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FEBRUARY 1998

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AQUARIST PONDKEEPER

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As we move further into the year already we have received advance details of aquatic events, both large and small, which should go quite a long way to making your fishkeeping enjoyment even greater. Every year we can look back on a busy 12 months during which our appetites for excitement and interest were generally well satisfied.

However, there is often a great deal of 'organisation' going on behind the scenes which not only ensures the success of such events but also, sadly, is not entirely appreciated (or noticed) by those who benefit.

Thus it is, and has been, with A&P. Through most of its recent history we have been fortunate to have had the dedicated efforts of one person by which it has been possible not only to bring you an aquatically-interesting magazine each month but also most of the A&P sponsored events, including the long-established Champion of Champions Competition at the annual British Aquarists Festival in Manchester and several national shows at Alexandra Palace in London.

Many readers attending other festivals at Doncaster, at various venues in Scotland such as Metherwell and Perth, and at Weston-super-Mare, will be on more than just speaking terms with John Young from whom they have purchased many a supplement, back issue, book or poster.

Many Show Secretaries will also have had contact with John in his co-ordinating capacity in A&P awards.

From January this year John will be taking on a new responsibility with A&P in becoming a Marketing and Promotions Consultant; we won't be losing his many years of expertise (and close links with the aquatic trade) but he will be handing over his advertisement manager's duties to Gwan McNeill over the coming months, although it is anticipated he will still be attending the major festivals with the A&P display stand whenever possible.

I am sure that readers everywhere will gladly forego my monthly rambling to make room for a very sincere expression of appreciation for John's enormous contribution to the success of A&P over the past 25 plus years and to his ongoing support of the fishkeeping hobby in general.

Very many thanks, John, from fishkeepers everywhere.

It is also with regret and sincere appreciation that we say farewell (perhaps for only the time being) to David Twigg, who has had to relinquish his Kai Calendar column duties. Dave's cheery face and personality (must be living with Lyn that does it) will, however, still be seen around all the very best Kai events during the year and we wish him all the very happiest of poolside moments in the future. Kai Societies have benefitted greatly from his continuing Calendar of Events and we hope to be able to bring you this important information without too much of an interruption.

David Twigg

EDITOR

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★ PLUS: Tetra Competition — 55; Seabray Competition — 62



COVER



MAIN PHOTOGRAPH: Kribfish are but one subject of tropical freshwater fishkeeping that the newsmag's also overlook in their mad dash to get printed. Derek Lambert urges you to slow down and have a look at these colourful fishes.

PHOTO: DEREK LAMBERT

INSET PHOTOGRAPH: Yes, you can dig half a hole... leave some of it above ground! David Lloyd explains how easy it is to upgrade your existing pond.

INSET PHOTO: DAVID W. LLOYD

Dave Garratt says his Love Affair with the Clown Triggerfish started it all off

PHOTOGRAPHS BY A&P LIBRARY

What Clown the Trigger?

Notice anything missing on this Triggerfish? Pelvic fins are but rudimentary stubs.



Despite the beauty of many of their number it is easy to see why some aquarists consider the Triggerfish to be a family of destructive, aggressive fooligans, not fit to grace the peaceful beauty of a marine tank. However, on a personal level I have always had a soft spot for these belligerent fish as it was a Clown Trigger that was directly responsible for bringing me

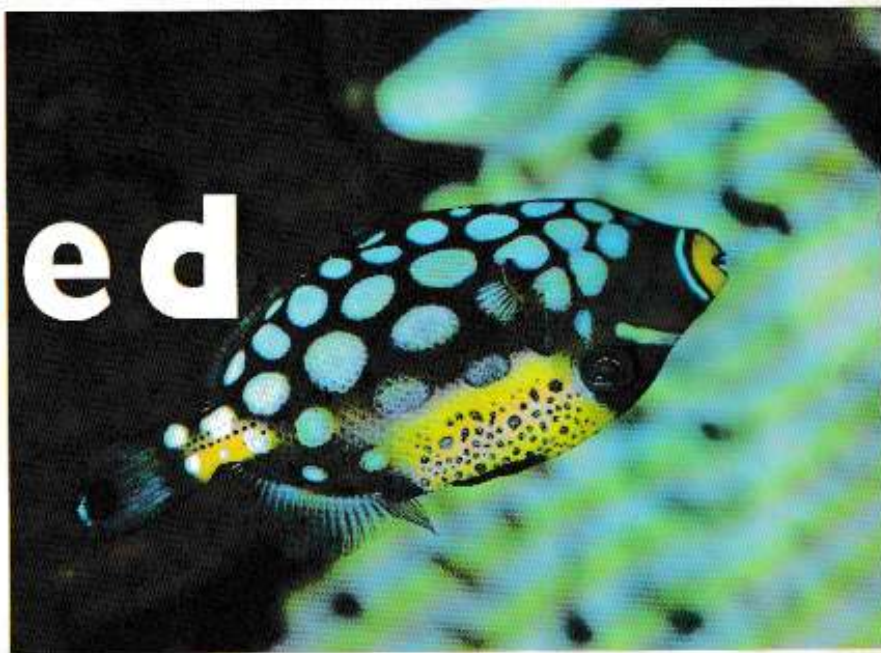
I have always had a soft spot for these belligerent fish as it was a Clown Trigger that was directly responsible for bringing me into the marine hobby.

into the marine hobby.

About 20 years ago I was wandering around the premises of a new retailer, considering what to buy for my tropical tank, when I came across a 10in Clown Trigger. To say I was stunned by the colouration, beauty and the £150 price tag of this specimen would be an understatement. I resolved to look into marines further and within six months I was the proud owner of a 4ft marine set-up.

Four years later I had progressed

Pulled



to a 150 gallon tank that amongst its livestock boasted a juvenile (1in) Clown Trigger, at a far more modest £30. Although I have since moved away from Triggers I have also kept a Picasso and a Blue Trigger with a fair degree of success.

WHAT'S IN A NAME?

The Triggerfish take their name from the unique defence mechanism they possess. The fish will retreat into a small crevice and then erect its dorsal spine (trigger mechanism) and lock the spine into place using two other spines. The fish is then firmly wedged into its retreat and extrication from this refuge proves impossible until the Trigger decides to unlock the mechanism.

Triggerfish have a widespread habitat and species can be found on coral reefs, in temperate waters, in open water and amongst Eelgrass beds. They have a laterally-compressed body and vary from startling bold colouration to plain old dark blue. The bizarre marking of some species is best summarised in the common name for *Rhinecanthus nubilatus*, the Picasso Triggerfish.

GREEDY OPPORTUNISTS

Triggerfish are equipped with a formidable set of very strong and sometimes protruding teeth. They will show little hesitation in using these razor-sharp teeth on Crabs, Shrimps, Sea Urchins, other fish and hobbyists' fingers. They are opportunistic feeders that appear to test

everything, from coral and Crustaceans to air-line and heater cables, on the off-chance that it may be edible. It is a wise precaution to protect your heater (and its cable) from attack by using a heater guard.

I have seen an authentic photograph of a 2in diameter scar left on a diver's wrist by an adult Trigger. Hobbyists with small children and large Triggers need to be fully aware of the damage these fish can inflict.

Triggerfish can be considered omnivorous and are thus very easily catered for in the aquarium thriving on a varied, predominantly meat-based, diet of Mussel, Cockles and Shrimps, etc. Triggers should sometimes be fed food with the shell intact, for example whole shrimps, to enable them to keep their formidable teeth worn down by crunching on the hard shell of the shrimp. Some vegetable-based food is recommended and they will even take flake food in some instances.

NATURAL PREDATORS OF INVERTEBRATES

In their natural habitat they are known to prey on Sea Urchins and Starfish in particular. Reports have been published of Triggerfish continually picking up Urchins by the tips of their spines and dropping them onto the floor. Eventually when the Urchin lands upside down the Triggerfish darts in and attacks the

exposed underside of the Urchin. This is possible because the spines surrounding the underside of the Urchin are short and present no danger to eyes of the Triggerfish which are set well back from its mouth. An alternative ploy used to turn an Urchin over is by blowing the sand away from beneath it until it topples over, to leave its underside exposed as before.

HOME BUILDERS AND CARING PARENTS

When spawning Triggerfish will dig a hole in the substrate in which eggs are laid. This fact could well account for their reputation for aquarium destruction. They will quite happily burrow under rockwork causing it to topple with potentially disastrous results should it topple straight through the sides of your aquarium. Common sense dictates that heavy rocks are not placed on top of one another (or even on the surface of the substrate — site large rocks on aquarium base before adding substrate) or are not arranged in an unstable, precarious fashion (some marinists create a total rock structure by silicone-sealing several rocks together). Triggers will also quite happily rearrange smaller pieces of tank decor to suite themselves and will often expose undergravel filter plates with their excavations (using a 'Gravel Tidy' will prevent this

Clown Triggerfish, *Balistoides conspicillum*, with the dorsal fin folded down in the dark groove at the top of the yellow patch.

occurrence).

R. Stratton (*Tropical Fish Hobbyist*, December 1989 page 65) reports observations on Triggerfish by Dr G. Barlow and R. Thresher. Barlow suggests Triggerfish provide post-hatching care for its young. Thresher's work revealed that Triggerfish live and spawn in a harem with a single male protecting a number of females.

COMPATIBILITY

From what has been said so far it will be apparent that Triggers and invertebrates do not mix. Neither can they be considered peaceful community fish. Their tendencies towards other fish can vary from relatively peaceful to a more likely psychopathic violence. Tank mates need to be similarly robust fish that are capable of looking after themselves. Lionfish, Puffers and large Tangs, Angels and Groupers spring to mind as possibilities.

Even when care is taken with fish selection aggression can reach unexpected levels of fury. A friend of mine could not keep any other stock with a 3in Clown Trigger. He added this fish to an established 150 gallon tank of large fish and watched in horror as it launched attacks on a 5in Blue Ring Angel and an 8in Pufferfish.

I am sure many hobbyists have seen a Triggerfish display a violent frenzy just because someone has walked past the front of the tank. Unsuspecting tank mates can also be caught up in a feeding frenzy and

What Clown Pulled The Trigger?

may receive severe bites, not through deliberate aggression, but just because they were in the wrong place at the wrong time.

Ironically, my own Clown Trigger was on the receiving end of a feeding frenzy accident that led to its demise. This Trigger was unbelievably docile (seeing a Trigger bullied by a small Bicolor Blenny is pretty unbelievable) and fed in a gentle manner. Unfortunately my Pufferfish was not as well mannered and the Trigger received a bite that ultimately led to his death. I was particularly upset by this loss as the fish had only just recovered its sight after a long two-year struggle against blindness. I had patiently hand fed the fish using a feeding tongs and apart from needing help to feed the fish managed exceptionally well. The blindness was not the reason for the docile nature of this fish as it was of a gentle disposition present well before the blindness occurred. The point of this little aside is to prove that marine fish do not read the books. We are dealing with biology and as such nothing is 100 per cent black or white. Occasionally a species with an aggressive reputation will buck the trend by displaying sweetness and light. There are also species of Triggerfish where aggres-

sion is not such a problem, these are covered later in the article under the individual species.

COMMONLY AVAILABLE SPECIES

CLOWN TRIGGER (*Balistoides conspicillum*)

A truly spectacular fish whether juvenile or adult. Found in the Indo-Pacific where it can reach a length of 20in although in captivity 10in is the usual maximum. Can be an extremely vicious fish although occasionally docile specimens appear to occur. However, assume the fish will be aggressive and do not consider small fish for partners.

PICASSO TRIGGER (*Rhinecanthus aculeatus*)

A strikingly marked fish in more subtle colours than the Clown Trigger, but then again most Triggerfish colours are subdued compared to the Clown! Found in the Indo-Pacific and the Red Sea where it attains a size of 12in although in captivity I have never seen a specimen larger than 5in. I have witnessed a number of small, 3in specimens existing peacefully with similar sized fish but its reputation suggests it has the capacity for aggression.

BURSA TRIGGER (*Balistes bursa*) QUEEN TRIGGER (*Balistes vetula*)

The bizarre colouration of *Rhinecanthus aculeatus* has coined the common name, the Picasso Triggerfish.



UNDULATE TRIGGER (*Balistus undulatus*)

I have grouped these three species together as they are not as common with hobbyists as the previous two species hence I have no first or second-hand knowledge of them. However, many texts will emphasise their over-riding characteristic as being viciously aggressive. They are all interestingly marked fish with a range of habitats from the Indo-Pacific (*Bursa* and *Undulate*) to the Tropical Western Atlantic (*Queen*). They cannot be kept with small fish and all of them may give you problems when attempting to find suitable tank mates.

BLACK FINNED (*Melichthys ringens*)

A real rarity in a Triggerfish as it has a gentle nature, making it a far safer bet for the community aquarium. However, like all Triggerfish it cannot be kept with any invertebrates. Found in the Indo-Pacific region it may reach a length of 20in but rarely exceeds half of this size in the aquarium.

BLACK or BLUE TRIGGER (*Odonus niger*)

A species found in the Indo-Pacific and the Red Sea. Can reach 20in in the wild but is restricted to 10in in the aquarium. Although it cannot be kept with invertebrates it is one of the more social species and is more likely to coexist peacefully with its tank mates. I can personally vouch for its sand excavation abilities and its desire to re-arrange the tank furnishings to suit itself.

TRIGGERFISH RELATIVES

Triggerfish belong to the Order *Tetraodontiformes*. The order also includes Puffers, Boxfish and a group of closely related fish, the Filefish.

The Filefish have a large dorsal spine and sometimes a second spine, but most do not possess the locking third spine found in Triggerfish. The Filefish could be considered by someone wanting a less aggressive 'Triggerfish' like species. However, they are not particularly easy to keep as many feed almost exclusively on coral polyps. In particular *Oxymonacanthus longirostris*, a blue-green fish with orange spots attaining a length of 4in, rarely survives in cap-

tivity. The Tassel Filefish, *Chaetodermis penicilligerus*, is also seen within the hobby and presents better prospects of survival for the marine aquarist. The species is docile and must be kept with similar peaceful species although it is not to be trusted with certain invertebrates as coral polyps form a natural part of its diet.

CONCLUSION

Triggerfish can make for an spectacular, active and interesting, if

sometimes frustrating, addition to a marine tank. Even with a peaceful species you can expect your tank decor to be rearranged and your substrate to be excavated. Aggression must not be underestimated, these fish are equipped to inflict severe damage upon other fish, invertebrates and unsuspecting fingers. Tank-mates must be suitably robust whilst most invertebrates are a non starter. A factor in their favour is their hardness, they are equipped to stand the rigours of a fairly new tank and the possible mistakes of a beginner.



The spines of this spiky Sea-Urchin is no protection from a hungry Triggerfish.



Triggerfish teeth are made for crunching!

Linda Lewis holds her hand up and admits to a few basic fishkeeping errors.

PHOTOGRAPHS BY THE AUTHOR

(Some of) My Fishkeeping Mistakes

Body of Platy was found on top of cover glass!



If we learn from our mistakes we turn into better aquarists, and our fish do, eventually, benefit.

Over the course of my fishkeeping life I have been responsible for the death of many fish. None of us are born as experts and so we all make mistakes at times.

Such mistakes, if we learn from them, turn us into better aquarists so that our fish do, eventually, benefit.

I got into tropical fish the hard way. At the time I was working for an insurance company, doing the

paperwork, producing quotes and schedules, that kind of thing, when one day my boss had a 'bright' idea. He'd get an aquarium for the reception area and I would maintain it.

This confidence in my ability to turn my hand to anything was usually



Botia sidthimunki became trapped!



Upside-down Catfish, *S. nigriventis*, lost during house move

well founded, so he didn't think that a fish tank would present any difficulties. Protesting, loudly, served no purpose, and the tank, plus assorted equipment, duly arrived. Things wouldn't have been so bad if the boss had been prepared to put his money where his mouth was, but putting his hand in his pocket, for anything but a handkerchief, was not in his nature. Muggins bought a few cheap fish — some Platies, and Zebra Danios, and one of our salesmen who'd just earned thousands of

Some of My Fishkeeping Mistakes

pounds in commission (generously!) provided some minute Tiger Barbs. Other fish were brought in by people who had tanks at home, or knew someone, so that we ended up with a weird selection of totally incompatible fish!

OCCASIONAL MORTALITY

Naturally this led to the occasional mortality. At the time I was too squeamish to remove dead fish from the tank so had to ask one of the salesmen to do the job for me. At one stage it got so bad that his first question on arriving at the office was "Any dead ones for me today?" For some reason this was considered the height of hilarity and

*Corydoras
reticulatus*,
trapped in
net.



Placostomus
— this one is
alive!



encouraged the others to bring in fresh supplies of new fish to replace those that perished.

Being 'in charge' of the tank meant that I was responsible for feeding the fish. A huge pot of flake lived below the tank. After a while I realised that the level in the pot was going down faster than it should. With one eye on the tank, one on the public, and another on the paperwork(!) I soon found the cause of that problem. Three salesmen were adding food every time they came into the office. This meant that on some days the fish were fed six times. I confronted them. They weren't feeding very much they protested. Show me, I demanded, and each took an enormous pinch of flake and deposited it into my hand. From that day I kept the food under lock and key. Remains of uneaten food became less obvious, but fish were still dying.

One of the reps who kept fish, although he was always having to buy new ones, had shown me how to maintain the filter — a Fluval 3. So every three weeks or so, I removed the foam, took it out to the ladies and gave it a good scrub under the tap. I had no idea that this was actually killing the beneficial bacteria responsible for keeping the water quality good. In fact I had no idea about water quality then at all. Test kits — never heard of them! Besides, they cost more than 50p!

When my birthday came round, I treated myself to a book on fish-keeping, *Tropical Aquarium Fish*, by our very own Dick Mills. This was a Godsend, and an eye opener. I took control over what kind of fish could be added to the tank, I began to vary the fish's diet, added more plants (all at my own expense of course). At last the tank began to be worth looking at. Until then, the boss had dismissed the sorry looking mess with remarks like "Linda's in charge of that." As soon as it looked good, they were HIS fish again!

FATE STEPS IN

Once you think you know what you're doing, fate steps in to show you that, really you know very little. I arrived at work one Monday, lifted the lid to add some food, and screamed, so loud that it brought the caretaker running from two floors up. There, on top of the cover glass, was the dried-up, very dead, body of my favourite Platy. I hadn't quite closed the cover glass on Friday night, and somehow he had jumped up through the gap. I later found that a fish, if determined to commit suicide, can find a way through the smallest of holes.

To cheer myself up I bought a

Some of My Fishkeeping Mistakes

Suckermouth Catfish — a Pleco of some kind (at that stage I could barely identify a Tiger Barb). It was about four inches long, and didn't seem to do very much. I thought, maybe it was nocturnal, and so didn't worry very much when each morning it seemed to be in the same place. Finally, someone pointed out to me that it looked a bit grey, and that maybe it was dead. It took me a while to live that one down!

Encouraged by my successes(!) at work, I set up a tank at home. Initially I had few problems, having already served my apprenticeship. The hitch was that the fish at home were watched far more than those in the office, and I soon became pre-occupied with any and every sign of illness, real or imagined. The remotest hint that all was not well had me dashing to the nearest pet shop, buying all kinds of medications. These I would add with great magnanimity to the tank. It took me many years to learn that fish often recovered from minor problems if left alone, provided conditions in the tank are otherwise good. Sadly, this kind of experience only comes with time.

Meanwhile, I continued to learn more about the ways in which a fish can kill itself. I had a beautiful Reticulated 'Cory' that got itself stuck fast in the drainage hole of a flower pot. Three delightful Dwarf Chained Loaches (*Betta sidhimunki*) perished by various means including becoming wedged behind the filter and escaping up the hole through which the wires feed, then a Leopard 'Cory' got so badly tangled in a too-coarse net that it took ages to get her free. This didn't kill her straight away but she died soon after from the stress. I know it's daft, but I have never kept these species since (nor any Plecos!).

My most recent stupid mistake lost me two of my all time favourite fish — Upside-down Catfish (*S. nigricentris*). For looks (ugly, but gorgeous, too), entertainment value, and impact, these fish are hard to beat. In 1994 I moved to Exeter from London. My biggest worry was not leaving London, where I'd lived all my life, but moving my fish. Thanks to a bit of financial juggling, we had already bought the house in Devon so tanks could be set up in advance of the move, so that wasn't a problem. Catching the fish would be!

I hate nets (probably since I lost that 'Cory') and always get into a terrible state when I have to catch

any fish. Stressful for them it certainly is, but it's ten times worse for me. I knew that some fish would be easy — you know the kinds I mean, ones like Zebra Danios that will swim straight into a net and never seem to learn. Of the ones I dreaded catching, the Glass Catfish and the Upside-downs were top of the list. Thanks to this, they were left until last.

