FISHKEEPERS AND WATER GARDENERS

BULLETIN

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From the Editor

I know I am always telling you that you are reading the best edition of the Bulletin since I became editor but in this issue it is true, the coverage of articles is very wide spread. This edition is full of **competitions**, take note prizes don't come around in every edition of the Bulletin so enter **now.**

Article of the Year
Best Cichlid Article
Best Aquatic Pictures for our Calendar 2005
Can you put the perfect caption to our Editors picture?
(Check out all the pages for the above.)

In this issue three of our sponsors have given us excellent articles to read these articles have so much information. The article written by P Greenwood of the Natural History Museum(London) on Dr Ethelwynn Trewavas introduces a series of articles being White Papers lent to myself, for reference. For our readers that are looking for more basic guide lines on their earlier experiences within the hobby, then catch up by reading the FBAS Help page. One of our more constant questions is "*how can I stop Herons coming down to my pond and taking my Fish*" . Well have our more experienced Water Gardeners have any better ideas that looks better than using the standard green netting?

For those of you that have never attended the Federations quarterly meetings or have been a long time ago in the past, why not attend this years meetings where you catch up with all that is going on within our hobby, plus listen to the first class speakers that have been booked at these events.

When talking about speakers, why not listen to speakers being booked from around the world that you could listen to at this years Fishkeeping Weekend being held at Bracklesham Bay during the weekend of 15th to 17th October. Day visitors are also very welcome so why not ring these dates on your calendar now. *For more information on the " FISHKEEPING WEEKEND"*
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cover photo: *Crossocheilus denisoni*
Malcolm Goss

LUOHAN FISH-BREEDERS' GROTESQUE MISTAKES BEING DUMPED IN RIVERS

If you think Luohan fish are ugly, just look at this specimen with its Mick Jagger lips and ball-like body. Probably the result of breeding gone wrong, say marine biologists and those who rear fish. Enthusiasts breeding them have been dumping the "mistakes" in ponds and rivers.

Two breeders and three other people who rear fish admitted they'd done this. The Sunday Times also spoke to fishermen who have spotted sick and dead Luohan, four aquarium owners, two marine biologists, and officials from agencies that have to deal with this problem.

Two Luohan breeders said they sought to breed Luohan, with blue or white eyes instead of red, or all-blue, all-red bodies instead of the usual 'red-green-black. When experiments went awry, they had to get rid of these mutants with "elephant-trunk lips" and "monkey faces." Neither would agree to be named, fearing flak from fish lovers and repercussions from the authorities.

Said one breeder: "Some fish had bloated bodies and no humps on the heads; others were skinny and had no fins. What do you expect me to do with them?" The other one said: "At least I release them in the water, not like some I know who flush them down toilet bowls!"

Abandoning fish, is an offence under the Birds and Animals Act, punishable by a S$10,000 fine and 12 months' jail.

"This is an act of cruelty," said Dr Leow Su Hua, head of Singapore's Agri-Food and Veterinary Authority.

Dumping Luohan into public ponds can also turn the ponds' ecology upside down, because they are aggressive and breed quickly.

Said Professor Chou Loke Ming, of the Department of Biological Sciences at National University of Singapore: "They may out-compete for food with local species and take over ponds and rivers."

The National Parks Board (NParks) and Public Utilities Board have found reptiles and non-native fish in ponds, lakes and reservoirs. Said a spokesman: "The released fish may not survive. They could carry disease and this would effect the native animals in the ponds."

Luohan fish, also known as Flowerhorns, are believed to be descended from wild cichlids. A year or two ago, they were all the rage because people thought they brought good luck. High-quality ones characterized by red eyes and large humps on their heads, went for as much as S$8,000. But now, they are no longer hot.

LUOHAN BRAINS FOR DINNER, ANYONE?

Most fish enthusiasts like the look of Luohan fish. But there are some who prefer to eat them.

Foreign workers have been known to fish them out of ponds and rivers to supplement their dinner, and at least one fish rearer said he has heard of people sucking their brains out with a straw.

"My friend eats it for good luck," Jumari Bueng, 35, a technician, adding, "He told me that the bigger the hump on the head, the luckier the eater will be."

A 30-year-old salesman, who wanted to be known only as Mr lim, said his friend, who rears Luohan, said they tasted yummy when steamed or fried.

"She told me there are too many of them at home."

One breeder said he'd released about 100 into Tengeh and Punggol rivers in the last three years. He said: "Some had holes in their heads and others had eyes popping out of their sockets. One had a diseased mouth and rotting lips like this," he said, turning his lips inside out. "I couldn't save it; it was too sick." Aquarium owners also say people leave buckets of Luohan at their doors in the dead of the night. Madam Shirley Lim, owner of aquarium shop Yun Feng in Pasir Ris, said she would receive "fish mail" three times a month. "Nobody wants them any more. They're being chucked into dust-bins like those unwanted babies in China. I could sell one at S$4,000 last time, but now if I can sell one for S$20, I'm very lucky."

Arlina Arshad, from Singapore's Sunday Times, 2nd November 2003

The Sunday Times spotted three Thai workers setting a net at a public utilities Board pond in Yishun New Town in the middle of the night last week to catch fish, including Luohan, to eat.

Fishing is forbidden at the pond, which collects storm water and drains it to Lower Seletar Reservoir. But it goes on.

