed by normal **MECHANICAL** means. As this indirectly clears green pond water, the



proprietary use of the description **Clarifier** is also correct.

When used correctly in an enclosed environment UV is capable of 99.9% Sterilization of water, but not in an outdoor pond. In practice, only objects of life-forms physically passing within 1" - 1½" of the light source will be affected (i.e. through the casing of most units). For our purposes, "through-put" or "retention-time" are of no great importance as the effect of the unit is accumulative and the entire water content of your pond will eventually pass through the unit and thus irradiate algal content. One positive side effect is that any parasites or "bugs" with a free-swimming life-cycle which pass through the unit will be eliminated.

The question of where to place a UV in the system is a little academic as full flocculation does not take place until the algal growth returns to the pond and is then removed as it next passes through the mechanical filter, so that the UV Unit can be used in tandem or in parallel with your filtration, the only proviso being



You Must Use Mechanical Filtration in Conjunction with a UV Unit.

There are advantages if the UV is placed in the pumped side of the filter (i.e. **input** on pumped supply systems or **output** on gravity-fed systems) on the basis that a pumped supply tends to scour clean the quartz sleeve which surrounds the light source in most units, thus minimising the maintenance of the most expensive (and fragile!) part of the UV Unit. It is pertinent to point out here that the UV penetration is dramatically reduced by any dirt on the quartz sleeve, so regular cleaning should be maintained. As the light source (tube) has to be replaced at six monthly intervals to maintain efficiency it is usual to combine the two.

On this point, it is essential to routinely change the light source (tube) every six months. Whilst there may still be a "lighting effect" from the tube, by this stage there will be little UV emission. Used correctly, a UV Unit is arguably the most efficient means of maintaining clear water at all times - not forgetting earlier comments that **clear** water is not of necessity **pure** water. Two important points to remember when using such equipment are:

- Water and electricity are always a source of potential danger and such equipment should always be utilized with an appropriate RCCB installed by competent personnel.
- Ultra Violet rays can potentially damage the human eye, so

NEVER LOOK DIRECTLY AT A LIGHTED TUBE

Following the theme of the last subject we will again focus on a 'non-filter'.

We arrive at "What is a Biological Filter?" Now whilst any media in an aquatic system, down to and including the sides and the bottom of the pond itself, will host the necessary bacteria for biological action to take place, such action in fact purifies the water rather than filters it, so strictly speaking the question should read "What is a Biological Purifier?"

For a Biological Chamber to work most effectively, all solids and suspended matter should have been **filtered** from the water prior to it reaching the Biological Media (hence my own contention commercially that single chamber "black box" type filters are unsuitable for ponds above about 1 000 gallons maximum). Now we must ask "What is Biological Media?"

I have no intention at this stage of getting involved in the ongoing arguments concerning various proprietary products which make magical claims or appear to be the next best thing to the elixir of life, all of which do a satisfactory job in the right circumstances. Biological Media is merely a material or substance capable of providing a maximum surface or "grazing area" to support the largest possible colony of Bacteria.

Now, what does a Biological Chamber actually do? We will assume that we are dealing purely with a recirculating pond system, bearing in mind that potable (drinkable) domestic water is **not** produced for the benefit of fish and fishkeepers! In a natural environment, fish produce body waste that Nature ensures is dissolved or diluted to harmless levels or held at densities which do not produce a health risk i.e. a natural balance.

As fish keepers we are rarely satisfied with Nature's idea of what constitutes such a balance in our ponds and so it falls upon us to redress the balance to meet our requirements and ensure the well-being of our fish.

The most dangerous product of a fishes body waste is **Ammonia**, not so much in itself as in its association with water, where it splits into what is known as ionized ammonia and non-ionized ammonia. Initially and for most hobby requirements the ionized ammonia can be ignored. The non-ionized ammonia is however toxic to most fish at varying levels and the situation is further complicated due to fact that toxicity levels vary both with temperature and the pH levels of the pond water. The obvious conclusion for the layman is - get rid of the non-ionized ammonia! The next problem area is **Nitrite** which above certain levels adversely affects the blood flow of most fish and thus impairs the respiratory system. Get rid of the nitrite! Nature herself has provided the means of achieving our objective in the form of minute bacteria known as *Nitrosomonas* and *Nitrobacter*, it is now our job to provide a suitable environment to establish a large enough colony of both to re-balance the life support system of our fish - a Biological Chamber.