Catching the Glass Cats turned out to be a doddle. As they spent virtually all the hours of daylight huddled together inside a flower pot, I simply manoeuvred a plastic bag under and around the pot, catching the fish without them even knowing I was after them. I tackled the Upside-downs on the final evening. At the time I had four, and each had its own roost. I simply picked up each one's cave and transferred it to a bowl from where I could easily scoop the fish out using a beaker and put them into breeding traps ready for the off, the next day. I learned not to use plastic bags with these fish after the time I purchased one, and before I left the shop, it had punctured the bag with its spines!

FEARED FOR THEIR SAFETY

I put two Catfish in one trap, and one each in two more. Once caught, the fish went crazy, thrashing about so much that I feared for their safety. To be honest I also thought they might jump out and get back in to the tank, leaving me to go through the dreadful process of catching them all over again, so I put the lids on the traps. I honestly thought they'd be fine. After all, the traps have plenty of holes to allow the passage of water, and there was a gap between the water level and the lid, but when I came down the next day two of my beloved Catfish were stone dead.

As a long time member of the Tetra Club I contacted them to find out what had gone wrong. No-one could be sure, but it was probably down to increased levels of ammonia excreted by the fish which did not dissipate fast enough, compounded by the obvious stress of being caught and confined.

I hope that this small sample of my mishaps has raised a smile (or brought to mind some of your own mistakes). Maybe, by admitting to some failings, we can all give encouragement to those people new to the hobby, and persuade them to try again in the sure and certain knowledge that whatever they do, however stupid, there is an 'expert' somewhere who has done something worse!

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They say there is nothing new under the sun and they're probably right. The other adage is that things occur in cycles and reading through A&P for February 1948 seems to bear this out, too.

There was a growing acceptance and official recognition of the educational merits of fishkeeping with reports that larger Societies catering especially for Juniors; an example was the progressive Nottingham Aquarist Society, who organised a Schools Junior Aquarists' Section in collaboration with the Nottingham Education Committee and open to all Schools under that authority's jurisdiction.

The basic workings of the Junior Section is that it is managed by a committee comprising four teachers and scholars (from different Schools) and four members of the Society. Members were entitled to attend Society meetings free of charge and receive a course of aquatic instruction. Two coldwater and two tropical tanks were set up by the Society for demonstration purposes and lectures provided by the members. Similar schemes were reported in East London (the Manor Junior Aquarists' Society) and a Junior Section

50 Years Ago ...

As recounted by Editor Dick Mills

In the period immediately after the war the increase of interest in all things aquatic was rapid. Looking through past issues of A&P makes interesting reading not only for the diversity of subjects raised but for the apparent enthusiasm by all contributors whether they be authors, reporters from Societies or letters from readers. February 1948 threw up this selection of topics ...

sponsored by the Suffolk Aquarists' Association.

Coming right up to date the new (!) National Junior Fishkeepers Association was formed during 1997 (see Society World, A&P, February 1997).

The 1948 Ideal Home Exhibition was of special interest to aquarists having an area of 2,000 square feet devoted to fishes. In the Hall of Youth a large series of aquaria introduced the public to various types of fishes — livebearers, egg-layers, bubble nest builders and mouth-breeding cichlids.

Additionally, there were a series of marine aquariums culminating in a large aquarium containing ... living cod fish. Replacement fresh sea water for these tanks was collected by fishing vessels from 60 miles out in the North sea.

Following the enforced layoff of interest in fishkeeping by the war years many hobbyists returning to their long-stored tanks inevitably found them to leak when refilled. A chapter on repairing such leaks just goes to show how 'primitive' things were then — running molten pitch down to seal cracks is one prescribed method! As for partially reglazing the tank then you had to reach for the pot of gold size to treat the frame first then adding new cement, a

new piece of glass plus a length of wood to brace across the glass to provide pressure whilst the whole assembly dries. Did I say cement? Well, the recipe for this consisted of three parts putty, one part red lead, one part white lead and one part litharge. All these were mixed together with gold size or varnish. I wonder how many of these ingredients are allowably available these days? Of course, if the tank had rusted to any extent it was out with the emery paper or even a trusty file, and liberal use of rust-resistant undercoat paint before finishing off with two coats of your very best gloss.

... Iceland doesn't immediately spring to mind as an interesting place to go to in respect of aquatic fauna but J. Cluddeley-Thompson, a zoologist of the Cambridge Iceland Expedition in 1947,

was able to report on various species encountered. As anticipated there was a conspicuous lack of fauna although Sticklebacks, Water-beetles and young trout were encountered. A low spot occurred when the transportation, a Jeep, became caught crossing a glacial stream whose level had inexplicably rose 2ft overnight (due to overnight rain!).

On the Society front, no less than three new Societies reported their first meetings — Preston, Southampton and the Mid-Somerset Aquarists' and Pondkeepers' Society. On the specialist front the formation was announced of the Goldfish Society for Great Britain (the GSGB are, therefore, celebrating their Golden Jubilee this year).

A difficult decision had to be made as, due to the increasing number of pages devoted to (or required by) Society News and the increasing number of advertisement pages (now up to 12), space was becoming limited. It was decided to restrict the Society pages to a Societies Directory with only news items of interest to the general reader (the majority of whom weren't Society members) being featured.



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A to Z of plants

By
DICK MILLS

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L FOR LYSICHTON

This member of the Araceae is a little reminiscent of the Arum Lily (*Zantedeschia* sp.), whose wax-like spathe it shares. It is a striking plant whose features make it stand out amongst other marginal plants — it can even stand on its own in appeal against that other popular plant the Brazilian Rhubarb, *Gunnera*.

LYSICHTON AMERICANUS (may be spelled *Lysichiton americanum*) Skunk Cabbage, American Bog Arum

Description: Immediately recognisable by the waxy, bright yellow spathe which conceal the robust seed head. This develops in spring ahead of the large cabbage-like leaves from which the plant derives its name. The odour is responsible for the rest of the name!



Distribution: North America.
Cultivation and Propagation: Requires moist conditions (even shallow water) and a covering much of bracken or other decaying leaves. It will tolerate full sun but will also adapt to a more shady position. The plant will reach approximately three to four feet in height with a spread of around two feet. Best planted in groups where its yellow spathe can create a display but once settled may not tolerate being disturbed. It loses its leaves in autumn and can be cut back. Further plants can be obtained by planting the seeds, as soon as they are set, in shallow trays of very wet gravel, maintaining a water level equal to the depth of gravel at this stage is reported to be beneficial to rapid germination of the seed.
Other species: *L. camtschatcense* (also seen as *L. camtschatcensis*) comes from Asia; has a white spathe, is a little smaller in its dimensions and is known as the Oriental Bog Arum.

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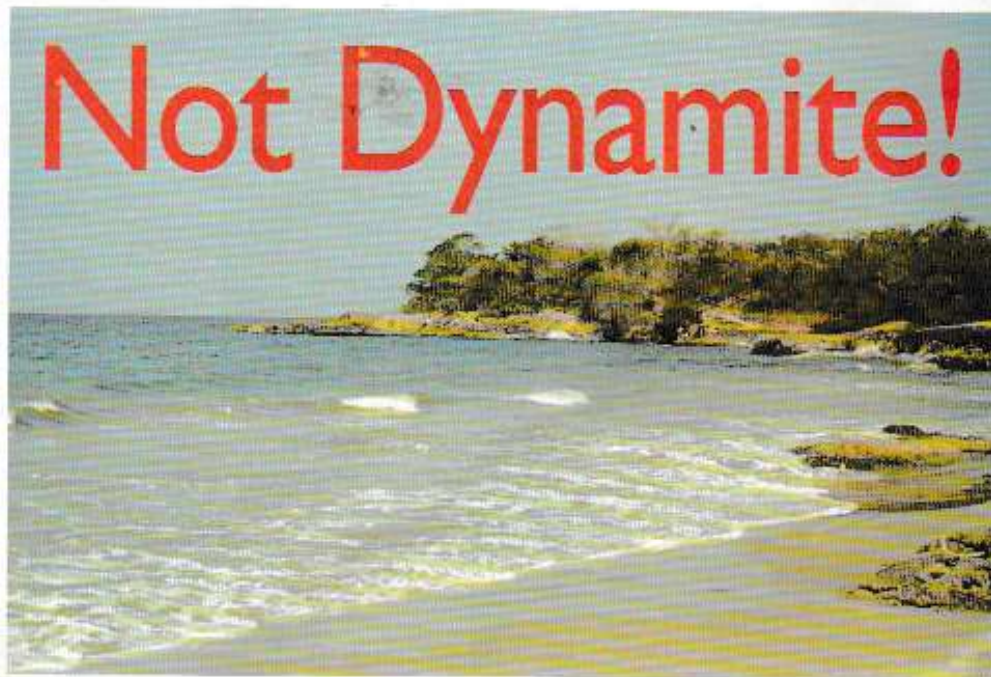
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Mark Biagi, of AQUAGARDENS INTERNATIONAL, reports how things could be changed

PHOTOGRAPHS BY THE AUTHOR

Nets —

Not Dynamite!



It seems a shame to shatter this tranquil scene with explosives.

Colombia is the only South American country with both an Atlantic and a Pacific coastline. Although the country has a couple of modern fishing fleets (mainly shrimp boats) the fisherman living in coastal communities had not changed their fishing techniques (using various forms of nets) for centuries — until recently.

DYNAMITE

This is arguably the most destructive fishing method in the country. The fishermen stand on protruding rocks on shore, waiting for a school of fish to approach. Once in range they light the wick with a cigarette and throw the explosive into the

Colombian fishing communities had not changed their fishing techniques (using various forms of nets) for centuries — until recently.

water. With the fish stunned and killed the fisherman dive into the water, grasping as many fish as they possibly can. Personal observations and published data report that up to ten times more fish sink and are lost than are collected.

The continued use of explosives on and near the reefs not only causes tremendous damage to the corals, it kills everything within a 20m radius. However, the lethal effects of these explosions can be seen at greater distances. In one case, fish were seen swimming in a disoriented manner as far away as 50m from the explosion. Further underwater examination of the area revealed several dead Rock Lobsters and Moray Eels under rocks and in crevices. The force of the explosion excavated a large crater in the sand, throwing up a large amount of fine sediment, while uprooting and killing a considerable amount of *Thalassia testudinum*.

Even though some of the fish that survive the explosion are seen to swim away, apparently unharmed, they die at a later date from internal

injuries. A post mortem examination of the dynamited fish revealed a complete destruction of the internal organs. The body cavity fills with blood, the swim bladders are ruptured and small pieces of organ tissue are evident throughout. The degree of destruction is directly related to the distance from the explosion. The closer to ground zero the greater the damage to the fish. All specimens recovered at dis-

tances greater than 10m from ground zero had their swim bladders ruptured by the explosion.

Dynamite fishing also comes with a considerable risk to the fishermen. If the wicks are not cut precisely, or if the dynamite is not thrown at the right time, the fishermen can blow his hands off.

In most coastal communities there are people who have sacrificed limbs to this method; some give their life.

ROSARIO ISLAND DYNAMITE FISHING

As the Rosario Islands became an increasingly popular tourist destination farms began to disappear, one by one. In their place were summer homes and resorts for the rich. Many of the coral reefs were blasted



A typical fishing village in the Rosario Islands.



Fishermen on their way to dynamite bait fish in the mangroves of Isla Grande.

and used as a cheap source of construction material. The mangrove stands were cut for firewood and to build homes, hotels and wharves.

With no land to till the former farm workers were now established in small communities. Some found jobs as labourers and caretakers for the developing tourism industry. Others relied on the fishery, and meagre agriculture. As the tourism industry grew, so too did the need for seafood. The local restaurants and hotels on the islands provided everything from Red Snapper to Lobster. With increased demand for seafood dynamite fishing grew at an alarming rate, with explosions punctuating the early mornings and late afternoons. Inevitably, fish and shellfish became scarce within the archipelago, so that the fishermen were forced to seek their catch farther and farther afield. The scarcity seemed to stimulate even further the use of dynamite, since dynamite made it possible to kill many fish at once. INDERENA (at the time, the Colombian Department of the Environment), was simply unable to cope with the problem, so the dynamite fishing went on right in front of their offices.

When marine biology student researchers under my supervision arrived in the Islands they knew that certain pre-conditions were necessary to convince the fishermen to stop using dynamite:

- (1) They would have to earn the trust and respect of the fishermen.
- (2) They would have to present an alternative method of catching bait fish.
- (3) The new fishing method would have to be both cheaper and superior to the use of explosives.
- (4) The fishermen themselves would have to notice or observe the changes in the ecosystem, as a result of the different fishing methods.
- (5) An education programme for the fishermen's children would have to be put in place, in order to disrupt this cultural tradition.
- (6) Creative solutions to some of the fishermen's basic needs (notably, cheap fruits and vegetables), would have to be found. These people live on islands with no fresh water and few resources.

In the Rosarios dynamite is the principal method of capture for the *Azulita*, considered to be the best bait fish in the area. During the day these fish travel in large schools close to shore, seeking refuge under mangroves and docks. They can easily be seen by the fishermen peering down from small boats, rocks or wharves. The fishermen use dynamite to stun and kill large amounts of this small, but plentiful, fish.

Nets — Not Dynamite!

FIRST STEP IN THE PLAN

The first step in the plan was to distance the initiative from the local authority and its futile attempts to stop the practice. This was achieved by asking the fishermen to help with fish sampling.

The fishermen were also consulted about the behaviour of these particular fish and were only too happy to help.

The sampling procedure was simple: two men, each holding one end of 10m long fine mesh (6mm) nylon net, were asked to pull the net through the water for a distance of approximately 30m. Once the net was brought to shore, researchers collected a random sample of fish. The remaining fish were given to the fishermen as bait.

In order to disrupt the normal dynamiting routine sampling times were carefully chosen to coincide with the time when the fishermen usually set out to catch the bait. The use of the seine was immediately effective. The fishermen had previously had no access to small beach seines of the type used by the researchers; larger beach seines, as used on the mainland, cannot be used on the islands because the coral interferes with the seining. The larger nets' mesh size is also too big (5cm) for the capture of the tiny bait fish.

The fishermen were quite surprised at the quantity and quality of fish they were collecting with the small beach seine. They also realised that the net was saving them time, since they were able to get all the bait they needed for their fishing expedition in less than half an hour. With explosives they spent an average of one and a half hours looking for the schools, blowing them up and then frantically trying to collect as many dead fish as they could before they sank out of reach.

This process had to be repeated several times for the simple reason that the force of the explosion ripped apart too many of the fish thus rendering them unsuitable.

Another bonus noticed by the men was that the live fish lasted longer in their boats. As a result the fishermen asked the students if they could borrow the net when it was not being used for the sampling. The students agreed to the loan, on condition that the net be routinely

returned to the base of operations and that the fish caught be shared equally with everyone who participated in the sampling programme.

Eventually, the net became an important link between the researchers and the fishermen. In fact, the fishermen, borrowed the net so frequently that the students finally decided on a rotation system among the three communities involved in the project. A second sampling net was purchased to ensure that the sampling proceeded on schedule.

DIFFERENT SITES CHOSEN

• Samples were taken every two weeks at three locations on two of the main islands: Isla Grande and Isla San Martín de Pajarales. The different sites were chosen for scientific and statistical reasons. Furthermore, three different groups of fishermen were engaged. Once again, the students took every opportunity to consult with the men on the biology and behaviour of the fish. Not only did they obtain valuable information about the movements of the school around the archipelago, but they developed a friendly rapport with the people of the islands and gained the confidence of the fishermen by living on one of the islands and participating in community life. After only a couple of months the students felt sufficiently rooted in the community to speak about conservation and fishing methods without causing offence. For their part, the fishermen complained that the fish were increasingly elusive with stories about earlier years when fish were both bigger and more plentiful.

Slowly, the students were able to establish linkages between the use of explosives and the decline of the fishery. There was a quiet acknowledgement of these linkages among the men.

Six months into the project the fishermen themselves noted that the fish were increasing in numbers. Almost with each haul of the net the number of bait fish rose dramatically. The greater diversity of fish also pointed to an improvement in conditions. Larger numbers of French Grunt (*Haemulon flavolineatus*), Spotfin Butterflyfish (*Chaetodon ocellatus*) and the Banded Butterflyfish (*Chaetodon striatus*) were among the most noticeable.

The fishermen reported excitedly that considerably larger schools of 'azulitas' were spotted around the entire archipelago. As time went on the fishermen reported catching more fish and Lobster closer and closer to shore. This was a clear

indication that the habitat was recovering and was once again able to provide shelter and sustenance to these animals.

After one year of work the consensus among the fishermen was clear: fish were more plentiful and swam closer to shore. Such was the impact of these observations that the fishermen themselves began to control those who tried to go back to the old ways. As long as the net was available the fishermen would not use dynamite.

CHILDREN'S EDUCATION PROGRAMME

Changing a tradition which has been passed down from one generation to another is not a simple task. On the Islands those children too young to go fishing help prepare the explosives for the next day's fishing trip. They begin to learn the proper procedures, looking ahead to the day when they will take their places beside the men. Since the family's livelihood depends on the fishery the children are acutely aware of the importance of learning these lessons well. Unless an intervention is effected they will continue to

depend on dynamite, as their fathers did before them.

The best place to effect a change is in the schools. In designing their programme the two researchers chose a method that was quite simple and fun — a series of creative workshops with an ecological twist to them. The children were taught games, songs and crafts dealing with conservation and respect for the environment. The end result was a puppet show, prepared entirely by the children. They created the characters, wrote the script, built the puppets, and constructed the stage from naturally-occurring materials. This show was presented on October 7, the Feast Day of the patron Virgin of the archipelago (La Virgen del Rosario, or the Virgin of the Rosary). On that day the children transmitted a powerful ecological message to the entire community. In order to ensure a massive attendance the researchers had organised an unprecedented event: two professional artistic troupes were brought from the city of Medellin. The puppeteering group, 'Arlequin y los Juglares', and the mime troupe, 'Imagen', reinforced the ecological theme of the day. The celebrations were a total success with most of the three communities in attendance.

By the time the fieldwork part of

the project ended fishermen had come to see that the use of the explosives was detrimental to the environment and to their own survival as fishermen. In fact, the fishermen were starting to police themselves. When explosives were used the other fishermen would visit the perpetrator to inform him that the practice was no longer acceptable. They would then demonstrate the use of the net.

INITIAL VICTORY SHORT-LIVED

Unfortunately this initial victory was short-lived. Before the students left the islands the beach seining project was turned over to the regional offices of INDERENA but poor management and an inability to communicate with the fishermen led to conflict and mistrust between the community and the managing agency. The end result was that the project was abandoned and the fishermen returned to their old fishing practices.

The above article was adapted from the original which was published in *Sea World*, 11(2), April-June 1997, *Bulletin of Ocean Voice International*.

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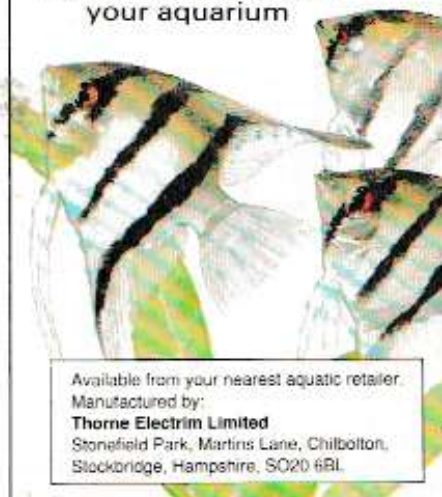


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John Rundle breeds the Port Hoplo

PHOTOGRAPHS BY THE AUTHOR

Forever Blowing Bubbles



Shows the breeding pair. Male on the right and the female on the left. Note enlarged rays on male pectoral fins.

They say that beauty is in the eye of the beholder and this must be the case with the 'Hoplo' catfish, *Hoplernum thoracatum* (Cuvier and Valenciennes, 1840), a very attractive, graceful and peaceful species of armoured catfish which I have kept and bred over many years. This is my account of my latest breeding success.

DISTRIBUTION

The 'Port Hoplo' can be found in

In the wild the catfish spawn to a set season.

However, in my aquarium, the season was to be April.

Brazil, Guyana and the islands of Trinidad and Martinique, living in slow flowing waters. Juveniles, available in retail shops, are raised in England or farm-raised in Hong Kong or Singapore.