One man, who wouldn't give his name, said he catches Tilapia, Parrot Fish and Luohan for fun.

He said:"I give them away to passers-by. Singaporeans want to eat Tilapia; the Bangladeshis go for Luohan."

Another point of view from the same issue of the Sunday Times.

I'VE GOT YOU UNDER MY SKIN!

Fish communicate with it, taste with it, and wrap themselves in it. What is it? - Its their skin!

by Dr Peter Burgess of the AQUARIAN® Advisory Service.

A COAT OF MANY FUNCTIONS

The fish's skin is more than just a slippery water-proof covering. It actually performs an amazing range of functions that help keep its owner alive and healthy. In addition, fish are able to communicate with others via their skin secretions, and they can even locate food using special skin receptors. Last but not least, our fish's beautiful colours are largely due to pigment cells (called chromatophores) that lie within the skin. An understanding of fish skin may even lead to improvements in the Navy's military capabilities. How? Read on..

SKIN ARCHITECTURE

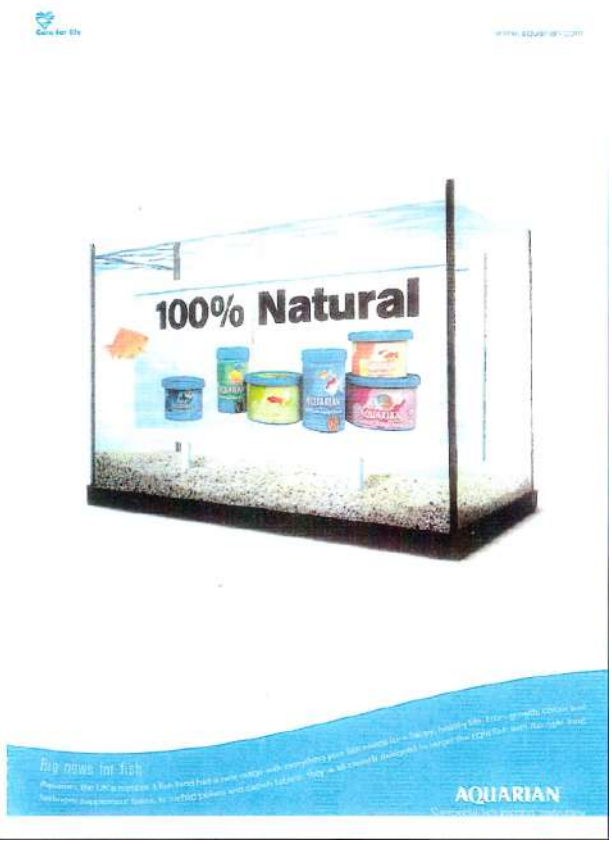
Starting with the skin's outermost layer (the layer in contact with water) and working inwards, we can identify several distinct zones:

Cuticle

This slimy layer separates the fish from its environment and serves as the first line of defence against attack by pathogens, such as bacteria. The cuticle contains mucus which is composed of protein-sugar chemicals known as mucopolysaccharides. The cuticle also harbours both living and dead cells, the latter having detached from the underlying epidermis.

Epidermis

Whereas the epidermal layer of our own skin is composed of dead material (= keratinised), that of a fish is a living tissue. A fish's epidermis comprises layers of epithelial cells amongst which are other cells types, notably mucous cells. As their name suggests, mucous cells contain the sticky mucus which they secrete onto the skin surface. Other cells - club cells - play a role in communication: they secrete chemicals know as pheromones into the water which can be detected and "interpreted" by other fish. Some pheromones alert other fish to possible danger,



Know your Plant

Aponogeton distachyos (Linn'e filius)

Common name:	Water Hawthorn, Cape Pondweed.
Distribution:	South Africa, introduced into Peru.
Description:	An aquatic perennial with oblong bright leaves of up to 20cm (8") in length and 8cm (3") wide that can become almost evergreen in mild winters. Leaves lay flat on the waters surface. The plant has white waxy flowers that have purple/brown anthers of 10cm (4") in length.
Remarks:	This plant is frost hardy although it may appear to have died away in severely cold winters. It grows from earth filled baskets from a depth of water 30cm - 90cm (1-3ft) and can be propegated by dividing the rootstock in spring that contain 2-3 buds each. The strongly scented flowers are often produced in two flashes, the main flowering time being spring and the second autumn. This plant can also be used in watertubs(half barrels) *Editor: This description, updated from issue 8.*

MUSSEL BOUND

Freshwater mussels are the cornerstone of river ecology.

But some, such as the aptly-named Depressed Mussel, are under threatened.

SIMON HADLINGTON reports on work to boost their numbers, and a potential spin-off for water companies.

For most people, mussels are what you order in a restaurant or buy at the supermarket. Occasionally, we see mussels in the wild, attached by their beards to rocks or timber piles at the seaside. But for David Aldridge, the most interesting mussels are to found at the bottom of our rivers. These are freshwater mussels, of which there are six species in Britain.

One, the Depressed River Mussel (yes, that's its name), *Pseudanodonta complanata*, is disappearing rapidly and is on a list of most threatened species in the UK drawn up as part of the Government's Bio-Diversity Action Plan. Dr Aldridge and his colleagues are identifying factors that have led to the demise of this mussel, and are devising conservation strategies to save it. The group has successfully reared mussel larvae in the laboratory, raising the possibility of re-establishing the mussel in suitable habitats.