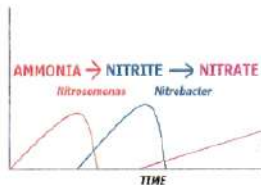
It must be stressed that unlike Mechanical Filtration, Biological Action does not commence instantaneously and provision must be made to protect existing stocks of fish while the biological action matures, normally this will take anything up to three months but can be accelerated by seeding with proprietary products such as ABA or similar. Interim protection can be

provided in the form of Zeolite, carbon, etc.

The reasons for this protection and an indication of the actual biological breakdown which takes place is as follows:

As a bacterial colony is built up in a Biological Chamber the *Nitrosomonas* bacteria become established first; their objective in life is to breakdown Ammonia into Nitrite, whilst the *Nitrobacter* bacteria (which oxidize Nitrite into **Nitrate**) are somewhat slower in developing, resulting in a Nitrite peak necessitating protection of your fish.

We can now see the reasoning for disposing of all or most of the solids in suspension prior to the water reaching the Biological Chamber - why provide our fast expanding colony of



Nitrosomonas with large quantities of ammonia-rich detritus to convert into Nitrite beyond the capabilities of our slower spreading *Nitrobacter*? It does not take much imagination to extrapolate this into the reason why single chamber "black boxes" are of little use for large and/or heavily stocked ponds!

In closing, I would emphasize that I am fully aware that this oversimplifies and side-tracks considerably

much of the scientific theory of the subject and takes no note of more recent developments in the area. It does, however, provide an understandable layman's outline of the subject sufficient to answer a newcomer to the hobby, who can then build on it at his/her discretion.

This brings me to a topic which I have studiously avoided for a number of years, "SIPOREX" or other sintered-glass products.

To be fair to the product, we must initially isolate both the hype and the mystique that has been evident in recent years in any correspondence referring to this product, this has I fear been encouraged by the emotive reaction of various "Amateur Experts" within the Hobby, particularly the Koi specialists who should know better.

Three statements will establish ground rules for this subject, these are:

- No one media, regardless of claimed sophistication, will do all things.
- You cannot change the rules of nature instantaneously.
- Regardless of topic, "Professional Specialists" usually know the practicalities of their subject better than any "Amateur Expert."

First and foremost, "SIPOREX" is manufactured by a major international conglomerate who would never place a product on the market without considerable research, development

and pre-release field trials, the product was well-established as an efficient and effective biological media in the aquarium sphere long before it was exposed to the UK Koi market.

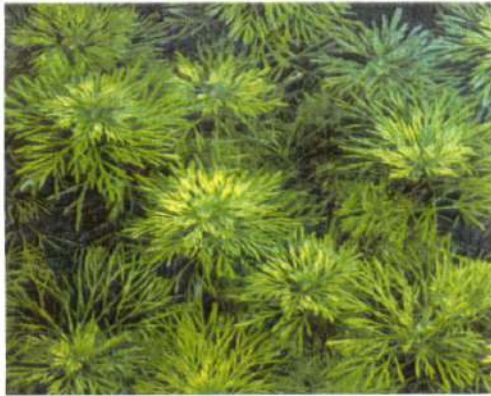
If you are naive enough to believe that small quantities of ANY media are capable of saving you from carrying out all routine tasks necessary to maintain the life support system and ensure the well-being of your fish, then I would suggest that you do not belong in the Hobby in the first place.

In conclusion, if in doubt ASK the Professional Specialist is there to help you - his livelihood is dependent upon you continuing with the hobby. There are also thousands of experienced hobbyists out there only too willing to help if asked, without the glare of publicity aroused by the emotive reaction of the 'Amateur Experts.'

Editor's Note: I would like to thank Janet Benson, of Ilford A.S., for permission to use this article and for her assistance in its original preparation.

Know your Plants

Limnophila indica (Druce) 1913



Common name: Ambulia

Distribution: Asia, South China, Africa and Australia.

Description: Thickly leaved stems that can grow well over half a meter in length. There are often white roots in the stems. The leaves form whorls, the whorls are so thick that they form a rosette. (in contrast to Cabomba) Total plant being light green in colour.

Remarks: A very decorative plant for the aquarium, all though there are no demands on water conditions, but prefers neutral to mildly acid (pH 6.5/7.0) it likes a temperature of 68/76f and grows well under the light of 40/60watt incandescent bulbs 12hrs per day.

NEW PRODUCT NEWS

INTERPET launches AirVOLUTION



AirVOLUTION, the new air pump range from Interpet, is the culmination of over 20 years experience in producing market leading air pumps. Designed in the UK, and manufactured using the latest materials and technology, AirVOLUTION provides a true evolution in the aquarium air pump market, delivering new levels of performance and noise suppression.