SIZE AND SEXING

Fully grown adults are around 18cm. At this size the sexual differences are easily distinguishable. The first rays of the male's pectoral fins are enlarged and bright orange. The female has much thinner first pectoral rays and tends to be more robust in the abdomen region. In a local dealer's tank I saw five adult *H. thoracatum*. A quick inspection proved that they were all females. I bought two and began an immediate search for an adult male. At my next Fish Club meeting I put the word

out that I required a male 'Hoplo' and, as luck would have it, I was able to obtain a fine specimen from another member.

TANK SET-UP AND BREEDING

The trio were housed in a 36x12x15in (90x30x38cm) bare tank (no plants or gravel) in the fish house.

Hoplosternum thoracatum is not a demanding catfish as far as water chemistry is concerned. They can be kept and bred in a wide range of water conditions. The tap water in my area is 7.2 pH and 1 degree DH of hardness. Although the fish house is space heated I did fit a heater and thermostat, a course of action that will be explained later. The only means of filtration was via a simple sponge filter system. This completed the spartan set-up that, in my opinion, is required to breed this catfish.

The next step was to condition the females for spawning. They were fed live Whiteworm (*Enchytraeus buchholzi*), frozen Bloodworm and dry foods (standard flake, high protein and sinking catfish wafers). Readers will find that 'Hoplos' are not fussy eaters. There was always a frenzy of activity at feeding time and on this diet the females soon came into breeding condition.

MY CATFISH START A FAMILY

In the wild the catfish spawn to a set season. However, in my aquarium the season was to be April. The clear indicator that a spawning was imminent was the sight of the male's genital papillae — six to 12mm long.

Hoplosternum thoracatum is classed as a bubble-nester breeder, so to accommodate this factor I floated a polystyrene ceiling tile 200mm square in the tank. This would allow the male to blow and attach his bubble-nest under the tile. The heater initially fitted to the set-up provided a means of helping to induce spawning. A 25 per cent water change was carried out and the temperature set at 80°F (27°C). After 24 hours the heater was turned off allowing the temperature to drop to 75°F

(24°C), which is the ambient water temperature of the fish house. This change was the trigger needed to start the male chasing the females. His attention began to centre on one female in particular so I removed the other one to a separate tank. Within two days the male blew a large bubble-nest under the ceiling tile about 15mm deep.

On the day the spawning occurred I was lucky enough to be in the fish house. The male encircled the female and nudged her with his head in a similar fashion to *Corydoras*, their close relatives, forming the so-called 'T' position. The female inspected the nest with the escorting male. They appeared to be mouthing the bubbles. The theory is that the female takes the male sperm into her mouth while carrying eggs under her body, then she deposits both eggs and sperm into the nest, but this was not borne out during my observations. The pair, in this instance, appeared to intertwine and the female broke off to swim upside down under the nest and deposit the eggs.

Both fishes would rest for a short period before starting the ritual again. The spawning sequence lasted for over two hours at the end of which the male took over as the guardian of the eggs which could be clearly seen in the nest. I estimated that there were around 200 eggs which is not large for a catfish this size. When I bred *H. thoracatum* in the 1970s broods of three times this number were obtained.

Another point, on previous spawnings the female would tend to take a beating and end up with torn fins and a few scales missing. Not so in this case. When I watched the

pair breeding the male was so gentle. In fact, the whole process seemed to be very graceful and in a sort of slow motion.

The female was removed at the end of the spawning. The male started tending to the nest, he even attacked the net when I began to remove his partner. At this stage I raised the water temperature to 78°F (26°C) and allowed the male to remain in the aquarium for two days, during which time he kept the nest together. After this time the male was removed and the eggs allowed to hatch of their own accord on the fourth day. Just to help I stroked the unhatched eggs with a fine paint brush to burst the egg shell.

HATCHING 'HOPLOS'

The fry, about 4mm long, are replicas of the parents. I placed a clump of Java Moss (*Vesicularia dubyana*) in the tank for them to have somewhere in which to take refuge. They love to hide in the moss and I am sure it provides them with a sense of security. They take brine shrimp and micro worm as first foods and soon put on growth with good feeding and regular water changes. Within eight weeks they can be 25mm long.

Hoplosternum thoracatum is not just a catfish to keep in bare tanks. It is without doubt an excellent, peaceful species for the larger community tank.

The young catfishes can be found in dealers' tanks at around 80mm long and they are well worth a try. Go on, buy the 'catfish that blows bubbles'.



Close up of female showing the armoured scales and the lack of large hard ray on the pectoral.

George Turner introduces some very colourful lake-dwellers

PHOTOGRAPHS BY THE AUTHOR UNLESS OTHERWISE STATED

Offshore Cichlids of Malawi



On Lake Malombi hundreds of small scale fishermen using fine meshed nets have disastrously overfished cichlid populations.

There are probably 700 species of cichlids in Lake Malawi.

Most aquarists are familiar with at least some of the many hundreds of kinds of Lake Malawi cichlids.

For many years, the most commonly seen was the black and yellow *Melanochromis auratus* — a beautiful, but highly aggressive species. Now the most popular is the equally beautiful, but smaller and more peaceful

yellow form of *Labidochromis caeruleus*. Both of these are 'mbuna', which is a local African name for the small, brightly-coloured species which live on the rocky shores all around the lake.

Most aquarists probably think that all Malawian cichlids are much the same — aggressive, hyperactive mbuna, which have to be kept in crowded tanks with masses of rocks. Probably more than 95 per cent of all Malawi cichlids in the aquarium trade are mbuna, but in fact there are many other species of cichlids in the lake. Some of these have become established in the aquarium trade: the big, robust, predatory *Nimbochromis*, such as *N. livingstonii* and *N. venustus*, and the Malawi Peacocks, a group of *Aulonocara* species which live on the rocky shores. But this is just the tip of the iceberg — there are probably 700 species of cichlids in Lake Malawi, and only half of these are mbuna.

TILAPIA OF LAKE MALAWI

I first went to Malawi in 1988, when I was working at the University of Wales at Bangor. I had just completed my doctorate on the behaviour of cichlids — all done in tanks — and was hired to carry out research on the *Tilapia* of Lake Malawi. As an aquarist since the age of 12, with a special fondness for cichlids, this was a chance of a lifetime, and I grabbed it — despite the fact that I would be working alone in Africa and couldn't swim or drive, had never slept in a tent, and had only travelled outside the UK once — for a two-day conference in Germany. Since then I've been to Africa

holid Fishes

15 times, and I even lived in Malawi for two years, working for the United Nations Food and Agriculture Organisation on a study of the fisheries of the southern part of lake. It was during this time, sampling catches from trawlers, and various other kinds of commercial fishing operations, that I came to realise just how little was known of the cichlid fishes of the offshore areas and sandy shores of the Lake.

Snorkelling on the rocky shores I found I could identify nearly all the mbuna fairly easily from the marvellous guide written in 1983 by Dr Tony Ribbink and his colleagues from South Africa. But, time and again, looking at offshore fishes, I found fish that didn't appear in any of the books or scientific papers. This was a big practical problem for my work, because we had to make recommendations for how to manage the Lake's fisheries, and to do this we needed to find out which fishing operations had to be treated together for management purposes, since they were catching the same kinds of fish. To know this, I had to know how to identify the fish. Although we were mainly working on the Tilapia, big cichlids which are highly esteemed as food, I took any chance I could to collect and photograph specimens of all the other cichlids I saw.

Since we were meant to be concentrating on the main Tilapia fishing grounds in the southern part of the Lake I didn't have the opportunity to look at the offshore cichlids from other parts of the Lake, although I had my work cut out to deal with the southern species alone. By the time the project finished in August 1992 I had only managed to work out the identifications of maybe half the species — mostly the very common or distinctive forms. I was able to find some old records from experimental trawling surveys made in the 1970s and to check the reliability of their identifications by looking at specimens kept in the museum room at the Monkey Bay Fisheries Research Station. Once I had sorted

out which species the earlier researchers had been able to identify accurately, I compared the older records with records of the surveys being carried out by the Malawi Fisheries Department in the 1990s.

DRAMATIC DECLINE

The results were alarming. Populations of many of the larger cichlids

Young tilapia, like many other sandy shore and some offshore fishes, sometimes feed around rocky shores, where they are easier to observe using SCUBA. PHOTO: EVA HERT



Lethrinops macrocanthus has been virtually exterminated by heavy fishing in southern Lake Malawi.



A ripe male of an undescribed species of *Rhamphochromis*, a midwater predator.

had declined dramatically over the previous 20 years. At the same time fishing had become more and more intensive and fishermen were using smaller meshes to catch smaller fish, as larger fish had become scarce. The worst hit were some of the big *Lethrinops* species which had previously been common at depths of around 20-50m — the prime trawling areas. In 1972 *Lethrinops macrochthonus* had made up 10-15 per cent of the weight of the experimental trawl catch in the south-eastern arm of the Lake, but between 1990 and 1992 I found only a single specimen despite examining hundreds of samples.

One of our main study areas was Lake Malombe, which is a shallow, muddy lake just to the south of Lake Malawi. It is connected to the south-eastern arm of the main lake by the Shire River, which is the only river flowing out of Lake Malawi. Fish, including cichlids, can easily move between the two Lakes through this slow-flowing swampy river. In the space of a few years the catch of *Tilapia* in Lake Malombe had collapsed from 10,000 tonnes per year to less than 250 tonnes. The main cause was that local fishermen had developed a technique of using their small-meshed seine nets offshore, by setting the net in a circle and diving down to the bottom to make the net into a bag so that it could be lifted right onto their boats, rather than being dragged onto the shoreline. This allowed them to fish all over the Lake for juvenile fishes — previously they had only known how to use small-meshed nets on the shoreline and had to use big-meshed gillnets in the open water. No-one had ever made a proper survey of the cichlids of Lake Malombe, but a few specimens had been preserved in the museum at Monkey Bay and their were various notes and records here and there.

DISAPPEARED

Comparing these scraps of information with the results of our surveys in 1991 and 1992 I found that quite a few of the medium to large-sized cichlids seemed to have disappeared completely, including *Cyrtocara mooni*, which had formerly been collected there for the aquarium trade.

When I moved back to the UK in 1992, to Aberdeen University, I brought back all my specimens and photos and, between lecturing students and writing more technical papers, started to try to sort them all out. Last year, now at the University of Southampton, I managed to find time to finish off this work and my book, *Offshore Cichlids of Lake*

Offshore Cichlid Fishes of Malawi

Malawi, was published by Ad Konings' Cichlid Press. I found that I could identify 199 species of cichlids from trawl and seine net catches from Lake Malombe, the south-eastern arm of Lake Malawi and a two-day trawling survey of Domira Bay and the Senga Bay area. Eighty one of these species were new to science, including the most abundant cichlid in the Lake, an offshore surface-living zooplankton-feeder which I named *Diplotaxodon limnothrisa*. Other finds were a deep-water predator which I assigned to a new genus — *Pallidochromis tokolosh*, and at least 14 new species of *Aulonacara* and 17 of *Lethrinops*.

This is certainly not the final word on these little-known and endangered fish — I had no chance to explore 90 per cent of the Lake's surface and I made little headway with some of the major groups, especially the long silvery predators of the genus *Rhamphochromis* which are found in all habitats — even right out the middle of the Lake, where the water depth can be as much as 700m.

In 1996, with funding from the Overseas Development Administration of the UK Government, my team at the University of Southampton began a three-year project to carry out an in-depth study of the pelagic cichlids *Rhamphochromis* and *Diplotaxodon* species from all over the Lake. Professor Gary Carvalho and his research group at the University of Hull will be using the latest molecular techniques to help us to distinguish species and populations within the Lake. We are carrying out this work with colleagues from the fisheries departments of Malawi and Tanzania. We will also be working with Tony Ribbink and his team from the Global Environment Facility Project based at Senga Bay in Malawi, who are attempting to survey all of the fish diversity of the entire Lake, as well as drawing up programmes to conserve endangered species.

Are any of these offshore species of likely to find their way into the aquarium trade? Some of the familiar aquarium species are sometimes found in deep-waters — *Nimbochromis livingstonii* occurs in trawl catches taken as deep as 114m. Quite a few of the species I have collected came from seine net catches taken from sandy or muddy beaches where the water can be quite shallow for several kilometres offshore. Species from these areas

could easily be collected for the aquarium trade, and a few are already collected from these habitats in the vicinity of Senga Bay. Young stages of some of the deep-water forms live in shallow waters. At least one species of *Rhamphochromis* has already become established in the aquarium trade and has been bred in captivity. Some of the open-water fishes such as *Diplotaxodon limnothrisa* spend a lot of time at the surface.

TOO DANGEROUS

Unfortunately, many of the species never seem to come into shallow water at all. It is too dangerous to collect fishes by diving at depths of more than 20-30m. Other techniques such as trawling can't be used to collect live fishes, since cichlids have closed swimbladders and bringing them rapidly to the surface causes the air in the swimbladder to expand rapidly as the water pressure around them drops. Fish trawled from more than about 15-20m depth are always killed, as the expanding swimbladder crushes their internal organs. It might be possible to catch deep-water fishes with baited traps, and then bring them to the surface gradually, allowing them to decompress in stages over a period of several days.

Maintenance and breeding of all species is likely to be fairly similar. Apart from *Tilapia rendalli* all the known cichlids in Lake Malawi are mouthbrooders, with females taking on all the parental duties. I suspect that all the new species I have found will also conform to this pattern — many of the females I have collected have been carrying eggs of young in their mouths. Like many other female mouthbrooders, the males are brightly-coloured, often with egg-spots on the anal fin, and the females are drab. Most of these species naturally live in shoals, with mature males establishing breeding territories for a short period of the year — although they will probably breed all year round in aquaria. Like most mouthbrooding East African cichlids they will do best in large groups with a few males.

Most will probably prefer relatively open uncluttered tanks and, apart from the more robust predators, will not take kindly to living with large numbers of hectic and aggressive mbuna. Apart from the *Tilapia* and the specialised leaf-eating *Protomelas similis* most are likely to be fairly tolerant of plants, particularly tough species such as Java Moss and Hornwort.

NEXT MONTH: AULONACARA AND THEIR RELATIVES

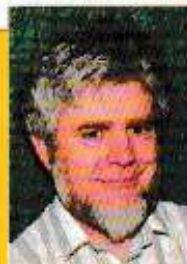
Writing this column since 1990 has given me a great deal of pleasure and because of it I have met and spoken to many wonderfully enthusiastic Koi keepers who wish to share their enthusiasm for the hobby with others of like mind. Whilst not giving up the hobby I find that circumstances dictate that I should, sadly, give the writing side a break, for the time being, at least. I would like to take this opportunity to thank all those readers who have over the last seven years written to me or called me on the phone; without them this column would have been much more difficult to write every month of the year.

I would also like to thank all those "Club" Secretaries, PROs and other dedicated Koi keepers who have worked so hard to organise meetings and

shows, etc. and provided information for all readers about those activities. These really are the people upon whom the hobby depends and without whom Koi keeping would still be in its infancy.

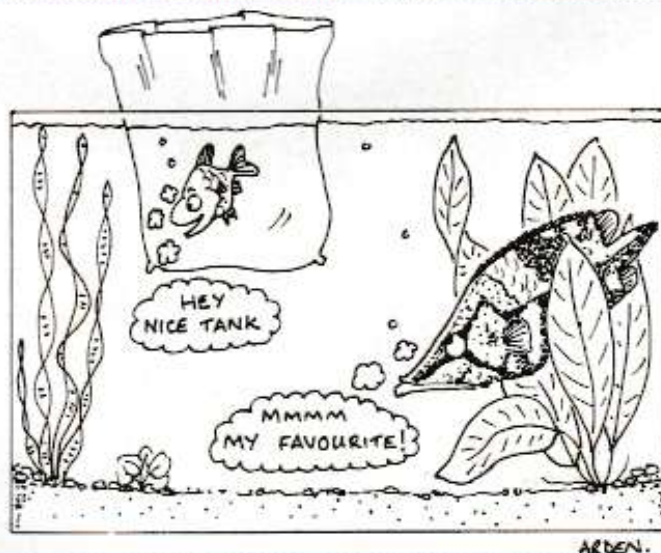
Before finally signing off I offer a big thank

you to John Dawes, former Editor of A&P, who introduced me to writing about our hobby and to current Editor Dick Mills for his help and support over the last couple of years. Best wishes to you all from Lyn and myself; we look forward to meeting you during the summer on the show circuit. Happy Koi Keeping in 1998.



DAVID TWIGG'S KOI CALENDAR

Koi Society Secretaries are encouraged to continue to support the excellent service established by David Twigg by sending in details of their events, Shows and any other activities for the benefit of other Societies and, of course, any reader who may happen to be in your area and wish to participate. Information should be sent to PJ Publications Ltd, Casson House, Wellesley Road, Ashford, Kent TN24 8EY, until further notice, but Secretaries can also send information direct to the Editor by fax on 01753 441134 or by e-mail on dtdmills1@compuserve.com.



SHOW CALENDAR

MAY

23/24 Merseyside

Section BKKS. Japanese Style pen Show & Craft Fayre. Held indoors at Aughton Show Centre, Aughton, Lanes. Contact Bill Tierney on 0151 920 5077.

24/25 South Hants

Section BKKS Open Show. South Downs College. Contact George Rooney on 01420 473169.

JUNE

27/28 Middlesex & Surrey Borders Open

Show. Kempton Racecourse. Contact Dave Webster on 0171-382 8003 or 0181-648 0848.

SEPTEMBER

6 Leicestershire Section

BKKS Show. Farm World, Gartree Road, Leicestershire Contact Ray Dunkley. 0116 2771600

27 Northern Koi Club.

Open Show at Cascade Water Gardens. Contact Tony McCann on 0161-794 1958.

KOI MEETINGS IN FEBRUARY

4 Leicestershire Section

BKKS. Bernard Channing of Japanese Water Gardens talks on Pond Construction at Kirby Muxloe Sports Club. Contact Ray Dunkley. 0116 277 1600.

10 Nottingham & District

Section BKKS. Speaker is Liz Donlan at the Western Club, Hillside, Nottingham. Contact Shirley Hind on 0115 981 0923.

11 South Hants Section

BKKS. Meet in Denmead Church Hall, 8pm. Contact George Rooney on 01420 473169.

15 Northern Koi Club.

Roger Foggitt of Tetra speaks on 'Food Nutrition' at St. James Hall, Vicarage Lane, off Eccles Old Road, Hope, Salford. Contact Tony McCann on 0161-794 1958.

23 Northern Koi Club.

Beginners Seminar held in Simister. Contact Tony McCann on 0161-794 1958.

Caught in the Net

Kathy Jinkings trawls cyberspace

Although we have touched on the subject of newsgroups and mailing lists briefly in past 'Caught in the Net' articles, there are many more ways of staying in touch through the Internet. While the Net offers a wealth of information to those who just want to read quietly, there is lots of fun to be had by actually making contact with other fishkeepers across the world. Just as in local Fish Clubs everywhere you will find people of every level of expertise who will enjoy talking to you, from acknowledged experts in particular fields to complete novices that you may be able to help and advise.

It has been suggested in newspapers that the growth of the Internet is causing people to lose interest in personal communication, like every new technology you get out what you put in, and there is no need to be an observer. Today we will be looking at some ways that you can use the Net to form new friendships, receive and give assistance, and have lots more fun!

Newsgroups are one of the earliest parts of the Internet as we know it, and have developed from old-style 'Bulletin Boards'. The principles are still the same, though — you leave a message on a notepad, called a newsgroup, and other people who are interested enough to look at that newsgroup will be able to read your message, and either reply to you through the newsgroup or just e-mail you directly. The newsgroup doesn't just live in one place. You send your message to the notepad, or news server, run by your service provider. That computer then contacts one or more other newsgroup servers, and receives any messages that it doesn't already know about. At the same time your message is passed on to the new computer. That computer then contacts another computer, and the message is passed on. This sounds very slow and untidy, but in fact your message will be visible all over the world within a few hours. To join in newsgroups you need a news server — fortunately both Internet Explorer and Netscape Navigator come with suitable software built in. To see how it works just type **news:alt.aquaria** into your browser. You will see a list of all the messages currently in the alt.aquaria newsgroup — by clicking on a header that looks interesting you can read the message, and if you want to add something to the topic just click reply and type your own message. There are lots of public newsgroups that you can try — have a look at some of these:

news:alt.aquaria — this is a place for general discussions, so if you don't specialise in any particular area of fishkeeping but enjoy a chat about it, this is the newsgroup to look at.

news:alt.aquaria.killies — here you'll find ongoing conversations for 'throwds' all about Killifish.

news:rec.aquaria.freshwater.goldfish — Goldfish often get pushed into second place by Koi lovers, but here you'll find lots of people who think Goldfish are great.

news:rec.aquaria.freshwater.misc — another general group, open to chats about any freshwater fishy topic.

news:rec.aquaria.freshwater.plants — many people have trouble growing live plants in the aquarium, and here you'll find help and lots of sympathetic ears.

news:rec.aquaria.marine.misc — marine keepers, or those who are thinking about it, will find lots of information and kindred souls.

news:rec.aquaria.marine.reels — if your fish are the carbals and then died, this is the place for advice.

news:rec.aquaria.tech — if you're a mail order fan, check out this newsgroup to find the equipment you should be ordering, and you can ask for help here when you buy it and can't fit it together!