"Freshwater mussels are much more widespread than people realize," says Dr Aldridge. "If you plunged your hand into the mud at the bottom of most rivers, the chances are you would come up with a handful of mussels." Species are relatively small – about the size of a 50p piece – while the largest, the Swan Mussel (in ancient times, people believed that they grew into swans) can grow to around 30cm in length. "Mussels are a keystone fauna in river ecology," explains Dr Aldridge, "They feed by filtering the water; removing suspended particles such as algae. It has been estimated that an adult mussel might be able to filter as much as 40l of water a day."

This natural filtration helps to clear the water; allowing light to penetrate deeper; which in turn enables plant life to flourish. This results in healthier populations of aquatic insects, the staple diet of mist fish.

Five species of mussel live in lowland rivers in Britain, and one, the Pearl Mussel, in upland waters. The Pearl Mussel is also a threatened species, and there is evidence that the Swan Mussel might be declining. Several years ago, reports came from mainland Europe that the depressed mussel appeared to be in decline. To determine the status of the depressed mussel in the UK, Dr Aldridge examined records kept by the Conchological Society over the past 100 year. "We revisited each site recorded and found that, in about 30% of sites, the Depressed Mussel no longer existed."

One reason why the Depressed Mussel is important is that Britain is a heartland for the species. "Many of the rare species in the UK are on the edge of their natural range, so you wouldn't necessarily expect high populations," says Dr Aldridge. "But the Depressed Mussel has historically had very healthy numbers here, so I important not only for our regional diversity, but internationally, too."

The Depressed Mussel is typically around 7cm long and slightly flattened in profile, hence its name. It has a deep olive-green sheen and a large fleshy foot that protrudes from the shell onto the sediment, anchoring it to the bottom of the river. Unusually, it tends to occur in highly localised populations, within the lowest 20km of a river system, and they are concentrated in small, densely populated "hotspots."

The Cambridge researchers have identified two main threats to the Depressed Mussel: the way rivers are managed for flood defence, and pollution. During their survey, the researchers were examining spoil by the side of a river in the Somerset levels. Spoil had been dredged from the bottom of the river as part of the routine management of the river for flood defence, when silt is removed to maintain the flow of the water. "There were a lot of mussels in the spoil, and 90% were Depressed Mussels," says Dr Aldridge. "Unfortunately, the dredging virtually wiped out the mussels at that point and it has since failed to recover. It is clear that a single dredging can destroy a local population."

The Cambridge team is working with the Environment Agency to try to devise new regimes for both silt-dredging and weed-cutting that might be more "mussel friendly". Weed is removed from rivers to improve the flow. This can be done by scooping the weed out with a large bucket, or cutting it with a sub-surface trimmer "We've shown that the weed buckets can remove a fifth of a mussel colony each year," says Dr Aldridge. "Weed-cutters have far less impact."

Back in the laboratory, scientists have successfully raised larvae of the Depressed Mussel. "We are the first in the world to breed this mussel in captivity," says Dr Aldridge. "We want to develop a propagation programme to re-establish colonies that have disappeared."

In the meantime, one of Dr Aldridge's research students, Anna McIvor; is investigating how the remarkable filtering properties of mussels might be harnessed to clean water. A big problem for water companies is algae growth in reservoirs. When the water is treated for drinking, the first stage is to filter it through sand. Algae can clog up the filters. "I've been working with a company looking at the feasibility of using mussels to filter out algae and other particles," says McIvor "We placed Duck and Painter Mussels in cages in a tank and drew water through it. We got a significant reduction in algae. More work is needed to determine whether this is a feasible first step to treat drinking-water, but companies are desperate for a solution, and the one I worked with seemed very interested."

from THE INDEPENDENT
10th December 2003

FBAS

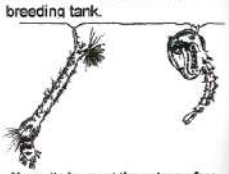
help & advice

Q. I have seen wonderful flowering water-lilies on ponds in friends gardens and parks but mine, whilst having lots of leaves, have one or two flowers at most, all summer.

A. Water-lilies are generally regarded as one of the most beautiful flowering plant in a pond. I would recommend that you replant your lily in a new mixture of soil. Often aquatic centres advise "aquatic soil" but often this soil is too sterile for lilies. But don't over rich the soil with manure or leaf-mould and planting compost, as this often causes the crowns to rot, plus the possibility of fouling the water. Use a mixture consisting of a fibrous loam and sand, being 4 to 1 with 2ozs. of bonemeal. Deep planting is another cause of failing flowers. Water-lilies are just as dependent on light and oxygen as are land plants. These are not so plentiful the deeper the plant is in the water, plus the water temperature gets that bit cooler. A safe rule with any, but the largest of lilies that grow in lakes and large bodies of water, is allow 12" from the plants crown to the waters surface. Lastly if you can reach your lilies remember to "dead head" them when each flower is finished.

Q. During last summer the water-tub was full of these small insects in the water. As I was concerned with the outstanding hot summer we had, I asked the fellow next door will they harm us. He told me they were Mosquito larvae and I could feed them to my fish. I never did feed these to my fish, but just in case they return in this summer will this be OK.