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Additional features include carbon air filters to ensure air-borne pollution is not transferred into the aquarium, and sturdy base feet to further reduce noise levels. Internally there are several innovative features. AirVOLUTION is available in 5 sizes with flow rates from 75-600 lph.

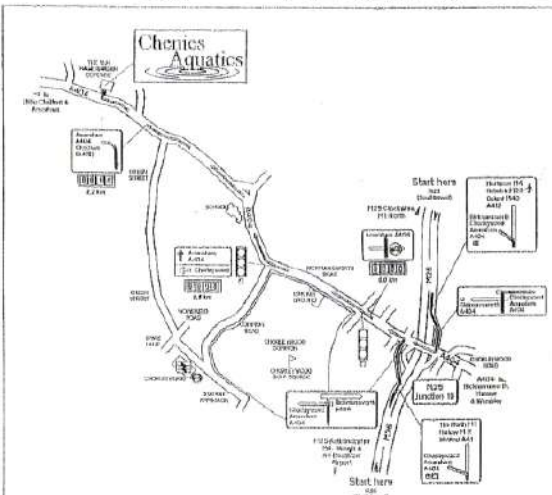
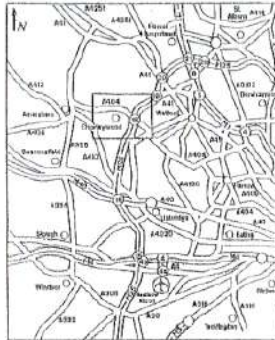
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BOOK REVIEW

POND BASICS
by Peter Robinson



Whilst dashing through and passing the many stands at this year's Chelsea Flower Show (FBAS stand was there) I could not pass the RHS Book Stand. I am always looking for a book that will catch my eye. I picked up some hardback water gardening books, but as soon as I saw the price tag they had to go down again!

Pond Basics, published by Hamlyn is a softback and priced at £12.99 seems on the expensive side. However just a flick over the pages and I could see its value.

Its opening paragraph says it all: "With its unique properties of reflection, sound and movement, water will bring a whole new dimension to your garden. It has infinite capacity to both soothe and delight, whether it comes in the form of a small, restful pond or a dramatic fountain display". This publication covers every form of water

feature with wonderful illustrations and full coloured pictures on every page.

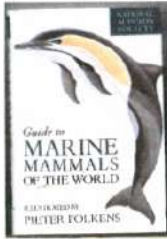
In fact the pictures inspire you to plan the building of a pond straight away. The items covered are Planning, Excavation and Installation Moving Water Features, Decorative Features, Wildlife, Planting, Plants, Troubleshooting and A Year of Pond Maintenance. I found 68 pictures of ponds giving those who are planning to build a pond many ideas. These being informal and formal examples, both raised, semi-raised and fully sunken ponds, plus waterfalls and water features. Pebbles, decking and pavements all entering in the many design and pond construction techniques. Pond design is the main asset of this book with its diagrams and particle help on where your pond should be within your garden.

The photographs are laid out in an easy-to-follow, step-by-step, making and building your pond trouble-free (so the books writer said!) well, almost anyway. Trust me, I am a fishkeeper!

However there is 15 pages devoted to plants, these being marginal, submerged plants and of course the Water Lily. It also adequately deals with those questions we hear over and over again, "what can I do about green water" not forgetting "blanket weed".

All in all it's a great book for the water gardener and covers every aspect of building a pond, with advice to maintain and care for your plants and fish.

Pond Basics is published by Hamlyn. £12.99 ISBN 0 600 60086 6



BOOK REVIEW

Guide to Marine Mammals of the World

Illustrated by Pieter Folkens

Are you one of those people who doesn't know their North Atlantic Right from their North Pacific Right? Or a Dolphin from a Porpoise?

OK, maybe we're pushing things by expecting fishkeepers to be as knowledgeable about - or as interested in - aquatic mammals as they are with true, albeit aquarium-kept, fishes. Having said that, we make no excuses for including this book in our 'must read' recommendations.

Do you want to start by guessing how many marine mammals you can think of? Well, yes, there are Whales, Dolphins, Porpoises, Seals and ... er ... Sea Lions (no, that's not cheating!) and ...

We'll put you out of your misery by adding such animals as Otters, Walruses, Dugongs, Manatees and - perhaps surprisingly - Polar Bears. Whilst the final animal in the group may be queried, its inclusion is justified by the fact that it spends a large amount of time in a marine habitat; the only difference to the other animals is that the Polar Bears habitat is frozen for most of the time.