All these newsgroups are carried by most newsgroup servers — since nothing in any of them can be regarded as controversial, if your service provider doesn't carry them, phone up and ask why not. To add to the mysteries of life there are other newsgroups that don't live on the public highway. To access the aquanet newsgroups you need to look at the aquanet server. This isn't as difficult as it sounds, because you can do that just by clicking on a link from the web page (and you'll find lots of other interesting information while you are there!) On the page at <http://www.aquanet.de/english/> you'll find three buttons to lead you to the following newsgroups:

aquanet.general — for all fishkeepers, a place for general discussion.

aquanet.cichlids — for discussions about cichlids. A lot of people who really know about cichlids are associated with aquanet, so you can expect lots of useful information here.

aquanet.marine — for all marine keepers (or just if you're interested).

One of the main problems with newsgroups is their tendency to

propagate 'spam', ie, message totally unrelated to the topic under discussion, usually inviting you to 'make money fast' or buy strange (and possibly obscene) goods. Assuming that your main interest was in fish, and not the other stray messages, the aquanet newsgroups are a good place to visit, since they are not part of the general uncontrolled newsgroup where the messages here are more likely to be relevant and interesting.

If newsgroups are too uncontrolled for you, and you don't like posting your e-mail address out for the world to see, consider joining one or more mailing lists. A mailing list is a more private affair — you can only read the messages if you take the trouble to join the group, and only other group members will find out your e-mail address. The messages posted are usually moderated, ie, a real human being reads them first to ensure that they are sensible and suitable for the mail list. Messages aren't rejected out of hand and queries from people who need to know something and aren't experts always get through — however, if you persistently try to post messages inviting people to send you five pounds for 'a survey', you will rapidly find yourself an ex-member.

Mailing lists operate through the e-mail system, and you receive and send your messages just as you would any other e-mail. All mailing lists have two e-mail addresses — one for the controller, to whom you send messages asking to join or leave the group, and the address of the group itself to which you send your messages to be read by the other members. Combining the two will be forgiven in the short term, but people may get annoyed if you do it persistently. When subscribing to mailing lists bear in mind that the subscription requests are usually handled by a computer program, so there is no point sending it a long chatty letter — it won't understand. Stick to the correct one-line subscription format, and, unless specifically advised otherwise, leave the subject line blank. When you have subscribed you will get an e-mail from the list, explaining how the list works and how to send your messages. There are both very specific and general mailing lists available, so you should be able to find something to your taste.

The Aquarium mailing list caters for people who want to discuss all aspects of aquarium keeping. To subscribe, send an e-mail addressed to LISTSERV@EMUVM1.CC.EMORY.EDU.

Write in your message subscribe 'AQUARIUM' followed by your name.

The Live Food list is for anyone interested in culturing their own live food for their fish. Your tank inhabitants will love you for joining this one! To subscribe send an e-mail to lifefood-request@aquaria.net. The message should contain only the word 'subscribe'.

The Aquatic Plants mailing list covers swapping plants, aquascaping, looking after and propagating water plants, and lots more. You can join this list if your interest is in either tropical aquarium or pond plants. To subscribe send an e-mail to majordomo@actwin.com containing only the phrase 'subscribe aquatic plants'.

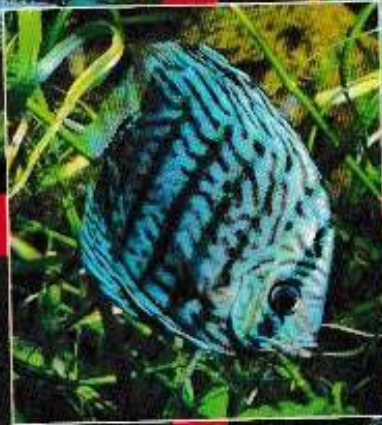
The Goldfish list has members around the world who share information and fun. To subscribe send e-mail to GOLDFISH-REQUEST@CS.U.MASS.EDU containing only the phrase 'subscribe GOLDFISH' followed by your name. The Catfish list has been mentioned in this column before, and remains an excellent place for anyone interested in catfish, some very well known names join in here, and everyone is made welcome. To subscribe send an e-mail to CATFISH.REQUEST@UUNET.CA. In the subject line put the phrase 'subscribe CATFISH' followed by your e-mail address. Leave the message blank.

There are plenty more mailing lists so if you like the idea but are interested in a topic that hasn't been covered here you'll find lots more lists to join at <http://www.efdc.demon.co.uk/links/maillist.htm>. For even more lists on every topic known to man check out the lists at <http://www.list.com/>. Whatever your interest is someone out there shares it. Through the Internet you can talk to and share information with people from all over the world, so try out some of the groups, and become a participating member of the World Wide Fish Club!

Next month we will be tracking down some of the best web sites dealing with Killifish.

Kathy Jinkings
(British Aquatic Resource Centre — <http://www.efdc.demon.co.uk>)
(AquaSource International — <http://www.aquasource.demon.co.uk>)

An Overview of **TROPICAL FISHES**



*Community
Tropicals for
Beginners*

*Difficult
to Keep
Marines*

*Kaleidoscope
of
Killifish*

*Discovering
Discus*

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PHOTO: AAP LIBRARY

'Tropical Fish'. The very name conjures up an exciting world, a collection of multi-coloured fishes darting in and out of underwater plants and rocky retreats, the picture never being the same twice.

What more could anyone ask for as a tranquil decoration to the home? But where to start?

Despite today's apparent impatience, with the 'instant' appeal of most things, the would-be tropical fishkeeper would do well to make haste slowly and not 'dive in' too quickly. A visit to the local aquatic retailer will not only conveniently present what is available in respect of livestock, but the collection will probably be too much to take in at the first viewing, such will be the selection on offer! Then again, according to that famous Law, the fish you'll really be entranced by will be the most expensive and, more than likely, the most delicate. So you'll need to take guidance; better still, invest a few pounds in a good aquarium book (or borrow one from the Library) and go home to consider your verdict. It will pay dividends to do as much advance research as you can before actually buying the livestock. (Of course, in the meantime, you can set up the

aquarium as, by the time you've made up your mind, the tank will be matured enough to receive them).

Nowadays, 'Tropical Fish' does not mean just species from tropical freshwater locations, as there are equally-attractive species (some would be more so) from marine waters around the coral reefs. Some of these are those so-called 'difficult' species that don't always want to settle down as you would like them to, for whatever reason.

In this Supplement we collected together some thoughts from our experienced contributors on filling that aquarium. There's the Community Collection to act as a foundation for your aquatic future; we look at why some marines appear to be 'difficult' and there's a look at two very different groups of fishes, Discus and Killifish, each of whom require that something special in their upkeep. From these we hope you can begin to form some idea of what's in store (both literally and forward-looking) as you start up your new hobby. Of course, if you're already into 'tropical fish', then maybe we've opened up another avenue of interest for you to discover.

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Kaleidoscope of Killifish

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Discovering Discus

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Difficult to Keep Marines

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An Overview of TROPICAL FISHES

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suggests a few
inmates*

PHOTOGRAPHS BY
THE AUTHOR

► Glowlight Tetra, *Hemigrammus
erythrozonus*.



Your new tank is set up and ready to go. What fish can you add that are inexpensive, yet colourful, tough yet beautiful, but avoiding the usual choice of Neons, Zebra Danios and Bronze Corys? I have chosen here a selection of fish that not only fit the above criteria, but which will all live peacefully together in a community tank.

First, the **Glowlight Tetra** (*Hemigrammus erythrozonus*). This

delightful little fish has been around for many, many years and is still very popular. They are easy to identify, thanks to the glowing pale red fluorescent line that shines all along the flanks, finishing above the eye. In some lighting conditions, a thinner band of burnished gold is visible, running immediately above the red line. Keeping a Glowlight happy is not difficult.

Their main requirement is the company of others of

their own kind, and a minimum of five should be kept, otherwise their retiring nature may mean that they spend a lot of time hidden amongst the foliage. Once they have found their confidence you may well find that a pair will go ahead and spawn in the community tank. After some chasing, a pair will dart in amongst the leaves, and perform a barrel roll together. It happens very fast, but if you look carefully enough you may

Tropicals



◀ Lemon Tetra, *Hyphessobrycon pulchripinnis*.

see the tiny shower of eggs and milt. Of course, no fry will result, as the eggs are quickly eaten.

pulchripinnis). The clue to this fish's charm lies in its scientific name, for *pulchripinnis* means beautiful fins. At first sight its

charms are not obvious, for under the less than ideal conditions of a crowded pet shop tank the Lemon Tetra's

▼ Harlequin Rasbora, *Rasbora heteromorpha*.

Gradual Temperature Changes

Water conditions are not critical but as with all fish you do need to make sure that any changes to pH or temperature are made very gradually. For such delicate looking, small fish, Glowlights are really very tough and should live for several years. I have lost track of how old mine are, but they are at least five years old and still going strong.

My next recommendation is the **Lemon Tetra** (*Hyphessobrycon*



Overview of TROPICAL FISHES

Community Tropicals for Beginners

performing various displays for courting and competition I am still completely captivated by that of the Harlequin. Of course, for there to be any chance of the fish establishing their own ranking system it is necessary to keep at least six of these fish. Again, they are not expensive to buy, and remain small, reaching just 4.5cm so can easily be accommodated in a medium-sized aquarium. Best of all, they are really very hardy and live for years.

My oldest fish is seven even though in her first couple of years I did my best to finish her off. I remember the state she was in, with most of her fins reduced to stumps, but now she's a real beauty.

Few community tanks are considered complete without a livebearer or two. If you don't want to try Guppies then Platies are probably the next best choice. When selecting Platies there is one very important point to consider. As with most livebearers, Platies do not

live very long, just a couple of years or so. If you buy a fish that is already nearly full size, then it is likely to die within a few months, however much love and attention you provide. Given the choice select fish that are smaller, say about 2cm or so. Platies come in a great variety of colours, a number of different species, and even with elongated dorsal fins. Because Platies and Swordtails frequently interbreed, it is often impossible to determine exactly what kind you have.

Fortunately this doesn't matter very much unless you are intent on serious breeding. For a standard community tank, simply select those that appeal most to you. Male Platies, like Guppies, are persistent lovers and will parade and chase females incessantly. To allow females some peace, it is ideal to keep a ratio of one male to two females. As females are often just as brightly coloured as males, and grow bigger, this is not a disadvantage. One of

my own favourite varieties of Platy is known as the Mickey Mouse because of the dark marking at the base of the tail which resembles a silhouette of Mickey, complete with large ears.

Provide Plenty of Cover

Platies are again hardy and can adapt to different conditions. They will also breed. If you wish to save any of the young then plenty of cover needs to be provided in the form of floating plants such as *Riccia fluitans*. Moving a heavily pregnant female to a breeding trap is likely to result in a miscarriage, but I find that I can easily spot and rescue a least a few young from each brood, as long as there is some cover in the tank.

The next small fish that I would not be without is the **Cherry Barb** (*Barbus titteya*). The temperament of this fish varies according to how it is kept, although it is never aggressive enough to cause a problem. Males kept together may spar. I have found the ideal solution is to either keep just a pair, or one male with two females. Spotting a male when he is in breeding condition could not be simpler for he turns, quite literally, cherry red. At other times, both sexes are similar, being fawn-tinged with brownish red. A brown stripe runs along the body from the nose to the base of the tail. A number of small blotches are found below the stripe, making even females attractive. Like true Barbs two small barbels are present.

Cherry Barbs are small, just 5cm in length, and can be timid if kept with bigger, more boisterous fish. House them with some of the fish listed

▼ Peppered Corydoras, *Corydoras paleatus*.



here, give them cover in the form of plants and they will lose their shyness. With luck you may witness a pair courting. This involves much high speed chasing, coupled with energetic leaps which sometimes lift the fish out of the water. Again they are hardy and are surprisingly long lived, five years being unexceptional.

All the fish mentioned so far live in middle and top water layers, so the tank needs something for the lower levels. *Corydoras* catfish are always a good choice. Nowadays there are plenty of different species to choose from, but the one which I recommend for a beginner is the **Peppered**, *Corydoras paleatus*. This is not only one of the more robust species, it is also one of the more active, and possibly the easiest to breed. The body is decorated with irregular dark blotches, peppered over a lighter base that glistens with metallic hues of green. A fine set of distinctive *Corydoras* barbels adorn the mouth.

Often small catfish are treated as scavengers and are expected to survive on the other fish's leftovers, and just one is added to a tank as an afterthought. A Peppered will survive under such conditions, for they are strong little fish, but you will not get the best out of them. Have at least three and they become much more animated. Give them a treat of Bloodworms occasionally and they may repay you by courting, and attaching their eggs to the glass sides of the tank.

Fascinating to Watch

The mating behaviour of Peppereds is fascinating to watch and I will not spoil it for you by going into details here. The sexes are easy to distinguish. Females are larger, rounder in outline and have a relatively blunt dorsal fin. In good condition, a male's dorsal fin will develop, becoming longer, and much more pointed.

All the fish mentioned so far are adaptable and have few specific demands. I finish with a

species that does need a bit more care, but that I think is well worth it. *Otocinclus affinis*, otherwise known as the **Dwarf Otocinclus**, the **Golden Otocinclus** or just plain 'Otto'. These tiny fish reach just 1cm and are completely delightful. They are equipped with a suckermouth which they use to attach themselves to any surface where there is algae to graze on. It does not seem to matter which way up they are, they will browse upside down under leaves to get at the choicest growth. Algae makes up virtually all of their diet which means they shouldn't be introduced to a tank until there is a good build up.

I keep the front glass of my tanks clean but allow the greenery to build up at the back, and also on one side. Algae also grows on the leaves of plants. I feed all kinds of foods to the fish in the Otto's tank, but have never seen them take any of it, preferring as they do to continue grazing on the algae.

Caport About

What makes these fish so appealing is their small size, and the way they caport about, seeming to hop and dance from

one resting point to the next. I have five and it is very rare just to see one on its own. They prefer to move in groups of at least two. I have fun trying to spot them all, for when they are hanging upside down on the back of a leaf, they can be hard to see. The final treat is the golden colour they take on when in breeding condition.

Apart from a good build up of algae Ottos have one more demand. They do not fare well if the pH of the water drops below 6.5, otherwise they are very hardy. They do such a great job, cleaning the leaves of the plants that I do not have to make room for a Pleco!

There are many more fish that beginners can safely start out with. Several different species of Tetras, for example, Black Neons, Black or Red Platons, or Bleeding Hearts. Hardy species of 'Corys' are generally those with the lower price tag, and of course, there are the Danios of which even the Giant, a misnomer if ever there was one, makes a good community fish.

I hope I have shown that just because a fish is popular does not make it any less interesting. I for one cannot imagine my tanks without Peppereds and Glowlights.

▼ Dwarf Suckermouth, *Otocinclus affinis*.



Kaleidoscope of Killifish

*Derek Lambert
gets expansive
on Toothcarps*

PHOTOGRAPHS BY
THE AUTHOR

Killifish are one of the most fascinating groups of fish kept by aquarists and yet they are few and far between in most aquarium shops. To be fair to the shops this is not a situation which is of their creation but one caused by the breeders out in the Far East and America who have never bothered to exploit this group of fish commercially. This is probably because many species are a little more difficult to reproduce than Barbs, Characins and other

fish which make up the bulk of the fish bred for the trade, and because they are far less productive in terms of numbers from one spawning than these other groups are. Killifish do, however, contain many stunning beauties which deserve a place in any community aquarium and they are becoming increasingly available through the trade now thanks to continental and UK breeders.

One of the commonly

held myths about Killifish is that they must have soft acidic water to do well. In reality, many species of Killifish are perfectly happy in hard and alkaline water and some species come from brackish or even marine conditions. Pat and I caught the Jamaican Killifish, *Cubanichthys pengelleyi*, in quite salty conditions in Black River Marsh. Since then we have bred thousands of these fish in very hard alkaline water in which they seem to thrive.

► The Jamaican Killifish, *Cubanichthys pengelleyi*.



Overview of TROPICAL FISHES

Kaleidoscope of Killifish

▶ *Aplocheilichthys lineatus* Gold Form is one of the most attractive Killifish.

▼ The most commonly kept genus of Killifish is *Aphyosemion*. Shown here is *Aphyosemion australe*.



In fact they soon go into decline and fade away when kept in soft acidic water conditions.

Diet

Moving on to diet it is well to remember these are Toothcarps and have a good set of teeth in their heads. These, like their cousins the Livebearing Toothcarps, are insectivores in nature and need plenty of live foods to do well. Even Mollies, which have the reputation of being algae eaters, are, in fact, digesting the Periphyton (Aufwuchs) which live amongst the algae and are gaining little nourishment from the algae. So when it comes to feeding all the Toothcarps a large proportion of live food is essential in their diet. I feed newly-hatched Brine Shrimp to all my Killifish once a day and follow this up with Whiteworms, Grindalworms or other live foods as available. A good quality flake food is also fed but not every fish I have will take this. Just about everybody, however, will



take frozen foods so if I am running short of live foods I can always fall back on the frozen alternatives.

The most commonly kept genus of Killifish is *Aphyosemion*. This contains many beautiful fish but it is only the males which have the colour. Females tend to be a drab brown and have a few spots in their finnage. The males, however, make up

for their drab wives with some of the most fantastic colouration known in the world of fish. Reds, blues, greens and yellows abound. With a huge number of uniquely patterned species, keeping track of the names of all of them can be a nightmare. They are, however, the gaudy peacocks of the Killifish world and well worth keeping.

Unfortunately, they tend to require soft, slightly acidic water and cannot cope with being in a mixed community tank containing boisterous barbs and such like. They can, however, be kept with small fish such as Harlequins and Neons in a well planted softwater aquarium. Once settled in they will soon be out and about at the front of the aquarium looking for food. Alternatively, trios can be maintained in a small two gallon aquarium with some plant cover and gentle filtration. In such a set-up they will breed perfectly well and you will soon have surplus stock to sell to your local aquarium shops or pass on to friends in the hobby.



Generally Peaceful

Another genus of commonly kept Killifish is *Nothobranchius*. The males of this genus are just as brilliantly coloured as *Aphyosemion* and this group are better able to adapt to hard water conditions. They are generally peaceful and fit in well in a community tank of small to medium-sized fish. Some males can be a little aggressive to other fish so it is not a good idea to combine them with small delicate species. These fish come from parts of Africa where pools, lakes and rivers often dry up completely during the dry season. To survive their eggs have adapted to survive long periods buried in mud until the rains come again.

Another African genus which contains some really wonderful fish for a community tank is *Procatopus*. The males of this genus are generally a lovely shining blue colour, often with red fins. They live perfectly well in hard alkaline water but prefer a well-filtered tank with some water movement. These fish tend to swim in the upper strata of the water column just underneath the surface where you will see them playing in any water current. Here they

are ready to grab any insect which falls on the waters surface and are always the first to any flake food put in the tank.

They will spawn into mops hanging from the surface and each female will lay several eggs per day. If the other fish in the tank are small you will often be able to collect these from the mop and hatch them in another tank.

One of the most attractive Killifish which is commonly available in the trade now is *Aptocbeilus lineatus* Gold Form. This is sometimes called the Golden Wonder and is really a stunning fish. Males are an overall iridescent gold colour and shine as though they have been polished for many hours. Females are a lot less brightly coloured but are still attractive in their own right.

▲ *Procatopus aberrans gracilis* prefers a well filtered tank with some water movement.

▼ *Nothobranchius rachovi*, just as popular as *Aphyosemion* but better able to adapt to hard water conditions.



Overview of TROPICAL FISHES

Kaleidoscope of Killifish

► *Oryzias mekongensis*, or Rice Fish, was one of the first of the Killifish group to be imported through the trade.



Surface Dwelling

This is another species perfectly happy in hard alkaline water with good filtration and some water movement. They are a surface dwelling species which lurks near any plant cover at the top of the tank but you have to be extra careful with this one because they are excellent jumpers with an almost suicidal death wish. Even a gap of 1/2 inch between the cover glass and the tank will be enough for them to jump through.