A. Mosquito larvae are a very important food for many aquarium fish. The larvae can be found in most bodies of water that do not have fish in them from spring right through the summer. They mainly swim at the waters surface, so you have to be quick with your net as they dive straight to the bottom. They should only be fed to fish in moderation as uneaten larvae will develop into mosquito's and may escape into your room. They have sharp pincers and can attack very small fry, so they should not be fed to fish in a breeding tank.



Mosquito larvae at the water surface

THE GREAT OUTDOORS

by Les Holliday

Spring is the time when we aquarists leave the comforts of the hearth and venture out into the great outdoors. Not bent on satisfying some primeval urge to find a mate but to rekindle our interest in the water garden as signs of new life are starting to show. Getting the pond into shape after the winter is an annual task I look forward to as it marks the beginning of a new year and it's an important job in setting the stage for the summer. It's also an ideal time to undertake any major cleanups, equipment overhauls and other maintenance whilst water temperatures are still below 10°C and there's little fear of disturbing the life within the pond.

Your pond should look pretty good if you attended to the autumn chores of cutting back marginal plants and prevented leaves and other large debris falling into the water. In fact the water should be at its clearest due to the absence of algae growth because of cool winter temperatures. Don't be lulled into believing though that because you can see the bottom of the pool through the clear water that water quality is good. On the contrary, throughout the winter decaying materials will have been producing pollutants which can destroy the equilibrium of the water, some of which are ready to fuel rampant algae blooms once temperatures rise.

Check out the water chemistry with a good test kit such as those from the Laguna test kit range.

Why not try the new Laguna Pond Test Strips, which give immediate results by merely dipping the strip in the pond water. These easy to use test kits allow evaluations to be made of all the important water parameter levels including pH, hardness, ammonia and nitrate/nitrite levels. PH levels will indicate whether heavy rain over the winter combined with plant decomposition has dropped pH levels below the recommended neutral (pH 7). Water hardness may also have suffered due to any acidic action and may, similarly, need restoring to levels beneficial to the fish and pond plants. Any adjustments can be made using a new Laguna range of pH adjust products which allow pH and water hardness to be adjusted up or down to optimum levels. Another impact caused by decaying organic material in the pond is elevated nitrate levels and accumulations over 50ppm should be rectified by partial water changes to restore conditions to below this level.

Whilst the water is clear in the pond, it's a good opportunity to net out any large debris of decaying plant matter using a strong fine mesh pond net. Once the worst of this material is removed an ideal tool to clear the bottom and sides of your pond of leaves, sludge and other small debris is a pond vacuum.

The Laguna Pond Vacuum Kit uses the power in your existing water supply to dislodge and remove all types of pond dirt and debris and incorporates a power brush for pond side algae removal plus a re-usable waste collection bag. The vacuum is attached to the mains water supply via a standard click fitting to any hosepipe and incorporates a stop valve to control water delivery.

Pond pumps and biological filters should also be due for a good overhaul and if you consider this a loathsome chore, you might like to consider upgrading your existing system by investing in one of a new generation of easy maintainable pond pumps from Laguna. The Laguna Powerjet range has been replaced by two new ranges of pump models branded Free-Flo and Max-Flo pumps. The Free-Flo range offers eight new high performance, foam free models in sizes from 1500 lph to 10600 lph, all suitable for operating fountains and waterfalls and/or remote connection to a filter. The housings of these new revolutionary designed pumps have a large intake surface to reduce water speed and therefore restrict clogging and require far less maintenance than foam strainer models. Another unique feature is the backwash facility which allows the pump housing to be cleaned from inside via a connection to a garden hose whilst still in situ in the pond. The Max-Flo models are available in four sizes, 3700 lph to 10600 lph. These high performance solids handling pumps are ideal for moving large volumes of water over waterfalls and as a feed to an external box filter. Minimal maintenance is required thanks to the advanced design of the housing, which accepts solids up to 8mm in diameter.

Whether you use a box filter or a submersed model of filter, you will find that the mechanical filter parts or foam pad is in need of a good rinse. Don't forget that it's necessary to safeguard the beneficial bacterial populations in the filter and only pond water should be used for washing the mechanical filter parts and rinsing through any biological media. You may also have a UV steriliser and this is the best time of the year to replace the UV bulb. To be effective UV bulbs need to be changed each year if you want to ensure you keep green water at bay throughout the summer. Another good way of ensuring full efficiency from your steriliser is to fit a magnetic water clarifier.

The Laguna model is ideal and reduces the formation of mineral salts (limescale) on the steriliser's UV bulb enhancing performance immeasurably. This gadget also improves water quality and helps reduce blanketweed so it's a good investment. If you are not satisfied with the performance of your UV steriliser you might also consider upgrading to a new generation of powerful Laguna Powerclear Sterilisers that has a bit more punch. These high performance sterilisers are available in three models, the 6w, 25w and 55w, and are able to clear water 50% faster than traditional UV designs thanks to a corkscrew shaped sleeve which increases the UV contact time.

Fully equipped and ready to go there is just one more additional preparation that can help the pond become a perfectly balanced environment. The winter will have taken a toll on your fish and they will need stable conditions and good water quality during this early spring period when they are at their weakest. When water temperatures rise above 6°C (43°F) it should be possible to start feeding them sparingly with a good quality low protein food. To ensure there is no detrimental effects to the water due to commencing these feeds, it's worth kick-starting the filter with one of the filter-start bacterial cultures.