Marine mammals range over a huge area - the whole world in fact - including pantropical seas, freshwater rivers, Arctic regions and open oceans. It seems impossible to find any location where marine mammals haven't found an aquatic niche in which to thrive.

No less than 118 species, divided between ten groups, are fully described within the pages of this book. Each entry contains information on **Names, Key Features, Introductory and Descriptive texts, Measurements and Life-spans, Range and Habitat, Similar Species, Behaviour, Reproduction, Food and Foraging, Status and Conservation.**

It may seem strange that an illustrator has been accorded 'top billing' on the title page over the several authors who also contributed to this Guide. However, once you've gone through the brilliantly illustrated pages you'll soon appreciate that Pieter Folkens fully deserves such a tribute.

Although the book is superbly furnished with real wild-life photographs you find yourself having to work hard to

tell the difference between the two different visual presentations. That's pretty good going say, for just a few species, but considering the sheer numbers involved plus the fact that many of the more obscure species (take, for instance, Beaked Whales with over 20 different species) are not easily, or even frequently, observed makes the overall project quite mid-boggling.

Produced by the famed National Audubon Society, the amount of facts assembled by the authors - Randall R. Reeves, Brent S. Stewart, Phillip J. Clapham and James A. Powell - will never cease to amaze: whales can sense sound up to a range of 2,000 miles; some dive to over 6,000 feet and

stay submerged for over 2 hours; growth rate of young whales is 20 times that of primates; food sizes range from knoll shrimp up to young Sea Lions and well beyond. The Whale is nearest related to the Hippopotamus than to any other terrestrial animal.

Pack both visual delights and scientific facts into one book, present it with flair and authority and you cannot help but come up with a best-seller. Dip into it at any place and you will find something to grip your attention, hold you spellbound or have you rushing out to book a ticket to the nearest whale-viewing area.

Guide to Marine Mammals of the World is published by Alfred A. Knopf in New York (\$26.95 ISBN: 0-375-41141-0)

WHO DOES THIS BELONG TO?

Correctly decide who owns this long-standing piece of aquarium equipment, still going strong after 50-60 years at least and the Editor will send you a prize!



This external thermostat belongs to:

- A) Bob Esson
- B) Colin Richards
- C) Bill Rundle
- D) Joe Nethersell

Answers on a postcard to the Editor

The Green Menace!

Crassula helmsii aka. Synonyms: *Tillae recurva* (Schkur)

The genus *Crassula* with about 300 species, comprises mainly succulent herbs. Only a few species, with creeping floating stems, are found in wet places and tolerate long periods of submergence (Ref: Rataj, Horeman TFH Aquarium Plants)

However many years ago, water gardeners were extolling the praises of this species as an excellent oxygenator but nowadays it's become the villain of the water garden - or anywhere else it can get a vacant space.

Scientifically speaking it is classed as a member of the *Crassulaceae* or *Opheo* family.

It occurs world-wide and has a characteristic feature of being able to store water in its tissues such as stems and leaves. Quite surprisingly, although aquarists know it as an aquatic plant, most members of the Family are succulents predominantly found in dry habitats.

The species in question here is a native to New Zealand and whilst quite happy also in a tropical aquarium it's natural preference is for cooler temperatures. The species shown was (fig 1) growing in a half-barrel, outdoors all year round at an aquatic establishment not a million miles from Heathrow Airport. In these conditions it is completely



Fig 1 *Crassula helmsii* (Schkur) growing in the confines of a barrel.

filled the area of the barrel, when "liberated" into the wild it encroaches rapidly along the lakes and ponds usually overgrowing everything else and completely clogging up the water. It is almost uncontrollable, so think twice about it before introducing it into your pond. You have been warned! If you already have this plant then do not throw it away haphazardly, always destroy it completely to prevent its otherwise relentless spread.

Dick Mills

Hounslow A.S.

Fig 2 *Crassula aquatica* (Schoeni) closely related to *C. helmsii* but is more commonly grown in the tropical aquaria.



Editor: Dick in this article has captured the upper most concerns for the environmentalist today. It is so easy for us to sit back and look at the *Eichhornia crassipes* (Water hyacinth) that was a native plant to Sri Lanka, formally Ceylon where it blocked up irrigation channels. Since, it has moved to all parts of the tropical world where in Lake Victoria, Africa, it has grown so dense around it's shores, fishermen have not been able to get their boats in or out. So it is quite easy to see how temperate plants from foreign lands could ruin our own environment.

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