One of the first of the Killifish group to be imported through the trade was members of the genus *Oryzias* — Rice Fish. These are halfway to being livebearers in that a pair mate but the eggs are produced in a bunch a few hours later. There are several species available from time to time but none of them have the brilliant colouration of many of the other Killifish.

Another oddball group of Killifish belong to the genus *Xenopoeilus* from Sulawesi. These strange looking animals have a huge duck-bill shaped mouth with which they scoop up prey. Since they

live in deep water lakes the pair will mate and then later the female will produce a bunch of eggs. Then, unlike Rice Fish, which brush these off onto a plant leaf, the female holds onto the bunch of eggs for the duration of their development. This is usually over two weeks during which time the female's pelvic fins are held over and around them to protect them from being eaten by other fish. A remarkable development which is as close to livebearing as any fish can come without actually holding the eggs inside its body which is the real test of a livebearer.

I mentioned the Jamaican Killifish, *Cubanichthys pengelleyi*, early on in this article but it deserves more than just a mention in any article on Killifish. Adult males have a beautiful blue sheen over much of their bodies and well into their fins. I first came across them in an article in an American magazine and fell in love with them straight away. Once I found out they were unobtainable in the UK I decided to go and catch my own. This Pat and I did in 1990 just after

we moved into our present house and we have been breeding them ever since.

One Male to Several Females

They are peaceful enough to go in a normal community aquarium containing Barbs and Characins, etc. but dominant males will bully other males in their tank so it is wise to keep only one male to several females in an aquarium. They live near the bottom area of the tank and normally a male will make one area his territory and try to entice females into it to spawn. This they do shortly after being fed in the morning and one or two eggs are laid by each female.

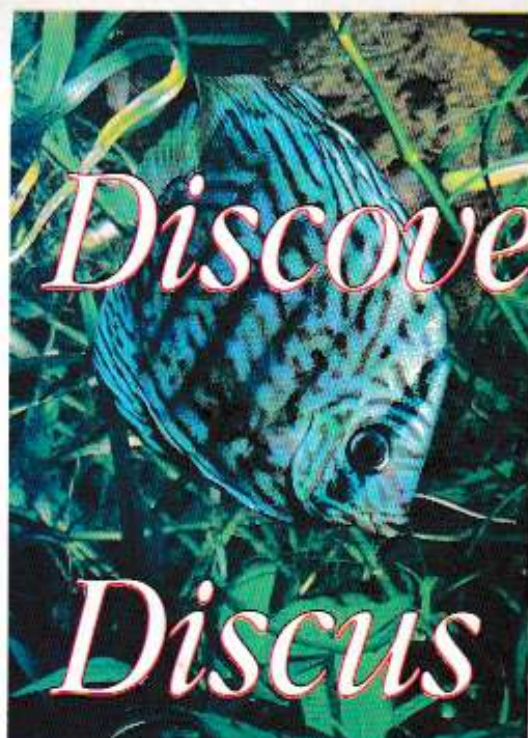
I hope by now you can see what a beautiful and fascinating group of fish Killies are. In this article I have just picked a few of the species I work with at present but there are many more available through the British Killifish Association. At the last auction I picked up a few *Cynolebias* species for the first time and there are plenty of others to try later.

Overview of
**TROPICAL
FISHES**

Dick Mills
looks back on
the early days
of *Discus*
keeping

PHOTOGRAPH BY
M.-P. & C. PIEDNOIR

► Dark vertical markings show
up beneath the blue on this
Symphysodon aequifasciata.



Well, you may be asking, what is there left to discover? To those not yet familiar with *Discus* the answer must be: "An awful lot", whilst to those well-immersed in *Discus* life there is an ongoing obsession to be found with these superb fishes in all their wide-ranging varieties and colours but ... it was not always so and this is the third interpretation of the title.

Looking at the impressive displays of *Discus* available today it seems unbelievable the changes that have occurred since the fish was first introduced on a regular basis to the retail trade some 40 or so years ago (the actual time date is unimportant).

The aquarium literature was quite adamant in its description of these fishes — its fulsome praise for the visual appeal (the ready attachment of the name 'Pompadour Fish' lent an extra magic) was suddenly tempered by the disclaimer

— the fish was far too 'exotic' or delicate to be kept by anyone except public aquariums!

"The fabulous Pompadour Fish is too difficult to attempt except in an experimental way".

"Breeding results are not too successful but the Zoo at Rotterdam had some young, although they did not swim. Why is this fish so difficult? Does it lack something in the food we give it? That is possible. For example, *Astronotus ocellatus* is known to breed only when it has eaten snails."

"Unless something unforeseen occurs such as discovering the fish in numbers from a yet unknown source — it has always been a rarity for collectors — the price of pompadours will be high for a long time and I am afraid beyond the reach of any except the most opulent fishkeeper."

"The fry have very small mouths, and must be fed on the smallest of infusoria for

a start."

The two species that were known to science were *Symphysodon discus* Heckel and *Symphysodon aequifasciata*, both ultimately having subspecies — *S. discus willischwartzii* and the more numerous *S. aequifasciata aequifasciata* (Green *Discus*), *S.a. axelrodi* (Brown *Discus*) and *S.a. baraldi* (Blue *Discus*). Colour strain were limited with the Heckel *Discus* having the extra horizontal wavy-blue markings over the vertical dark bands.

They were not exactly unfamiliar either, inasmuch as they were likely to be featured somewhere in any public aquarium desporting themselves amongst the bamboo poles simulating the underwater mudbeds of their natural river home. But as aquarium subjects they could be considered a rarity. As with any new species the first supplies of fish available were from only wild-caught imported stock from the exotically-sounding Rio Negro (Lake Tefe imports were still far in the future) rather than from today's intensive *Discus* fish farms in the Far East, although new strains are now regularly arriving from specifically named locations in South America.

such as the Alenquers and Gouris.

Similarly, like any 'new' fish on the block, prices were prohibitive to the average fishkeeper but who, nevertheless, made pilgrimages to those shops stocking the fish, just to wonder in awe at them.

Aquarists in the London area will remember visiting the 'House of Fishes' in Hemel Hempstead which at the time was the only aquatic outlet that had firstly, fitted carpets throughout and, wonder of wonders, superb Discus of all sizes in excellent condition. The owner, Roy Skipper, with his wife Gwen, became members of the early legendary pioneers of Discus keeping.

Every aquarist of a certain year's standing (or whose hair is either receding, a fond memory or of a permanently white colour) will have stories to tell of someone they knew (it was never them you understand) who had kept these fish. A favourite story (circa 1960s) is of the aquarist who bought a pair (well, let's say 'two') of Discus for himself and blithely told his wife that he had paid 'a bit over the odds' for them — thirty shillings (£1.50 each). Although reasonably shocked, the dear lady had a good nature and decided that as 'hubby' had a forthcoming birthday she would add to his collection of Discus and promptly set off for the shop. Details of subsequent actions (physical or legal) are not forthcoming when the aquarium shop owner politely (and gently) informed her that 'two of those thirty-bob fish please' was going to set the lady back £60!

Then there was the difficulty in sexing the fish. Although colour-intensifying by the male was often quoted, extra information about an 'S'-shaped curve to the pelvic fins of the female also entered into the main discussion. The main discourse was the growing familiarity of would-be Discus keepers with their fish changing colour — usually to black just before they died. 'Hole-in-the-head' disease was another scumbag factor to be taken into consideration and justifiably feared.

Obtaining stock also had a 'Catch 22' situation — the ones you wanted (which were big enough and, therefore, stood most chance of survival during your learning phase) were too expensive, whilst the smallest ones that you could just about afford never lived long enough for you to learn about!

Breeding stood on a par with finding the Holy Grail in the local junk shop. Thousands of fish must have perished as aquarists, equipped with normal cichlid-breeding experiences (especially with supposedly near-related, or near-neighbourhood, Angelfish) treated Discus in exactly the same way — removing eggs from Mum and Dad — to raise them artificially and watched them, helplessly, all die through starvation before the truth was learned about the young's dependence on first foods from their parents' skin mucus. Later, a method of rearing young Discus was developed but it's not quite the same somehow.

Getting them to breed also had its own air of mystery and again legends and myths abounded as to how to do it. Another story (actually it concerned the same 'thirty bob each, dear' aquarist): he heard a whisper that adding some horse serum to their water did the trick and of course had to have some. His investigations led him to a house equipped with an excellent pond in the garden right up next to the house. The owner admitted to keeping Discus but our friend couldn't see any tanks around and presumed the man had a fish-house. "Oh, you want to see my Discus," he said, promptly throwing a switch which powered up the underwater lights to the outdoor heated pond in which the colourful soup-plate sized fish were swimming, and viewed via the courtesy of a 'though the wall ponds/house wall window! Such was the power of obsession with these fish — and we tropical fanatics have the temerity to mock the loftier ambitions (and achievements) of Koi keepers.

Incidentally, the horse serum did seem to enervise the fish into breeding, with the

hormones present in it intensifying the colours and so forth.

You have to remember that all this was taking place in a shroud of ignorance and well before water chemistry was as widely understood, and its effects appreciated, as they are today. Reverse Osmosis could well have been an alternative form of Colonic Irrigation for all we knew then and those in hard water areas prayed for rain in order to provide the necessary softer water for their fish.

So what made the difference to make the Discus establish, and maintain, its place at the top of the tropical exotics? As with everything, determination by the dedicated few (notably Jack Wattle, Roy Skipper, Harald Schultz, Eduard Schmidt-Focke, Bernd Degen, to name but a few) perseverance and obsession (if we must use that word), coupled with the acquiring of knowledge and modern transportation techniques. In recent years the selection of Discus varieties available has mushroomed as a result of selective breeding programmes: at last year's Discus International Show all of the guest speakers had something to offer their audiences in the way of expert knowledge and practical advice.

Like it or not Man's tinkering with genetics continues (well, they're still looking for the Black Tulip, I believe) and the quest for the ideal this or that in the fish world still runs unabated, too. Whether one's own tastes or moral judgements come into play on this aspect of the hobby I leave to you to decide, but there is one undeniable fact — some of the results are simply stunning and out of this world. Who would have thought it possible from two, "Let's call it thirty bob each, shall we?" fish?

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Overview of
**TROPICAL
FISHES**

Difficult Marine Fish

Dave Garratt explains that it might not always be a fish's fault for that 'difficult-to-keep' tag

PHOTOGRAPHS BY
A&P LIBRARY

► Butterflyfish like this *Chaetodon falcula* can be finicky feeders.



I would like to qualify the content of this article by explaining what I have taken the term 'difficult' to mean. I will not be talking about species that are virtually impossible to keep in captivity, eg, species with, say, an exclusive diet of coral polyps. Instead I will concentrate on species that under certain circumstances may prove challenging, or species that are challenging in their own right and, therefore,

definitely not for the inexperienced hobbyist. I will approach the task as an overview of the reasons why fish may be difficult, sometimes unexpectedly so, rather than listing a catalogue of difficult fish.

Non-Community Fish

Many aquarists prefer a general community of fish

with a good mix of differing, unrelated species all peacefully coexisting. This is no bad thing in itself and leads to some beautiful aquaria, but certain species are just not cut out for this type of existence. Many are of a shy, retiring nature and cannot survive the hurly-burly of the competition that occurs for food in many community tanks. Butterflyfish spring to mind as the classic example of a species that must be



◀ Adult Pterois Lionfish may not transfer totally satisfactorily.

housed with fish of a similar temperament, such as other Butterflyfish.

Demanding Diets

Many fish have food requirements that are particularly exacting. Whilst not impossible to maintain, unlike the exclusive coral polyps feeders mentioned earlier, they nevertheless constitute a real challenge for the aquarist. Mandarinfish are a good example of such fish. These fish exist on a diet of Copepods and tiny crustaceans and are, therefore, best catered for in an established reef type aquaria that will have developed a rich culture of such food organisms.

Diet and Competition

An example springs to mind that combines the problems of fish unable to compete with that of a specialised live food diet. An example of this nightmare of

a challenge was featured in *AGP*, December 1997, in my article, 'Seahorses and Pipefish'. Their diet can be supplemented with large numbers of newly-hatched and adult Brine Shrimp, but it must still be remembered that these fish are very slow creatures and cannot compete

▼ The Wreckfish, *Anthias* sp., succeeds best when kept as a juvenile.



Overview of TROPICAL FISHES

'Difficult' Marine Fish

with other fish for the available food. Therefore, it is vital that their tank mates are chosen carefully so as to be of a similar disposition. Peaceful, non-competitive conditions cannot possibly prevail in a general community aquaria yet thousands of Seahorses are condemned to starvation in just such a tank. Seahorses are demanding but can be kept if sufficient thought is given to their aquarium home, and copious amounts of live food can be provided.

Aggression

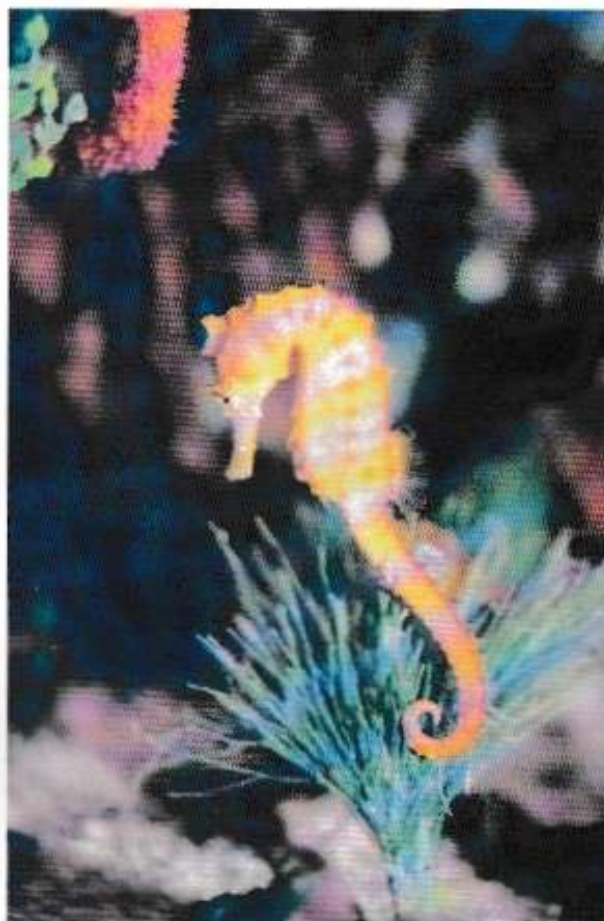
At the other end of the

'sweetness and light scale' are a group of fish featured elsewhere in this magazine, the Triggerfish. If you want to keep one then it must be housed with fish capable of defending themselves against the Trigger's belligerent nature. The Triggerfish is hardy, to the extent of often being recommended as a beginner's fish, but kept in the wrong type of community it could become extremely difficult to manage. Fortunately, it has a reputation for being vicious and as such most hobbyists would not contemplate keeping it with anything other than

equally formidable tank-mates, therefore making the fish easier to keep.

In contrast there is a popular group of fish, not generally considered difficult to keep, that can easily trick the unwary and prove to be unexpectedly vicious, and troublesome. I am referring to the Tangs of the *Acanthurus* and *Zebrafish* genera, eg, the Powder Blue (*Acanthurus leucosternon*) and the Sailfin Tang (*Zebrafish velifera*). If these fish are added at an early stage of the overall stocking plan of a tank they can become extremely problematic when the aquarist attempts to add other fish.

► Seahorses require plenty of tiny live foods.



Increasing Belligerence

Even species usually regarded as very easy fish with a reputation of hardiness in captivity can sometimes prove a problem. As the fish matures it can begin to show increasing signs of aggression towards its tank mates and any new additions. Many of these fish are sold to beginners because of their hardiness, examples being Clarkii, Tomato, and Saddle-back Clowns; Sergeant Major Humbug, Velvet, Domino, and Black Tailed Damselfish.

A similar problem can be found with Angels except these fish, for other reasons, are difficult even when juveniles. They can become even more difficult as they grow and become increasingly territorial.

Fading Away

There are a number of marine fish that exist quite happily in their first few months in captivity but

Overview of TROPICAL FISHES

'Difficult' Marine Fish

then slowly decline and perish. Unspecified dietary problems are often quoted as the reason for this slow, but terminal, decline. Many Butterflies and Angels fall into this category and the hobbyist must undertake some sufficient research to avoid purchasing such species. Some sources suggest a number of these fish are hardy, eg. Scooter Blenny, Cleaner Wrasse, Hi Hars, Sweetlips, but conversations with other hobbyists would suggest otherwise. The much sought after Cleaner Wrasse, unfortunately, appears to fall into this category. I know of retailers who no longer supply this fish because of the casualty rate.

Disease-Prone

Surgeons and Tangs whilst generally being fairly hardy aquarium species can be troublesome because of their disease-prone nature. In particular they are susceptible to *Amyloodinium*,

Cryptocaryon and parasitic skin and gill flukes. These diseases will probably require a copper-based medication.

The group is generally considered relatively easy. However, anyone who keeps these fish in a mixed fish/invertebrate aquarium, without having a separate treatment tank, plus the means to catch the fish, has a potentially difficult fish and runs the risk of severe problems.

Failure to Thrive*

Some fish do not withstand the rigours and stress of capture and transport from reef to aquarium and consequently have very little chance of acclimatising to aquarium life. Extreme patience may be necessary to coax them to accept an artificial diet. Adult Angels are notorious examples that fall into this category. Although once established they can lead long lives in captivity, juveniles adapt far better.

Other possible contenders, from a list

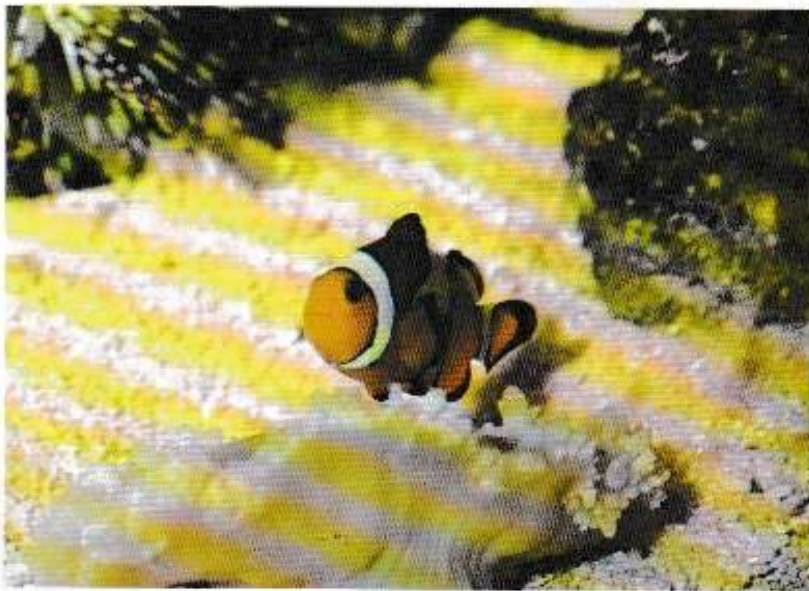
that could run to quite a number, could include the Jack-knife fish (*Eguetus* sp.), Sweetlips (*Plectorhynchus* sp.), Copper-band Butterflyfish (*Cochran* sp.), Blue-Ribbon File (*Rhinomuraena* sp.), adult Lionfish (*Pterois* sp.) and Coral Wreckfish (*Anthias* sp.).

Environmental Stability

Some species are very intolerant to even small changes in the quality of their aquarium home. They demand excellent water conditions, a stable aquarium life, good tank maintenance and excellent husbandry, in short they are extremely demanding. Obviously these species require an experienced aquarist and a fully-matured tank and cannot be recommended for the beginner or for a new tank.

They will usually respond to a fall from these exacting conditions and standards by refusing to feed, followed by a

► Although Clownfish are hardy they may get territorially-minded.



downward spiral towards disease and demise. As mentioned earlier juvenile fish will usually be more tolerant than adults. The classic examples of delicate fish can usually be found amongst the Angels and Butterflies.

Conclusion

I hope this article has highlighted some of the commonest reasons why some species are difficult to keep. More importantly I hope it has given food for thought as to why some supposedly easy species can give unexpected problems. I hope to encourage the reader, particularly the beginner, to research any proposed purchase beforehand. It is relatively easy with a minimum of research to identify and avoid the more obvious 'difficult' fish. However, what can be overlooked is the wider picture, giving consideration as to exactly how the fish will be housed and how

any special needs will be accommodated. Bearing this in mind, whilst keeping an eye to the future developments of both

the fish and the aquarium, the hobbyist may avoid many of the pitfalls that lie in wait for the unwary.

▼ The Jack-knife fish, *Equetus sp.*, can be temperamental when adult.