Laguna Pond Clean and Pond Detox are perfect for this job as they not only remove liquefied organic wastes, organic solids and pond sludge but also replenish the various strains of beneficial bacteria in the filter.

Looking through the Keyhole

at the Dwarf Rasbora (Boraras maculatus)

The dwarf, rasbora *Boraras maculatus* formally known as Rasbora maculatus is one of the smallest members of the cyprinid family. In addition to being a smallest cyprinid, they are about the tenth smallest vertebrate. At one time the small fishes was considered to be the juvenile of the Clown Rasbora, *Rasbora kalchroma* but is now recognised as a true species.
Originating from slow moving waters, such as ponds, bogs and ditches in South East Asia, these tiny (25mm) rasboras are a peaceful agile schooling fish. They are best kept with other relatively small and peaceful fish. However fish such as the fast swimming danios will intimidate them, causing them to hide and seek refuge.
The colouring is generally pink/red blush with a black spot in the middle of their side and also at the base of the anal and caudal fins. Often the first rays of the dorsal and anal fins may have a black colouration. When well fed and in ideal water conditions the colouring becomes more intense, with males developing slight violet overtones. The males in addition to a more intense coloration are also more slender than females.
They are easy to keep and fed when housed with suitable tank mates. Flake food is readily accepted, but like most fish they like live foods, such as small daphina, grindal

Boraras maculatus
2 males at the top
1 female below.

worms and newly hatched brine - shrimp. As well as being a "show-persons fish", (due to there small showing size) feeding on brine-shrimp will enhance their colour. They do best when kept at a temperature of 24 to 26c.In water that is softish/acidic with a pH 6 to 6.8 They also appear most relaxed when the tank has light on the dullish side. Dark gravel, and a well planted tank with floating plants, plus peat stained water is ideal for them, if not for us to see them.
Although they are tiny fish they are not difficult to spawn given the right conditions.An 18"x10"x10" aquarium is suitable, and with correct water conditions coupled with well conditioned adults.

Like the temperature when keeping them in normal community aquaria a temp. of 26/28c. water being acidic with a pH 5.8 to 6.3. Keep the water shallow, about 6" in depth, with a densely fine leafed planted tank. The fish normally spawn in the plant, but their eggs are not the most adhesive, so a spawning trap made up of two layers of marbles can be beneficial, as the parents may well eat the eggs.
These fish are not over prolific with often only up to 50 eggs being laid. The breeding pair or pairs should be well fed during their stay in the breeding tank to minimise egg eating, so remove the parents once spawning is complete. The eggs hatch within 24/36 hours and needs extremely small food, green water is ideal or use one of the commercially prepared foods like liquifry type of fry foods. Once the fry are able to accept freshly hatched brine-shrimp they will grow rapidly and without further problems.
Despite having two pairs in the breeding tank, I only succeeded in raising 15 fry to adulthood. I feel there is a couple of reasons for this: I didn't condition the females separately from the males and I left the adults in the breeding tank too long, so they probably ate a number of the fry. My reason for this as with such small fish, the eggs are not always easy to spot, if you have not witness the fish spawn. This has made me realise that in future I must start to condition the females at least a week in front of the males. Place the female in the breeding tank, and if you are like me have to leave home to go to work, then add the male to the tank just before going to bed. Then on arriving home form work the next day remove the parent fish, keep your fingers crossed and keep an eye on the marbles and plants to see if you have any free swimming fry. The help of a magnifying glass could be used as the fry are very, very small.

Rob Torrens
of
Waikato Aquarium Society.
New Zealand.

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(Dr. Wolfgang Wicker) T.F.H. Publications Inc.

Rasboras
Dr. Martin R. Brittan
TFH Publications Inc.

Editor: I would like to thank the New Zealand publication Aquarium World for this inspired article.

2m species of Fish

UNDER the Sea

Roger Highfield science editor of the Daily Telegraph says "the total number of species in the world's oceans could be more than two million'. Scientists are working on a billion-dollar national effort to document all marine life.

Census of Marine Life has recorded 15,304 species of fish, however as a guide there are 210,000 marine species of all types, and this could possibly have total 10 times larger.

Leading scientists from Smithsonian Institution in Washington involved with the census met to discuss the creation of a comprehensive portrait of ocean life that may well take 10 years to produce. Today this group names about 160 new species each year.

They have set their priorities for the next seven years of research, using electronic tags, tracking species by satellite, robot submarines used for filming and "landers" monitoring them from the ocean floor.

Of most interest the census aims to identify threatened species and important breeding areas, this will help fishing authorities to manage the sea's resources.