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This month I have received two articles — one about breeding Albino Corydoras, the other about a Table Top Show organised by Seascale Junior Fishkeeping Society in December — and Lizzie's come up with two Book Reviews ...

We've received a letter from Jackie, who says:

It is with sadness that I must leave you for the time being. Due to a year of ill health and pressure of work I cannot give my full attention to our Junior page. Fear not, I am handing over the reins to Helen, who helps the Junior Committee to run Seascale Junior Fishkeepers and I am sure you will enjoy the new life she and Lizzie will put into the new page.

What will the future bring? Well, that is up to you! Tell Helen and Lizzie what you want to see in your page and help create the best Junior page ever. The more you send in the more we can be sure of giving you what you want. Why not give Helen a lovely welcome by writing in (maybe with a picture) telling her about yourselves and your hobby — let's have our postbag bulging!

I look forward to meeting many more young fishkeepers at Shows and Auctions around the country and will do my best to let you know about any school aquariums I come across or help with. Thanks for your support over the last two years and 'Happy Fishkeeping' to you all.

NOW FOR THE ARTICLES

The Way We Breed Albino Corydoras, by Kelly and Karen Dougan

We are members of the Seascale Junior Fishkeeping Society. With the help we have got whilst being members we have managed to breed five species of tropical fish.

A few months ago we got a pair of Albino Corydoras and after a while we noticed the female was full of eggs. We separated the 'Corys' from the other fish in the tank by placing a piece of glass in the main tank. After a few days she laid her eggs on this piece of glass, so we took the glass out of the tank and put it into another tank we had set up earlier.

After three days the eggs hatched, the fry were too small to eat flake food so we fed them on micro-worm. When they got larger we counted them as we did

FRY TALK



HELEN STEELE

Welcome to the Junior Page in *AF&P*. I will be ably assisted by Lizzie who will tell me what you want to read about, as she, too, is a Junior. Who are you? I hear you ask. My name is Helen and I am a teacher of mostly junior children, spending much of my spare time working in our own fish-house (as you can see above!)

I look forward to hearing from you all with your articles, ideas and questions. Why not set a Quiz for the experts or ask for information about breeding a particular type of fish? I am ready to receive all your correspondence and will do my best to provide you with what you want! Happy Fishkeeping.

a water change. There were 122 fry altogether — we were surprised at the amount as we were told they are quite hard to breed!

We have since entered them in shows as a Breeder's Team and have done very well with them. We should have another batch of fry soon as we have noticed the female is full of eggs again.

Seascale Juniors' Table Top Show, by Hilary Porter

When you are preparing a Table Top Show you start by cleaning the right sized tank for the fish you intend to show in it — the tank has to be big enough for the fish to be able to turn round — and, remember, only to use water (no soap!) when cleaning the tank. Then put enough water in for the fish to be comfortable when transporting it to the Show. Get the water out of the same tank that the fish is normally in, then catch the fish and put it in the tank. You can put cling-film over the lid of the tank to stop water leaking out during transportation. When you get to the Show remove the cling-film if necessary top up the tank with

water you've brought with you from the fish's tank) and, before putting the tank on the show bench, remove any debris from the tank using a small, fine net.

We had a Table Top Show at our last meeting on December 5 1997. After everybody had benched their fish Kerry Graham and Donald McCartney (with the assistance of Chris) set about the task of judging. Whilst we were waiting for the judging to be completed (which seemed to take forever!) we watched a Hagen video about setting up an aquarium. When the judging was finally over Chris announced the winners — for the cocklewater Kelly Dougan (11) won with a Shubunkin, whilst, in the tropicals, Karen Dougan (11) won with a red-tailed Black Shark. Hilary Porter (12) with a Black Neon and Kelly won with her Breeder's Team of Albino Corydoras.

After the prizegiving we debenched our fish, making sure they were comfortable for their journey home and then their return to their tanks.

• I hope you found both those articles interesting. Why not get your club to organise a Table Top Show for Juniors

and allow you to sit in with the judges and see how it all happens? If you are successful let me know and we will feature it here on your page. Have you visited any good aquatic displays or centres lately? A good Sea Life Centre or Aquarium with a difference? Write me a report and send me a brochure of the venue. This way we can build up a collection of places worth visiting when we are out and about — or even on our school holidays or at half term. Next month I shall be including an article about Maryport Aquarium which is worth a visit if you are coming up to the Lake District for your holidays, but more about that next month ...

LIZZIE PORTER LOOKS AT TWO NEW BOOKS

Your First Koi and Your First Pond

New out from TFI are two books by Dick Mills, aimed at younger readers and the first time hobbyist. Each book explains what is a complicated business in simple and easy-to-understand terms. Both books go into detail about the care of the Koi and/or Pond using colour photographs, diagrams and clearly labelled text so the user can quickly find information.

The advice in 'Your First Pond' takes you from choosing the location of your pond, in-depth explanations of filtration, design, seasonal care and maintenance once the pond is established — all in the same beginner-friendly style.

'Your First Koi' gives good, sound advice on the choosing, care and surroundings these fish need. The book also goes into detail of the dimensions and filtration that your Koi will need and would work well in conjunction with the previous title. The book also describes the Breeding and Showing of Koi, providing beautiful colour photographs of some of the many varieties available from dealers today.

If you are planning to set up a pond, or have completed a project, I would definitely recommend these books as a set, as they offer good value (very much less than £5 for both!) and friendly advice. Start off with 'Your First Pond' and then, when you have established yourself in the hobby, move on to 'Your First Koi'.

Nick Dakin looks at Sea Fans and Sea Whips

PHOTOGRAPHS BY THE AUTHOR

Gorgeous Gorgonians

Orange Sea Fan.

Marine aquarists are often seeking different and new invertebrates to add interest to their showtanks. Some are sought to provide colour, others are purchased because of their unusual forms, yet more are located to introduce interesting behavioural patterns. But there is only one group capable of bringing height to a display, and that is the Gorgonians.

Gorgonians is a general term used to encompass both Sea Whips and Sea Fans. They are common throughout the shallow tropical seas of the world, especially on and around coral reefs.

SURVIVORS

Surviving the often turbulent and ever-changing currents of the coral reef is not an easy task. Most sessile invertebrates cope by clinging as firmly as possible to their chosen anchorage point to avoid being swept away. Not so the Sea Whips and Sea



Gorgonians is a general term used to encompass both Sea Whips and Sea Fans, which are common throughout the shallow tropical seas of the world.

Fans, for they actively seek out areas of strong water movement and grow in some cases, to a height of 3m (10ft) in perfect security. Their secret lay in their amazing ability to flex and bend with currents that would easily destroy other corals. But why choose to live and grow in the most exposed and potentially dangerous areas of the reef?

The answer is simple — food. For these turbulent locations are extremely rich in plankton, which are swept through the branches of the exposed fans and whips and in the process captured in large quantities.

HORN CORALS

Sea Whips and Sea Fans fall within the group known as horny corals because, in the main, their supporting skeletal stems are made of a flexible, horny substance known as gorgonin — hence the common collective name Gorgonians. (Some Gorgonians do, however,

have a calcareous skeleton but these species remain rather small and prefer sheltered, shady positions.) The stem is covered by a crusty and often brilliantly colourful substance called coenenchyme, in which dense colonial polyps are embedded. The main stem is always attached to a hard surface, usually limestone, and the rest of the structure branches from that point.

Whilst closely related Sea Whips and Sea Fans differ distinctly in the way in which they grow, Sea Fans

have a central stem, devoid of polyps, from which branches a lacy structure on one flat plane. Sea Whips, on the other hand, do not have a central stem but branch from very close to the base into a cluster of vertical, whip-like extensions.

Gorgonians may be found in a myriad of colours, from the subdued beige hues through to more garish reds, oranges, purples and yellows. Polyps do not necessarily extend during the day and some species are exclusively night-time feeders. Of

those that prefer daytime feeding, it is often found that the polyps harbour a symbiotic algae from which they supplement their filter feeding diet.

Being exposed to such nutrient-rich waters Gorgonians often attract an array of passengers, ready to take advantage of a favourable feeding platform. Quite often, various Sponges, Sea Squirts, Hydroids and Brittlestars will be found in abundance amongst the intricate branches.



Red Sea Fan.



Caribbean Sea Whip.

UNWELCOME VISITORS

Not all visitors are welcome in the relatively close confines of an aquarium and tankmates must be chosen carefully. Some Shrimps, for example, rest among the Gorgonians' branches, irritating them and preventing them from extending their polyps to feed. Sea Urchins and Starfish are also unwelcome visitors as their weight can cause Gorgonians to topple over. Equally, Sea Horses may find them ideal attachment points but they will have the same effect as Shrimps and cause an untimely demise. Ice Snails are particularly destructive, as are certain species of Nudibranchs. Both consume Gorgonians and if detected should be removed as quickly as possible.

Purple Gorgonian species.



Gorgeous Gorgonians

PLACEMENT

In common with the wild preferences Gorgonians should be situated in an area of strong current and never in slack water. Some species prefer a well-lit position, while those without symbiotic algae, such as the Red Sea Fans with white polyps, are happier in shadier areas.

FEEDING

The polyps of many species are large enough to capture Brine Shrimp nauplii, Rotifers, sieved

Daphnia and Cyclops. Dead and coarse liquid foods are generally rejected. Feeding once or twice a week is usually sufficient and should only be carried out when the polyps are fully extended. Some species, for example, the beige-coloured Caribbean Sea-Whips (*Plexaurella* sp.), are largely self-sustaining and will survive purely with the assistance of their symbiotic algae, providing the lighting is intense enough.

A BEGINNER'S INVERTEBRATE?

It must be said that most species do NOT do very well in the average invertebrate aquarium. As already mentioned the beige-coloured Sea Whips, mostly from the Caribbean, are the least sensitive and tend to do noticeably better. To avoid any confusion, however, newcomers are encouraged to postpone the keeping of Gorgonians until some experience at maintaining a stable, high-quality environment.

HEALTHY SPECIMENS

When purchasing it is preferable that the base of the animal is firmly anchored on a substantial piece of rock. Quite often fine specimens will be found without a good anchorage point; however, this can easily be overcome by gouging out a hollow in a piece of Tufa rock and wedging the base in it; they will become firmly embedded within a few weeks. Alternatively, underwater epoxy resins can attach the base to a suitable piece of rock in minutes.

Bacterial infections are reasonably common whereby the coenenchyme covering becomes discoloured, often blackening, and finally disintegrating altogether, leaving just the horny skeleton.

The causes of this 'stripping' disease can be many and varied including physical damage, poor water conditions, insufficient water circulation and even the entrapment of filamentous algae amongst the branches which has failed to be removed quickly enough. Under optimum conditions regeneration is possible, although this is a very slow process and not to be guaranteed.

Never purchase specimens that have 'stripped', exposing a black or white skeleton, they rarely recover and usually get worse. Always try to witness the polyps fully extended in daytime feeding species. As a rule, thicker branching species do better than the more delicate, thin, spindly species which are mostly deep water night-time feeders.

GROWTH

Under favourable conditions growth may exceed 2.5cm (1in) every month, in some species. However, a more usual rate is a few millimetres each month. When they reach the top of the aquarium water it is common for them to turn around and grow back down again! (Though moving them to a lower position is far preferable).

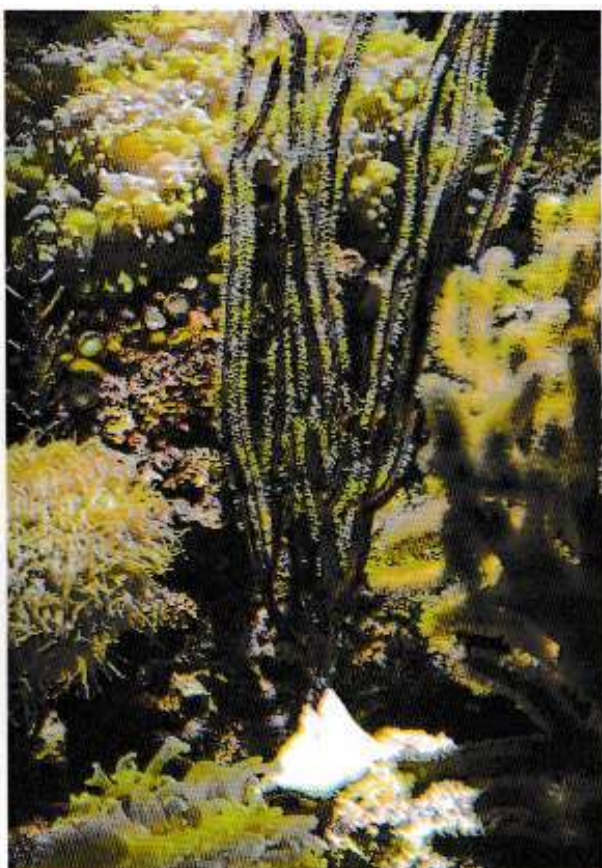
A COMMON PROBLEM

Gorgonians can refuse to extend their polyps for weeks, sometimes months and still remain healthy. Eventually, however, they will 'strip' and die. To avoid this unwelcome scenario, ensure that all water parameters are correct and that the Sea Whip is in a fierce water flow. Decide on what type of lighting it requires and alter the position of the animal accordingly.

TANK AND WATER CONDITIONS

An aquarium of 48x12x18in deep is recommended as a minimum

requirement for stable water quality and room for growth. pH: 8.2-8.3. Ammonia and Nitrite: Zero. Nitrate: less than 10ppm (preferably zero). Temperature: 25-26°C (77-79°F). Specific Gravity: 1.021-1.026. Calcium: 400-450ppm. Phosphates: Zero. KH: 7 dKH. Redox Potential: 350-400mv. Lighting: Depending upon the species, metal halides, fluorescents or even mercury vapour will be adequate. Water changes: Change 15-20 per cent every two weeks. Filtration: Should be efficient with a protein skimmer and activated carbon to be installed as standard.



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FROGS & Friends

By BOB and VAL DAVIES



HERP FACT FILE

Pouched frog (Gastrotheca monticola) — an egg-laden female showing entrance to pouch.

PHOTO: BOB & VAL DAVIES

MARSUPIAL FROGS (GASTROTHECA species)

Many frogs and toads rely on producing huge numbers of eggs to ensure that some will survive predation in the vulnerable early stages of development. Others produce fewer eggs but have evolved varying methods of parental care to protect their offspring during all or part of the tadpole stage. Included in this latter group is the genus *Gastrotheca*, sometimes also referred to as Pouched Frogs after the dorsal pouch in which the eggs are placed following fertilisation.

The genus contains some 40 species although these have not been fully described and there may be more or less than this. Natives of Central and South America they are found in a variety of habitats; rainforests, cloud forests and high grass plateaus. Some years ago, *G. marsupiata* (from Ecuador) was occasionally available and more recently *G. riobambae* has been bred in captivity and is sometimes offered for sale; latest imports contained *G. monticola* from Peru.

In the few cases studied mating takes place on land. During



amplexus the eggs are fertilised by the male and are manipulated into the female's pouch the opening of which is situated on the posterior end of the dorsal surface; the opening may be rounded or rectangular. Once full of eggs it closes and assumes a puckered appearance. In certain species the eggs undergo complete metamorphosis inside the pouch, in others the tadpoles are later released into water to continue their development.

The main problem, unless the origin of the specimen is known, is providing appropriate conditions. Some species are arboreal others terrestrial, often burrowing especially in dry periods.

Those from high altitudes need lower temperatures; rainforest species will need more humid conditions and higher temperatures.

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NEW DEVELOPMENTS

New products are constantly being developed for the hobby. Not having tested every new item which appears it is difficult to comment on their efficacy. One we have tried is a new, very finely-ground, calcium powder for dusting live foods. It has efficient adhesive properties and

remains on the insects for a substantial period. This is one of a range of calcium products developed at Loughborough by Underworld and marketed by T-Rex. It is sold as 'Bone-Aid Micro stick Powder'. The range also contains 'Bone-Aid Liquid Calcium' and 'Bone-Aid Calcium Tablets' (the latter for longer reptiles).

The same company which also developed 'Snake Sausage',

'Garter Grub' and 'Gecko Grub' is now marketing 'Odour manipulators' which are naturally-scented additives to enhance the palatability of dry, fresh and frozen foods and to increase palatability for reluctant feeders. These possess 'patented species-specific, high-powered chemo-sensory attraction mechanism'. Not having problems feeding any creatures we have only tried the calcium powder which was found

TINY TEIIDS

Another interesting recent import from Peru were small Teiides (*Proctoporus ventrimaculatus*). This genus is often referred to as 'Light Bulb Teiids' due to the presence, particularly in males of certain species, of reflective scales along the lower edge of the body. Such is the reflective quality that it was once thought that these lizards actually produced light within the scales hence the common name. This quality has not been observed in the above species although possibly the light conditions have not been suitable.

These lizards are not well-known. They tend to be secretive, mainly crepuscular/nocturnal and live among dead leaves. They are almost Sidnk-like in appearance, having a shiny, elongated body with relatively small legs. The scales are in regular rows and are rectangular which produces a similar effect to those of Plated Lizards (*Gerrhosaurus*). Unlike many



Light Bulb Teiid (*Proctoporus ventrimaculatus*) — an uncommon species from Peru which seems to lack the reflective scales.
PHOTO: BOB & VAL DAVIES

Teiidae which are large (up to 1m/39in) this species only measures around 12.5cm (5in). Males were distinguished by a larger head and swollen tail base. In the vivarium they have fed well on vitamin-dusted Crickets often in the daytime when they occasionally come out to bask. The substrate of dead leaves and Sphagnum Moss

is divided into a slightly damp area and a drier area with hides in both. A daytime temperature at the cool end of 26°C (78°F) is maintained but at night it drops to 18-20°C (65-68°F).

Since this genus is not well-documented exact conditions are a matter of trial and error. Although their distribution is given as tropical South America some species are found on the Andean slopes where cooler conditions may exist especially overnight. Fifteen species are said to have been identified.

CHEAP AND CHEERFUL

During recent visits to tropical fish retailers to buy fish for our new aquarium we spotted some tiny frogs in a tank. They turned out to be Dwarf Clawed Frogs (*Hymenochirus*) although the exact species has not yet been identified. There are four species hailing from West Africa. The average adult length is around 4cm (1.75in) and they have the typical flattened body of the genus *Pipidae*. Fingers and toes are both webbed, the three inner toes possess claws.

Our specimens were barely 2cm (0.75in) long and at £1.60 each were not likely to break the bank.

In the retailers they were housed with tropical fish in 30cm (12in) water and seemed to have difficulty reaching the surface to breathe. At home they were housed in a small plastic tank in 3.75cm (1.5in) of water with a few sprigs of *Elodea*. As the room contains numerous other vivaria no additional heat is necessary and they are feeding well at a daytime temperature of around 26°C (78°F) dropping to around 21°C (70°F) overnight. The frogs feed readily on *Daphnia*, *Tubifex* and occasional bits of chopped Earthworm. They will also take *Artemia* (Brine Shrimp) nauplii if offered. Occasional, partial water changes are necessary using water of similar



Dwarf Clawed Frog — cheap to buy, easy to cater for and fascinating to observe.

PHOTO: BOB & VAL DAVIES

temperature which has been allowed to stand overnight.

These tiny creatures are interesting to keep and require little maintenance. As growth proceeds water depth should be increased to around 12.5cm (5in). The aquarium can be planted and hiding places provided. Dwarf Clawed Frogs breed readily in captivity if stimulated by an influx of cold (15°C/60°F) water which is then allowed to rise to normal temperatures. To prevent predation of eggs the adult pair must be

removed after spawning. Breeding males develop a post-axillary gland (just behind the forelegs) and produce clicking sounds under water.

Tadpoles hatch in two or three days, spend a few days resting and then start to feed on *Infusoria* graduating to newly-hatched *Artemia*, small *Daphnia* and other live foods. A ventilated cover for the tank is advisable; although totally aquatic it is possible that these frogs might try to leave the water.

This has been observed in the related African Clawed Toads (*Xenopus*) which in the wild occasionally leave one pool to travel to another. *Hymenochirus* are more commonly available from fishkeeping outlets rather than reptile and amphibian dealers.

to have the best adhesion we have encountered.