Tube worm discovered in the *Gulfofmexico*

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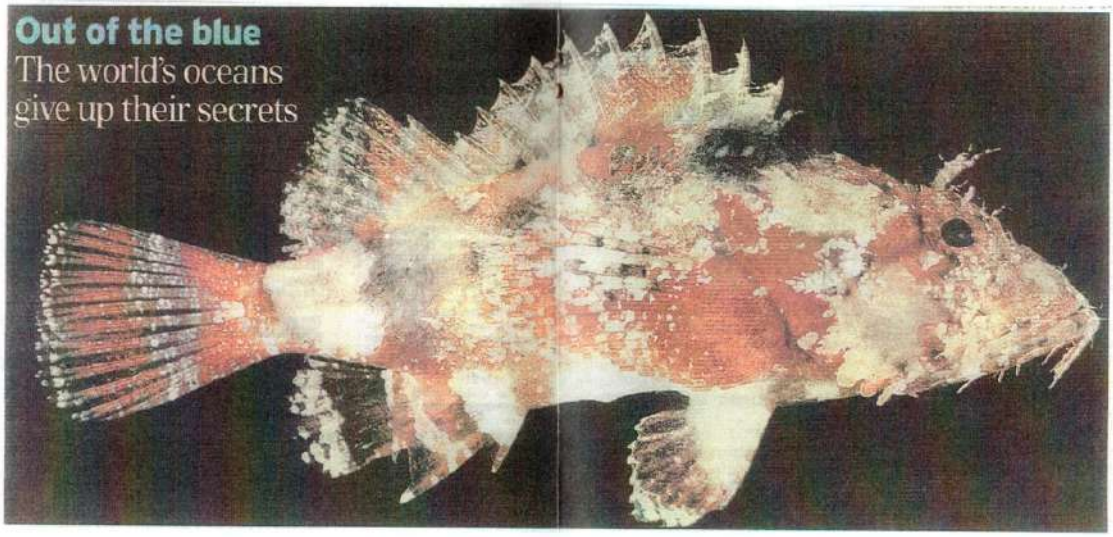

Scorpaenopsis vittapinna a type of scorpionfish found in the Indo - Pacific area. One of many new species to be identified during an enormous census of marine life. The first phase of the exercise has recorded 15,304 species of fish

Dr. Ronald O' Dor, the census chief scientist says "the oceans are mostly unexplored and little is known about their life, with only a tenth of the oceans being sampled. New to science is the discovery of bright red sponge, common name "rasta sponge' found 10 miles off the Florida Keys. Its chemical compounds may help treat cancers.

Sea Stars in *Port William Sound, Alaska*

Deep-sea researchers exploring the abyssal sediments off Angola found more species per area than in any other known aquatic environment on Earth. Here about 80% of the species collected were new to science, closer look at these species has revealed over 500 new species with the chance this figure will increase to 1,000. Many of the oceans have revealed rich three-dimensional habitats formed by corals and sponges, replacing the beliefs that the deep was only mud.

Video footage taken in the mid Atlantic at the depth of 2.7 miles, census scientists explore the depths of the "Charlie-Gibbs Fracture Zone" in the North Atlantic. These scientists suspect that fish indigenous to one side of the Atlantic may be using extinct undersea volcanoes as stepping stones to migrate to the other side.

It is known that every large species of fish has been caught so extensively over the past 50 years, that 90% of each fish type have disappeared. It also recognises that way back in the years of the 1600's fishing in Northern Europe was already having a huge impact on fish stocks. Today measures to control herring fishing are underway, as the annual catch is now 307.000 tons.

Vast areas of micro organisms in the oceans make up for their size by their numbers. The 1,030 types of microbe that exist within the oceans supply the Earth with half its oxygen created by photosynthesis in these microbes.

Excerpts and photos taken from an article published in The Daily Telegraph 24/10/03
Photos: Census of Marine Life.
Centre page:
Bill Eschmeyer and John E. Randall

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send your answer SAP to the contact address under the editors report, top prizes for the top answers.

GROCKLEMANIA '04

England's Garden Isle is again hosting this event at the Royal York Hotel, George Street, Ryde, Isle of Wight 14th to 17th May 2004. For all information contact: Les Pearce, tel: 01983 613575 email: LesJPearce@aol.com.

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CATFISH CONVENTION IN THE USA

International Catfish Convention being held 15th-17th Oct 2004 is being held in the USA. This event is being staged by the Potomac Valley Aquarium Society, based in Laurel, Maryland, that is halfway between Baltimore and Washington, DC.

The closest airport is Baltimore/Washington International (BWI).

The weekend starts with speaker seminars on the Friday afternoon and will continue through to Saturday evening. Eight different speakers on a wide variety of catfish topics. For those arriving early on the Friday a number of field trips have been set up. Saturday evening there will be a banquet. Sunday there will be a number of all-day auctions, along with manufactures representatives and product displays. "up dates" on this event: **www.pvas.com** *Andrew Blumhagen.*

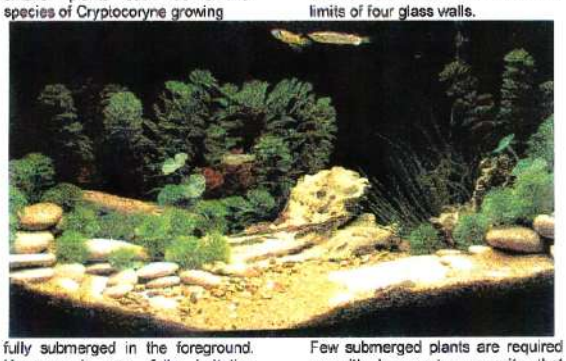
What happened at the Fishkeeping Weekend 2003 Part 1

The Furnish Aquaria display
by
Malcolm Goss
&
Peter Anderson

The 2002 exhibition was my first experience of setting up such a large collection of furnished aquariums, in fact 27, ranging from 2ft tanks to 4ft. Malcolm had done this sort of number before when the Federation had an exhibition at Dunstable some years ago.

So this year when we arrived on Monday about midday prior to the show weekend it was such a help to see the tanks already in place, with water and filtration running, plus the heaters on.
This year filtration was by using internal Fluval 300's, what a blessing after setting up last year with external filters. There was even more good news for us "There was only 12 tanks to set up" on the stand. However if we thought this was going to be a doddle for us, Joe had other ideas. 4 more tanks in the entrance, plus 4 tanks for the trade stands and the *moving fish bowl* that leaked after setting it up and had to be emptied again.
In the aquatic trade imitation plants have been around for many years, these plastic plants really never look like a real plant. In fact an enthusiastic aquarist would regard placing them in their aquarium as a joke. However today these plants like their out of water cousins have made great strides in their quest to look like the real thing. In fact Rolf C. Hagen, manufacturing company to the aquatic trade say "imitation plants are one of their most fastest growing sales". Many of these plants are manufactured in plastic while others are made of silk, its not just plants that are looking good, but imitation bogwood, rocks and boulders of all shapes and sizes are available now, so it was a good chance to try these products out at the show.
The aquariums are all using imitation plants, rocks and bogwood. The rift valley aquaria set up to suit Cichlids living in their natural habitat uses rocks that are marble in their appearance, here real marble left under water for a length of time starts to dissolve, and when lifted off of the substrate leaves a white powder. But these imitation pieces being light in weight makes them easy to work with, when creating your own caves and hide-aways that these Cichlids require.
Malcolm and I were fortunate, in that we were able to visit and chat with the owner of Worthing Aquaria, a stone throw from Arundel Castle, well worth a visit if you are in this part of the country. Here we could choose the fish we wanted, so when we arrived back we knew exactly how we wanted to set up the tanks.
Malcolm set up a 3ft aquarium with Buenos Aires Tetra (*Hemigrammus cauvittatus*) he describes how he set up this aquaria resembling an Amazon rainforest river, I used the miniature Amazon Sword plant (*Echinodorus tenellus*) as a foreground plant, giving a dense carpet of foliage over the aquarium substrate. These plants are manufactured with their foliage on an interlocking grid system of approximately 5mm by 100mm, ideal for breaking up into smaller sizes or with their interlocking system joining together for larger areas. They don't even have to be weighted down, as a gentle "wiggle" in the gravel lets the gravel rise over the grid, not only hiding the grid from view but automatically holding the plant down. These plants although imitation make an excellent spawning medium for egg-laying fish such as Danios. This foreground plant wraps its self round the imitation bogwood perfectly, giving a very natural appearance. With the Buenos Tetra being a fast shoaling fish plenty of swimming space is essential to both the front and midwater areas of the aquarium.
An African river bed was created for the Killifish, Panchax (*Aplocheilus lineatus*) with a substrate of sand, pebbles and imitation bogwood. The substrate has been hollowed out to give the appearance of a gentle, tidal flow across the centre of this layout. Here no foreground plant was used, only midwater and background plants being, Ambulia (*Limnophila aquatic*) Hairgrass (*Eleocharis acicularis*) and Pennywort also known as the Umbrella plant (*Hydrocotyle vulgaris*). These plants commonly known as "bunch plants" are manufactured as three or four stems mounted in plastic, resembling a turned over rowing boat do nothing, not even hold the plant down in the water, except when pushed deep into the gravel. These mountings are quite large and eliminate planting in any form of close formation, or enabling you to aquascape your plants that is required to give a natural appearance. To achieve this in this set up I have pulled the plants out from the mounts. Split the plants up into one or two single stems, cut them to the length or height required, with the smallest to the front stepping up to taller lengths as you plant further back into the aquarium. These then require a small lead weight placed on each individual plant whether in the form of a single stem or two.
When looking at the Golden Gourami aquaria with both golden varieties Thick-lipped (*Colisa labiosa*) and Dwarf (*Colisa lalia*) it illustrates the use of single stem planting to a length that is required to suit the set up. Here real rock-work is used in the form of coal and perbright, known as fools-gold. Black and gold being two contrasting colours and the gold well in-keeping with the gold coloured Gouramis.
By contrast we set up 2 aquascape aquaria's giving the visiting aquarist a completely different dimension to the furnished aquaria. This type of set up is best suited to the larger the aquarium the better. The basic

ingredients of an aquascape is an aquaria half filled with water, having plants growing in and out of the water. Many aquarist whilst not authentic, use mosses and alpine type plants for use out of water and smaller plants such as smaller species of Cryptocoryne growing



fully submerged in the foreground. However in our fully imitation aquascape I have used various sizes of boulders all made from fibreglass. They are shaped like the halves of coconut shells so when placing them under water they have to be placed in such a manner to remove any airlocks, or they will float up. If this becomes difficult due to where you wish to place them then drill one hole to the centre and top of the boulder, just a small hole of 1/8" will allow the airlock to escape naturally. At the time of assembling this aquaria, I made use of an Internal power filter (Fluval 300) fitted with a length of clear plastic hose positioned with the filter fully submerged whilst the hose is placed in such a way that water is being pumped via the filter and has water cascading down from the top-most level within the aquarium. The effect is one of the most stunning features one is able to achieve within the limits of four glass walls.

Few submerged plants are required as with less water capacity that comes with an aquascape swimming space for the fish is paramount, here we use Pennywort (*Hydrocotyle vulgaris*) that once again has been separated from its mounting and planted in single stems weighted by small pieces of lead. The plant supposed to be growing within atmospheric conditions is once again imitation, in the form of a type of Vine species. These type of plants can be found within a range of plants created for the reptile and terrarium set-ups. With these type of plants I place some around the outside of our aquarium completing that 3D image to the set up.