We have also used almost-pure calcium sand produced by *Life*™ some people which should soon be available in two coloured forms. Natural dyes are used to make it more attractive than its present normal greyish colour. The sand has fine, coarse

particles and we have used it for young Spur-thighed Tortoises (*Testudo* species), Sand Boas (*Eryx* species) and various desert lizards such as Horned Toads (*Phrynosoma*) and Collared Lizards (*Crotaphytus*). The idea behind the sand is to avoid trouble by substrate ingestion as it can be digested

and provides essential calcium. No problems have been encountered so far, one colleague actually sprinkles it on the food for his African Spur-thighed Tortoises (*Geochelone sulcata*) and reports excellent growth rates and good shell formation. In our vivarium young Spur-thighed Tortoises have

been seen actually eating it when it has been freshly spread on the floor. Since Tortoises and Turtles need a higher than average calcium content in their diet this product would seem to be useful and safe as it avoids gut impaction sometimes caused by

► Continued on page 62

FROGS & Friends

By BOB and VAL DAVIES

◀ Continued from page 61

ingestion of gravel, soil and other substrates although we have never encountered problems using bird sand but this lacks the calcium content.

The products are all tested at large scale captive-breeding establishments before marketing them. If interested in these products specialist reptile outlets should be consulted.

TORTOISE CARE

Tortoises seem to be enjoying a boom in popularity and although relatively few species are available they do need somewhat different treatment with regard to diet, temperatures, humidity and winter treatment. For instance hibernation conditions for the better-known Spur-thighed (*Testudo*) species can vary depending upon the area of origin; in fact some do not hibernate at all and attempting

this could be fatal. Matters are further complicated in that precise winter conditions in some areas are not known. In parts of their range winter simply consists of a short period of sluggishness, sometimes referred to as brumation as opposed to hibernation. Incomplete information at time of purchase can often be misleading.

With these factors in mind the Tortoise Trust has produced a number of video tapes dealing with such topics as identification, correct husbandry and hibernation for Tortoises, Box Turtles and Turtles. Having recently viewed 'Keeping Tortoises as Pets' and 'Safe Hibernation for Your Tortoises' (Vols 1 and 2) we found them to be extremely interesting and informative and can recommend them. Anyone owning or considering buying a Tortoise is advised to buy these to prevent costly and tragic mistakes.

Details can be obtained from: The Tortoise Trust, BM Tortoise, London, WC1N 3XX.



Doesn't it make you want to spit!

We have to apologise for the errors that crept into the January issue of A&P.

In the Out & About report of the Supreme Festival of Fishkeeping credit was given to Aqua Aquarium for the generous donation of fishes for the National Junior Fishkeeping Association's Open Show. This should have read Alpha Aquarium, of Byfleet, Surrey, and we apologise for this mistyping.

Unfortunately Tarquin's photograph appeared inverted (although the silly fish may not even have noticed!)

Going back a month to the December issue the address given in the Seabray Aquarium Competition was incomplete—the correct address should have been—MJ Publications Ltd, Seabray Competition (AP12), Caxton House, Wellesley Road, Ashford, Kent TN24 8ET.

Many readers will have had their entries returned as 'Not known at this address' by the Post Office and so to make amends for this we are extending the closing date for the competition to February 27 1998 and again we apologise to our readers and to Seabray for this inconvenience.

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All you have to do is to answer the following questions (clues to the answers can be found in the separate 'OUT & ABOUT' feature on the company in the December issue of A&P, pages 60-61).

- 1 When did the Seabray tank building service start?
- 2 Name the Shopping Centre built over a previous Seabray site?
- 3 What is the latest cinematic appearance called in which Seabray plays a part?



Send your answers and your name and address on a postcard (or sealed down envelope) to: Seabray Competition (AP2), MJ Publications Ltd, Caxton House, Wellesley Road, Ashford, Kent TN24 8ET, to arrive no later than February 27 1998. The first correct entry to be drawn will win the Seabray Aquarium and Cabinet. Collection arrangements must be made by the winner through the nearest Seabray stockist.

Coldwater

Q I am new at the art of fishkeeping. In England it appears nobody knows anything about Sturgeon including myself. I have two Black Sturgeon with white tips on their snouts. They are three years old and 2ft in length. I also have one Diamond-back Sturgeon, two years old, 14in in length, plus two Diamond-back Sterlets. My pond holds 460 gallons. All the fish appear to be in good condition. I feed them on catfish pellets, but as I know little about the species I would be very grateful if you could inform me about their general upkeep and any problems I may get, and treatments that may be called for.

A Thank you for your email. Sturgeon are a fairly misunderstood fish, being often sold for both tropical tanks and blanketweed clearance, both of which they are unsuitable for — they prefer cold, clean waters, and have a nasty tendency to become fouled in blanketweed and die. They will eat sinking pellets, being naturally trawlers along the bottom, but some learn to do clever antics to take flake food from the surface. Live bloodworm will be appreciated as a particular delicacy. (More information can be found in the March issue of A&P, 1996 — send for a back number today!) I suspect the black ones with the white tips are Sterlets, *Acipenser ruthenus*. I hope you have a big pond, as these grow to 39in each. I'm not sure how big Diamond-back Sterlets grow — true Sterlets tend to be around this size. The Diamond-backs have always looked like the true sturgeon to me though, which ends up at 6m! You could save for a swimming pool... All the Sturgeon family are gentle and peaceful fish, and are one of the most ancient groups around. However, their size means you will probably be unable to keep them into adulthood, so

ASK A&P

unfortunately these fish are best left to public aquaria. I appreciate this isn't what you wanted to hear, but shops really ought to warn people.

Marine

Q I would like to try my hand at marines, with the eventual aim of breeding them. Am I doomed to failure right from the start?

A Well, they say nothing will beat an optimist and for your sake I hope they're right! But, seriously, the keeping and breeding of marines is a lot more feasible now than it was perhaps only a relatively few years ago. The actual keeping of the fish is pretty straightforward as long as you realise what is involved right from the start. Marine fish have little tolerance to changes in their environment — and that includes you discovering the early teething troubles. Please don't experiment at the fishes' expense. Only when you have got the whole aquarium management thing under strict control will you have any chance of moving on to successful breeding. Unlike freshwater tropical fishes it is not practicable to try to breed every marine species you come across and the few species that are regularly bred in captivity although they come from a very few different genera they are fairly similar in their breeding techniques. Most are egg-depositors (in the freshwater cichlid sense) as marine egg-scattering species need plenty of space — they scatter their eggs in the water column near the surface to take advantage of surface currents to carry the eggs away to a safer place to hatch. Such fish (Angelfish,

etc) are generally much larger than the previously mentioned egg-depositors (Damsels, Clownfish, etc) and will not reach breeding condition so quickly. Other species to be successfully bred in the average aquarium include Gobies and, of course, with good fortune, Seahorses and Pipefish.

Koi

Q I know it's a daft question but can you tell me if it's correct to say Koi Carp?

A At the risk of ruffling a few scales I'd say that it's over-stating the very nearly obvious. 'Koi', so we are told, is Japanese for Carp so you're actually duplicating the description but, common usage being what it is, the term had been used so often that it's now become tradition. Incidentally, the coldwater side of fishkeeping has a large number of species whose scientific names are simply double-barrelled (*Barbus barbus*, *Gobio gobio*, *Tinca tinca*, etc) — perhaps it's something in the water?

Tropical

Q Can you help please, I am trying to lower the pH of my aquarium, at present, the pH is exactly 7.0 and whatever I try, ie, water treatments, peat, resin, it will not drop to the value of 6.5 I need for my Tetras. Can you suggest anything that may lower it please?

A As you have found, the simple methods of lowering pH are

unreliable and unpredictable at best.

You don't mention it, but you probably need to reduce the hardness as well, which is more difficult.

You can get assorted chemicals (mostly acid, obviously) to drop the pH, but they won't touch the hardness. The only way you can get rid of this from tap water is to buy a reverse osmosis unit for lots of money. If you only have a small tank, your local shop may sell treated water by the gallon. You mix the RO water with tap to get the required amount.

Alternatively, you could try collecting rain water, making sure it doesn't collect off a dirty or poisonous roof. If you do this, keep the lid on the rain butt, and filter the water with carbon before use. Incidentally you should appreciate that calcareous gravel, some types of rock and concrete (or plaster) aquarium ornaments will quickly harden water even if it's soft to start with. Good luck! Unfortunately most people (including me) give up and try hard to like the fish that like their tap water.

Plants

Q I can't seem to control the build up of algae on the front glass of my tank. The tank gets no direct sunlight as it is in an alcove. The aquarium lighting is the only light source and is on all the time.

A Try turning the lights off occasionally! This is a mistake often made by beginners, you are not alone. Lights need only be on for ten to 12 hours a day. If you invest in a timer, this can be programmed to switch lights on and off automatically, at times that suit you. Once there is a period of darkness you should find that your algae problem decreases. Your fish will also be much happier when they get a period of rest.

David Lloyd describes how he upgraded his pond

PHOTOGRAPHS BY THE AUTHOR

A Small Garden Pond Project



What could be better than spending some time on a sunny day by a Koi pond?

A pond, Koi and a small garden is not the ideal combination for such a project as aesthetics and space tend to compete with each other. Our home is a simple semi-detached house with a small rear garden approximately 60x30ft. However, this did not stop us and we established a small pond at ground level by digging a hole in the ground providing a deep section at 3ft deep and a shallow section at 1.5ft deep. The surface area was only 6x4ft.

When this was created out came the text books, the hole was dug out and cleared of stones. Down went the felt underlay to protect the butyl liner. Plenty of overhang was allowed and following text book instructions water was fed into the middle of the liner which sank to the bottom of the excavation. As the water level rose predictably the liner was pushed out to the shape of the hole until it was full. The liner was trimmed and paving stones added to anchor the edges and provide a neat finish to the whole project.

Even though this project was very

simple it soon became the focal point of the garden. Friends would always walk up to it and admire it, look at the fish and love to feed them. "This is great, isn't it!" they would say. Then a quick look around would add "and the rest of the garden is nice too". At barbecue times or when just sitting in the garden it became very obvious that everyone liked to sit close to the pond. The rippling water and gurgling effect of the pumped water gives a hypnotic, soothing background. Even when one is alone there is a feeling of presence close by created by such a

STRONG CONSTRUCTION

To ensure that the weight of the water did not push the walls apart the construction had to be strong and this was overlapped at the corners and half way along the 12ft length. In addition, six off 12mm diameter by 1m in length wrought-iron rods were used to hold the structure together.

These rods are available from most builders' suppliers or DIY outlets. The round sleepers were drilled at one end with a hole just larger than the 12mm rod on the centre line of the sleeper and 3in in from the end. To assist in drilling of these holes a template was constructed using some sheet metal. A cardboard template would be OK but you would mark the hole position rather than use the template to drill with.

Once the sleepers had been drilled it was a simple matter of building up the walls. Assembly was straightforward and the first layer was placed onto the ground with one edge running parallel to the boundary fence. Sleepers were placed so that the corners interlocked and also the joint in the centre of the 12ft length, as these only came in 6ft lengths. Next, the second layer of sleepers was put into place but with the corners and length joint interlocked opposite to the previous layer. The holes in the sleepers are aligned at the corners and length joints and the 12mm rods are driven into the ground through these holes thus locking the sleepers together but leaving approximately 0.5m (18in) above the ground.

To give the assembly more strength (belt and braces approach), 6in nails were driven through the top sleeper into the lower one at random positions along the lengths of the sleepers. To ensure the sleepers retained maximum strength a pilot hole was drilled for every nail, the diameter of the hole was two thirds of the nail diameter. This technique is used a lot in boat-building as the wood in the drilled hole is curled over and compressed when the nail is driven home. If you just hammer into a blind piece of wood you tend to split the grain where the nail is being driven through and this in turn increases the chance of splitting the wood. By using the pilot hole method you retain maximum strength, maximum grip and no splitting. The rest of the sleepers are built up in this fashion so that the interlocking is alternated thus providing a very substantial wall for the pond. When the whole construction is completed the rods are hammered home until they are flush

A Small Garden Pond Project

with the top of the last sleeper. Two thirds of these rods are driven into the ground with only one third in the sleepers thus providing an extremely strong assembly anchored to the ground.

Fillers were added of earth or sand where the sleepers join with the ground. This provides a smooth contour for the liner to follow and ensures there is support for the liner at the corners, otherwise the weight of the water could puncture through the liner at those points. Great! That completes the major construction work and in less than one day.

Day two was a nice summer's day which was just as well because it was messing about with water day. To protect the liner the ground was inspected for any stones twigs, etc, that could puncture the liner. Following this, underfelt manufactured specifically for the job was laid into the pond. This was an easy task as it comes in easy to manage strips. Make sure that there is a good overlap at the joints, it is better to have too much of this material laid down to protect the liner than too little and do not be concerned if it is a bit wrinkled and not perfectly smooth. When the liner is in place and full of water you would never know. For this exercise I actually climbed into the pond and made sure that the felt underlay hugged the shape of the pond. This underlay is very important as it provides a protective barrier between the liner and the ground and any possible protrusions that were missed in the previous search for them.

Next, the liner was offered up to the pond. Due to its shape being regular (but the depth irregular), the liner was teased into the basic shape of the pond leaving some overlap for when the water was added. To do this I climbed into the pond making sure not to place any weight onto the liner where it was not supported. This was done in bare feet so that I could feel the bottom of the pond and thus not damage the liner. Having teased the liner into rough position water was added and, as it filled the pond, it pushed the liner out into the shape of the pond and at the same time pulled the excess liner into the aperture. Slowly but surely the water rose and as it did the liner was continual teased into shape with folds being carefully put into place at the corners and where the uneven floor of the pond dictated.

FINISHING TOUCHES

When this part of the exercise was in progress it became very apparent as to how heavy water really was and also how much water the pond took to fill it. Approximately 1,000 gallons, and it took an age for it to fill — so be patient.

Finishing touches now, make sure the liner fits into the shape of the logs as much as possible as this relieves pressure points where the water could break through. Fold the liner over the top of the sleepers and using 1/2in gravel boards (left long) sandwich the liner between the gravel boards and the top sleeper. Make sure you maintain the overlap process even with these final gravel boards. Fix them with nails that will not rust and then on the outside of the pond trim off any excess liner and if you worked out your sizes correctly you will not have too much. Up to this point it had taken less than two days and we had a pond full of water and ready for the fish — or were we?

Unfortunately not, as tap water has chemicals which have to be neutralised and so down to the local pond specialist who will advise what to do. The advice was to use a bottle of this(!) in the measures described in the instructions and leave it for 24 hours then everything should be OK.

Simple. We fitted a good pump moving half the water in the pond every hour pumping at 500 gallons per hour. Algae is a problem and to combat this we fitted an ultra-violet light source just prior to the pumped water going into a filter. From the filter we fed the out-flow of water into a small length of guttering (brown to match the wood effect) which fed the pond as it protruded through two broad spiky leaved plants.

The rest of the exercise was to arrange a rockery at one end of the pond and a small raised patio. To provide an all-round green background we used miniature conifers to frame the rear of the pond. Statues were also added with great effect.

There is no doubt that our pond retains its position as the focal point in our small garden. Birds visit us, we are aware of more wild life and insect life. Maybe it is because once a day we will visit our pond to feed the fish and admire our little self created world. Well now, it's time to sit back and enjoy the hard labours with a glass of wine, a good book and sink into the tranquillity of our small but very effective water garden.

If you have got a job that needs doing join a fish club. With any luck there will be a willing band of helpers able to assist with all types of tasks from cake making to house building.

This is certainly the case with Ilford & District Aquarists' and Pondkeepers' Society, based in Redbridge in North East London. Recently groups of members have built new ponds, mended old ones, dug gardens, cut down trees, erected polytunnels, laid crazy paving and built walls. Members also maintain aquaria in a local School, Library and Hospital. "We can turn our hand to almost anything, but we could do with a good electrician," says Secretary Den Seaman.

Despite all this socialising fishkeeping is still the major activity and the encouragement of the hobby still the prime objective of the Society. A monthly Newsletter announces Society activities and the monthly meetings are attended by a regular group of between 40 and 50 members. Normally a visiting expert gives a talk on some tropical or coldwater subject but there is also an Annual Auction, an Awards and Competition Evening and a Review of the Year. Programme Secretary Roger Saltrick enthusiastically maintains that meeting only once a month "means that there is little difficulty getting a quality Speaker at each

Meet the Societies



ILFORD & DISTRICT AQUARISTS' AND PONDKEEPERS' SOCIETY

meeting and this ensures that even the longest-serving member can learn something new."

During a busy year the Society runs both a garden pond and Home Aquaria Competition, a coach trip to a Zoo or a large aquatic dealer, an Annual Dinner and various Quizzes. The Society also promotes the aquarium hobby at various local craft fairs, School Hobby evenings and Shows.

On Club evenings there is a Members' Library, a Bring and Buy table and usually a small Table Show. President Len Smith says: "We used to run perhaps the largest Closed Fish Show and Exhibition anywhere in the country but showing fish is not as popular as it was and the hard core of the members willing to help was not fully supported by the younger membership."

Instead, the Society puts its energy into Aquatic

Conventions and is likely to join with other Clubs in the Essex and East London Area Group and promote a new Open Fish Show.

The Ilford Society maintains one of the largest memberships in the UK but this success is founded on the hard work of a large group of enthusiasts. Chairman Mike Shadrack says: "Our Society is founded on a good organisation. We have Minutes of nearly every Club and Committee Meeting since our foundation in 1934 including the famous note on September 3 1939 'Meeting cancelled due to outbreak of war on the previous day'. Our large Committee still meets every month to organise our activities and we try to make these meetings as much fun as Club Nights."

And what of the future? There are still many ponds to build and aquariums to install. The most ambitious activity so far planned is a week-long visit to Holland visiting aquatic dealers, public aquariums and botanical gardens. That's unless anyone knows a good fishkeeping electrician!

The Society meets on the second Monday of each month at the Wanstead Library, Spratt Hall Road, London E11. For details please contact Roger Saltrick on 0181-550 1252 or Len Smith on 0181-550 7329.

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Tetra COMPETITION

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FOCUS ON
TROPICAL
AQUARIUM
PLANTS

Rooted Plants and their

*Neil Frank
concludes his
two-part
article on
aquarium
plant culture*

PHOTOGRAPHS BY
THE AUTHOR

► A collection of red leaved plants. One of the most striking rooted plants, the red variety of *Echinodorus horremanii* will be the focal point of any aquascope. The other red plants shown are stem plants: *Aemmania senegalensis*, *Ludwigia palustris* and *Rotala macrandra*. The tall green plants are *Cryptocoryne balansae* and the stem plant *Hydrophilla difformis*. In the foreground are different varieties of *Echinodorus*. Submersed *Riccia* nicely conceal the plastic pots used throughout this tank.



Maintenance

Growing aquatic plants is not that hard, once you master the basics. Then, the more mundane issues of maintaining the tank's appearance by pruning, thinning and harvesting excess growth becomes important.

In general I find rooted plants easier to work with and prefer them to the stem plants. I will often allow the rooted plants to dominate my aquascapes. The rooted plants do not grow as quickly and do not require the same degree of maintenance in terms of

periodic trimming and removal of excess growth. While stem plants grow vertically the rooted plants generally grow horizontally or get bushier and fill up the aquarium with their leaves. They are also less prone to shedding of leaves which plague some stem plants. Java Fern and Anubias have tough leaves and so are relatively 'cichlid-proof', which allows the aquarist to have live plants in any freshwater aquarium.

If desired, growth of fast growing rooted plants can be controlled by limiting light or nutrients. Older

leaves can be trimmed when necessary and young plants can be removed when the tank has achieved its desired plant density. When their outer leaves die off they tell the aquarist that the plant is lacking certain macro nutrients like nitrogen or potassium (the former is only likely in heavily-planted tanks with few fishes). The plant recycles nutrients from the outer leaves to feed the new growth. To maintain a healthy look the deteriorating outer leaves can be removed. Even with extra light and nutrients some rooted plants will still

Care



get larger as they fill this space. With Crypts, for example, it is usually better to start with several individual plants and place them a few inches apart. In time, they will fill in their designated area and will then take off.

With good growing conditions, adequate time and a little luck they will spread beyond their original domain. Care should be taken when thinning them, because some species do not like any disturbance. This can trigger a setback or worse yet initiate the dreaded Crypt 'meltdown'. This can also occur with other environmental or chemical changes, sometimes resulting in every *Cryptocoryne* species in the tank temporarily losing all of their leaves. Some Crypts are more prone than others. To minimise such problems either let the Crypts have the run of the tank or carefully remove plants on the periphery of a cluster. This will involve snipping the underground rhizomes and carefully inserting your fingers around the crown and lifting up the plant trying to keep its roots intact.

Sometimes Crypts die back and disappear for reasons unknown to the aquarist, only to reappear months later, sometimes in an entirely different position in the

aquarium. This is characteristic of plants with rhizomes which grow deep in the substrate and are just one of the many joys of these interesting rooted plants. *Cryptocoryne affinis* is both the most prolific but one of the most troublesome. The varied *wendtii* group of Crypts are among the hardest and most recommended for the beginner.

The plants which reproduce with runners present a different challenge. These plants include the small and medium size Chain Swords, *Echinodorus tenellus* and *E. quadricostatus* (now called *E. bourianus*), some *Sagittaria* and *Vallisneria*. They are among the fastest-growing rooted plants and are difficult to contain within designated zones. Unless monitored on a regular basis they will expand from one side of the aquarium to the other. When two different spreading species of rooted plants are placed adjacent to one another they will soon intermix and will be difficult to keep separate.

This is only a problem if the plants are causing an undesirable change to the intended aquascape. Sometimes one rooted plant species will emerge as the dominant plant in a tank. The rooted plants may compete with one another, both in terms of their ability to take up and store nutrients and also

▼ Two excellent rooted plants for the front of the aquarium: Pygmy Chain Swords (*Echinodorus tenellus*) and *Glossostylna elatnoides*.

grow slowly. This may cause the surface or edges of older leaves to become covered with algae despite the best efforts of the aquarist or those of an arsenal of algae eating creatures. It is easy to trim these leaves and allow the new growth to shine.

Unlike stem plants or the Ferns it is best to not move the rooted plants after their initial planting. This requires careful planning of their initial placement and some knowledge of their mature size as well as their growth patterns. Some slower-growing, rooted plants prefer a crowded environment and do better in groups. Many such plants seem to prefer the tank's corners and will literally



FOCUS ON TROPICAL AQUARIUM PLANTS

Rooted Plants and their Care

► Initial planting of three types of Chain Sword Plants — *Echinodorus quadricostatus* (wide leaf) with two forms of narrower *E. tenellus*. The leaves of *tenellus* are only 1mm wide and turn reddish under bright light.

► Fully established Chain Sword Plants (*Echinodorus tenellus*) in the foreground against a backdrop of stem plants (*Rotala macrandra* and *Hygrophila polysperma*).

via allelochemicals which allow the plants to protect its immediate domain.

Initial placement of some plants like *Amublus* is important because these plants generally grow horizontally as they put out new leaves. However, they will also send out side shoots allowing them to become more bushy. Some rosette plants including the larger Sword Plants also move horizontally from their original location. This is a small problem for most aquarists because this change is usually only noticeable after a very

long time, sometimes years. In extreme instances the growing point of the plant may move long distances from its original location, leaving behind a trailing rhizome. New plants will erupt from this woody structure. When the plant encroaches the front glass it is time to dismantle the tank.

The *Aponogeton* are relatively undemanding, but can be problematic. The plant is often purchased as a bulb. For most species, the bulb will predictably transform into a plant, but

occasionally you will have a dud. The unusual Madagascar Lace Plant is most undependable and its success depends as much on luck as skill. *Aponogeton* are seasonal in nature and its growth either declines or it will entirely die back during the year. Some advocate removal of the plant from the aquarium and placement of the bulb in a cool dark place. After a short resting period the plant is reinserted into the aquarium for renewed growth. Alternatively, the aquarium temperature can be lowered to 18-



FOCUS ON TROPICAL AQUARIUM PLANTS

Rooted Plants and their Care

20°C for a couple of months. Many species will typically flower in the aquarium.

The common *Aponogeton crispus* will provide the aquarist with seeds which makes propagation easy.

The Ferns are among the easiest to maintain and they provide a great contrast to the linear and broad-leaved aquatics. Just tie them to driftwood or wedge them between two rocks and forget about them until they outgrow their intended space. Then simply pull them out, divide the

rhizome for a pruning and the plant is back in business. The smaller varieties of Java Fern will stay in place without being tied down and will then grow in a more symmetrical rosette. This is especially true for the new small lacy *Microsorium pteropus* var. "Windelov" which can be neatly tucked in any convenient crevice. When potted plants are used this small Fern can help conceal the pots by placing the plant in the wedge between two pots or adjacent to the front glass. The same is true for

the small variety of *Bolbitis beudelotti* which is harder to come by.

In summary I have provided a brief overview of the group of aquatics known as the rooted plants. They include many easy to grow and easy to maintain plants and offer the aquarist a broad variety for a planted aquarium. Many will do well in low-light aquariums that are not specifically outfitted with sophisticated hardware. Add some plants to your aquarium today. You will enjoy them, and your fish will be happier, too.

► Vallisneria spread by runners.



► A jungle of Java Fern (*Microsorium pteropus*). The rhizome should not be buried under the substrate. It likes to be attached to driftwood.



Famous Faces in Fishkeeping

A&P meets the faces behind the names and lets them tell you of their own individual aquatic interests.

This Month: **DR DAVID FORD,** *of the Aquarian Advisory Service*

A&P: How long have you been in fishkeeping and what started you off?

DF: I have kept pet fish continuously for 50 years now, apart from a love of science and the music of Stan Kenton, it has always been my only hobby. It all started just after the Second World War when as a teenager I saw my first ever ornamental fish. A Nottingham (where I was born) pet shop had imported a Blackmoor Goldfish and put it on display in their window. I thought it was the most beautiful creature I had ever seen and was determined to own it. I took a job as a delivery boy and eventually earned the £5 (a week's wages then) needed to buy the Fancy Goldfish.

A&P: Can you remember your first aquarium and what you kept in it?

DF: Yes, it was a home-made one by pouring cement into a wooden mould and glazing the front with window putty and shop window glass. This housed that Blackmoor Goldfish that had taken me several weeks to buy. I proudly showed off my acquisition to family and friends and announced that I was now an 'Aquarist'. The next day the fish was dead. The alkali from the concrete had killed it... something I then knew absolutely nothing about. I will always remember that I had killed that beautiful creature — it made me decide to study the science of aquarology, so never again, through ignorance, would such a thing happen. The rest is history! I studied

chemistry and eventually received a Doctorate on the Physical Chemistry of Aqueous Systems. Then a Food Science degree and I used all this knowledge and experience to develop the Aquarian range of fish foods for the Mars Group.

A&P: What are your special interests?

DF: I have kept all the pet fish from Corallfish to Piranha, plus all the planted systems from Reels with *Caulerpa* to Dutch Aquaria with marginals, from algal Rift Valley rocks to *Plutalaria* with Tree Frogs and Butterflies. Most have been photographed, too, so that is a necessary hobby! My work with the Aquarian Advisory Service has allowed me to travel all over the world to visit the public aquaria of every continent.

A&P: Are you into breeding?

DF: I have bred most families of fishes over the years, from Livebearers to Anemonefishes. I would like to say I have bred most species, but with 20,000 of them breeding in 20,000 different ways it is more than a single lifetime's work!

A&P: Do you belong to any Aquatic Society?

DF: All the national ones and an honorary member of many local ones. When I lived in Melton Mowbray I was an active member of my nearest club — the Leicester A.S., one of the oldest fish clubs in the UK. Now my local club is the Halifax A.S.

A&P: What do you think about Fish Shows?

DF: Having attended all the national fish shows for the last 20 years it is easy to recall with nostalgia the excited, packed crowds at the British Aquarist Festivals in Belle Vue or the packed halls at the Scottish Aquarist Festival, Motherwell. Those halcyon days are gone. The modern fish show needs to be about technology, conservation, ecology and sophisticated entertainment.

Providing the shows modernise I'm sure they will be around into the new millennium.

A&P: If money was no object what aspect of the hobby would you like to follow?

DF: I would fund the setting-up of gene banks, using the new cryotechnology, so rare exotic fishes could be preserved for far future generations to see and enjoy. This work is actually underway for a few endangered fishes, but underfunded, of course.

A&P: What fish would you never keep and why?

DF: The large predators, which should never be housed in the confines of the home aquaria. The classic example is the Red-Tailed Catfish, *Phractocephalus hemiliopterus*. There is a Red-Tailed Catfish Society, which must be the only species fish club that recommends you should not keep their fish!

A&P: What's your favourite aquarium book?

DF: Two — the one I find I refer to most is Hans A. Baensch's *Aquarium Atlas* series because, with its Germanic thoroughness, I know I can trust the entries to be correct. For readability I like *You & Your Aquarium* by Dick Mills (and this is not just because he's the Editor of this magazine!) — it's over 10 years old now but the Dorling Kindersley Publisher's great presentation style is as fresh as ever!

A&P: How do you think fishkeeping is keeping up with other modern day attractions?

DF: The 'Public Aquarium' is as old as London Zoo, but the concept of showing we humans the wonders of the fish's world has spread right around our world. Hence, it has benefited from technology, with acrylic sheet for giant aquaria and tunnels that sweep visitors through multimillion litre tanks. Every



developed country has a public aquarium now, some are internationally famous such as Disney's Living Seas at Epcot or SeaWorld in Florida. Just in the UK we have more than 30! There are 16 SeaLife Centres (and more abroad), as well as the London Aquarium, the Scottish National Aquarium, many Zoos have an Aquarium and more are planned, from the London Zoo Aquarium to (the soon to be opened) Blue Planet Aquarium at Ellesmere Port.

A&P: What do you get from fishkeeping that keeps you interested?

DF: Versatility. No hobby can offer quite as many variations as the fishkeeping one. You can keep fish as a living decoration or for scientific study. Keep them as pets, or to breed. To show them and win prizes or preserve endangered species. You can have a complete Coral Reef in the living room or a slice of the Amazonian Rainforest in the bedroom. There is never any need to grow bored with the hobby; there is always another challenge and to be successful you have to be a biologist, an electrician, a veterinarian, a DIY fan, indeed, a caring person, too.

A&P: What's next in your fishkeeping plans?

DF: Retirement! The millennium looms and I want to be part of the 25-year celebrations of the launch of Aquarian in that momentous year. Then retirement, so I can at last devote some time to... my pet fishes!

Silktown Auction

On Sunday, February 1 1998 Silktown Show Team will be holding an Auction of Fish and Aquatic Accessories, at 12 noon.

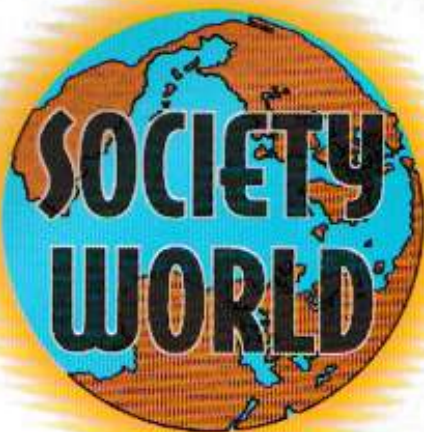
The event will be held at the Brinnington Community Centre, Hereford Road, Brinnington, Stockport, Cheshire. Booking in at 10am. Lots can be pre-booked. Contact Ken Lawn on 01625 427582.

Other Auctions

The following dates have been notified for Societies' Auctions. It is hoped that more detailed information will be forthcoming in these columns before the actual events occur.

February 22 Glenrothes A.S.,
March 1 CAST 88; March 15
Merseyside A.S.; March 29

Halifax A.S.; June 28
York A.S.; September
13 Silktown A.S.;
November 15 FNAS.



Northern Area Cattfish Group

The Annual Convention of the Northern Area Cattfish Group will take place at The Mill, Wigan Pier, Wigan at 10am on February 15 1998. Speakers are Dr Peter Burgess, Senior Consultant to the Aquarian Advisory Service, and Kathy Jinkings, regular contributor to *Aquarist & Pondkeeper* magazine.

Tickets are £5 and the Convention is also open to the public.

Further details can be obtained from Bill Hurst on 01704 213690. ▶

OPEN SHOWS

(R) = Rules A = A.M.A. FE = FEAS FN = FNAS FS = FNAS
I = International Fishkeepers Society, N = NCTUS 17 = 175th Y = Y.A.S.

- 8 March NEFAS (N) Greenock A.S. (FS)
- 21 March KAAS Convention, Smithy Hotel, Cliftonville, Kent
- 21-22 March Yorkshire Aquarists Festival, Duxford
- 28 March Tarriffish A.S. (FB)
- 29 March Northampton A.S. (FB)
- 5 April Aberdeen A.S. (FB)
- 12 April Chelsea A.S. (FN)
- 19 April Bolton Standard A.S. (FB); Murrigh A.S. (FB);
Rother Hood A.S. (FN); Strood A.S.
- 26 April Somerset A.S. (FB)
- 2 May FEAS Diamond Jubilee Dinner (Dunstable)
- 10 May Goring A.S. (FB)
- 17 May CAST 88 (FN); IOW A.S. (Grocklemuir) (FB)
- 24 May Halifax A.S. (FN)
- 30/31 May Fishers' 96, Dunstable (FB)
- 31 May Carr Liffa A.S. (FB)
- 6 June S.P.A.S.S. (Kilbourn II), Wotching & District Rod
Show (BROOKS)
- 7 June Erith A.S. (FB)
- 13 June Birstall A.S. (FB)
- 14 June Carlisle A.S. (N); Tameside A.S. (FN)
- 28 June Brighthelm A.S. (FN); York & D.A.S. (Y)
- 11 July Port Talbot A.S. (FB); Southern & L.L.A.S.
- 18 July Devonport A.S. (FB)
- 26 July Merseyside A.S. (FN)
- 2 August Yorkshire Rod Society (BROOKS)
- 9 August Gwent & Chepstow A.S.; Salisbury A.S. (FB)
- 23 August Llantrisant A.S. (FN); KAAS Show (FB)
- 30 August T.T.A.A. (New Green) (FB)
- 6 September Alder A.S. (Y.A.S.); Cardiff A.S. (FB);
Crannington A.S. (FB)
- 12 September Hazwode A.S. (FB)
- 13 September Mid Somerset (BROOKS) Saldown A.S. (FN)
- 20 September Malpas A.S. (FB)
- 27 September Doreen A.S. (FN); Fair City A.S. (USA)
- 4 October Halifax A.S. (FN); Letchampton & Rognor A.S.
(FB)
- 11 October Washington A.S. (FB)
- 18 October Solway A.S. (FB)
- 21/25 October British Aquarists Festival, Manchester (FN)
- 30 October/1 November Supreme Festival of
Fishkeeping, Weston-super-Mare (FB)

OBITUARY

TED DERRICK — An Appreciation by Eric Harding

Fishkeepers around the country will be saddened to learn of the passing of Ted Derrick of Halton A.S.

For many, many years Ted's hawk-like gaze would always be amongst the first of those intently studying the results sheets at Fish Shows for here was a man who was driven by his hobby and achieved excellent results.

Back in the 1960s Ted (then with Merseyside A.S.) met up with Eric Harding (Warrington A.S.) keeping in touch on the Show circuit until they 'merged' into a formidable countryside showing force when Halton A.S. was formed in the 1980s. The number of Best in Shows (more than 45) and consequent appearances in the Champion of Champions competitions (four Firsts, three runners-up and three Thirds) each year were so abundant that it would be easier to name the Trophies and Shows that Ted's fishes hadn't won. In 1997 Ted became the first person to win the Scottish Supreme Championship's tropical and coldwater sections in the same year. In recent years Ted concentrated on breeding and became a master breeder of the FNAS having spawned and raised to maturity over 113 species. No wonder his house (and garage) was overrun with fish tanks!

An active member of Halton A.S. Ted was also proud to be the Society's Chairman and quite obviously 'led from the front'. To everyone who met him (even rival competitors) Ted would chat on tirelessly about his fishes and share his experiences with all.

In recent years ill health began to dog Ted and to many who saw him but a few times a year his progressive decline was sad to see; the fact that he was becoming increasingly physically frail meant that he could no longer care for his fish as he would have wished, with fish-house maintenance duties steadily outstripping his capabilities. We know it would have been a bitter experience for him to think that his fishes might be suffering due to his shortcomings. However, plans were in hand to install a tank at the foot of his by now downstairs bed so he could still keep involved with his special fish.

Although a staunch northerner Ted could always respect other points of view, especially when it could lead to better fishkeeping or the sharing of knowledge and ventured south of Walford Gap on many occasions to more southerly situated Open Shows. Last year he was determined to make it to the Supreme Festival of Fishkeeping at Weston-super-Mare despite an arduous and strenuous time at the British Aquarist Festival at Manchester only the week before.

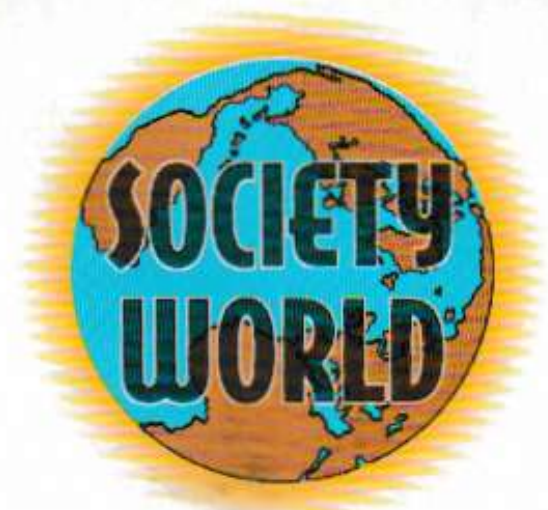
Although success seemed to come easy to Ted he always maintained that it came of hard work and constant watchfulness, and it was only fitting that he received his deserved rewards as a result of such dedication. Losing a 'character' from any walk of life is regrettable (they appear to be in general decline in this modern age) and there was no doubt that Ted was one of fishkeeping's top characters — where would we be without them certainly the poorer for not knowing them. And that's how it was with Ted. We share the sorrow with his family, his Society and all that knew him.

Thanks must also go to all at H.A.S., especially those who made the effort to visit Ted in his last years and who contributed so much in helping him to further his hobby.

New Displays at the Yorkshire Aquarist Festival

In the previously reported 'Yorkshire Attractions' (Society World, A&P, January 1998), an erroneous impression was given that the new Furnished Aquarium and Pond Displays to be featured at this year's YAF at Doncaster (March 21/22 1998) were to be Competitions. In fact they are meant to be informative displays and whilst there will be some financial reimbursements made to participating Societies, no outright winners will be declared. We apologise to the organisers for giving this incorrect information (a late amendment failed to make the final press copy).

During the Friday (the day before the official opening day) the organisers have taken the constructive step of inviting schoolchildren to the Festival free of charge to get an idea of



the fascinating world of fishes. All schools within the event's area have been notified, including those whose pupils have special learning difficulties. An additional activity on pre-

opening day will be Balloon Race. The owner of the balloon that travels the furthest will receive a complete aquarium set-up, whilst the finder of the winning balloon will also receive

a cash prize.

Details of all attractions of the forthcoming Festival, together with relevant Entry Forms for Displays, etc. can be obtained from YAF Secretary, Marie Harrop (01484 666591).

Bradford on the Move

Anthony Fisher, Secretary of Bradford & District A.S., reports that from the January 13 1998 the Society will be meeting in a new venue — the East Bowling Independent Labour Club, Paley Terrace, off Wakefield Road, Bradford (near Q.S.S.). Meetings are held on the second and fourth Tuesday of each month.

The Society has just completed its first 50 years and are looking ahead to the next 50!

Details of the Society and its activities can be obtained from Anthony (01274 223770) or from the Chairman, Ray Stanfield (01274 595097).

FBAS AGM BRINGS CHANGES AND HONOURS



Chairman Joe Nethersall flanked by General Secretary Adrian Dempsey (right) and Minutes Secretary John Pail (left) at the recent FBAS Annual General Meeting.

The Annual General Meeting of the FBAS moved to its new venue — the London Aquarium — and was attended by over 100 aquarists representing member Societies. The annual election for re-election of half of the Officer and Council Member posts took place with the following results:

Re-elected: Vice-Chairman, Ken Saxby (Strood A.S.); General Secretary, Adrian Dempsey (Inverleith A.S.); Tape/Slide Officer, Colin Parnell (Hastings A.S.); Public Relations Officer, Alan Benson (Ilford A.S.); Database Officer, Bob Esson (Riverside A.S.).



Keith Sullitt receives the Chairman's Award from Joe Nethersall on behalf of Bracknell A.S. who received the award for their overall support of all major fishkeeping events throughout 1997.

New election: Fishworld Editor, Sue Crew (Isle of Wight A.S.; Chairman, 28 The Mall, Beasdale, Isle of Wight PO33 3SF.

The Chairman, Joe Nethersall, had two presentations to make. His annual Chairman's Award (always awarded to individuals in the past) broke with tradition as he presented it to Bracknell A.S. for their sustained efforts in supporting the hobby throughout the year at all the major Festivals both in exhibiting and in many cases lending a helping hand during breakdowns. The second presentation was a Lifetime Vice-Presidency of the FBAS to Dick Mills for the many years of service (at least 27, Joe thought) to the Federation.

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