Ethelwynn Trewavas

by

P. H. Greenwood (1994)

Either as the sole author, or in collaboration, often with C.T. Regan, Ethelwynn Trewavas was responsible for describing and naming at least 462 genera, subgenera, species and subspecies. Doubtless, in compiling data which included nomina nova that she established and Trewavas taxa.

In many respects, as she herself often remarked, Ethelwynn entered the field of taxonomic ichthyology at a fortunate time. It was a time when large collections of fishes were arriving in the British Museum (NH), many from poorly sampled Great Lakes of Africa, others from the then little explored deeper oceanic waters. Above all, she had the great advantage of having Tate Regan as her guide and mentor. He too was fortunate in having Ethelwynn as his student and assistant, and both were lucky to be working at a period when financially and philosophically the Museums of the world were able to research. The times of penury and expensive theme park-like exhibitions were yet to come.

Ethelwynn was not only a tireless worker, but a gifted taxonomist, one not merely of the "stamp-collecting" variety, but a true biologist who recognised the corpses she handled as once living entities and essential elements of the biotopes from whence they were collected. I have not been able to carry out a detailed analysis to determine the current status of all taxa in whose recognition and description she was involved: however for the African Cichlidae and non-cichlids my estimate would be that more than 80% are still regarded as valid. This despite the activities of many taxonomists now studying the fresh-water fishes of that continent.

Interestingly, and somewhat surprisingly, little of Ethelwynn's work was concerned with higher-level systematics, especially the phyletic inter-and intrarelationships of the groups she studied. This is surprising because she certainly was interested in those aspects of systematics, and read extensively in the literature of evolutionary biology. Those wide-ranging interest were very obvious throughout my long association with her, particularly so during the time when, in the early 1960's Donn Rosen and I were roughing-out our ideas of a phylogenetic classification for teleosts (Greenwood et al. 1966)and often had long and beneficial discussions with her.

Her few publications in the field of higher-level taxonomy are surprising too, when one recalls that her major doctoral research on the hyoid and larnx of Anura was in large part stimulated by Noble's work on phylogeny of the group, a study which had paid scant attention to that important aspect of animals anatomy. Then too, her early association with Tate Regan was at a time when he was preparing his major synthetic work on the classification of telecost, later published in the 14th edition of the *Encyclopaedia Britannica* 1929, together with his earlier papers, long accepted as the definitive work in that field.

Perhaps her reticence in this sphere of systematic ichthyology stemmed from her high regard for Tate Regan's work coupled with the fascination that of African cichlids, especially the tilapiines, held for her, and her strong views on the pragmatic importance to fishery biologists of sound alpha-level taxonomy.

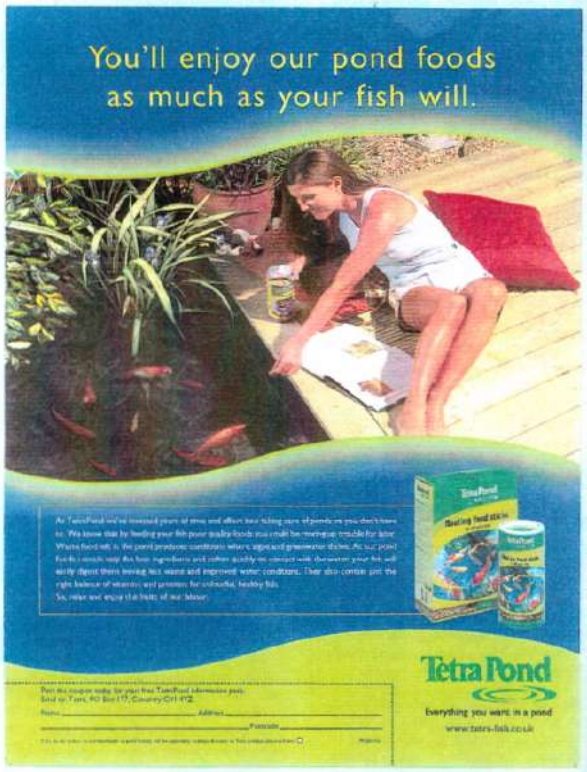
Be that as it may, all those who were to be involved later either in cichlid taxonomy or working with fishes in applied research, are deeply indebted to Ethelwynn, as are the many people who benefited from her tutelage and knowledge.

Editor: Before her retirement in 1961 Dr. Trewavas was Deputy Keeper of Zoology in the British Museum of Natural History, Cromwell Road London. For many years she was curator of fishes, and where she has continued her researches into cichlid and other fishes long after her formal retirement.

I first meet Dr. Trewavas in the many formal and informal talks she gave to the Catfish Association of Great Britain, the British Cichlid Association and Herdon A.S.

Tilapia guinasna (male)

I would like to thank the Fishes Department of the BM. for the manuscript by Dr. P.H. Greenwood. I also have to thank them for a copy of Dr. Trewavas book, Tilapiine Fish *of the genera: SAROTHERODON, OREOCHROMIS and DANAKILIA. This comprehensive work will be given to the best Cichlid article written by a "Bulletin Reader"*



Nutrition and Fish Health

Rupert Bridges
Tetra Information Centre

Most fishkeepers realise that the environment in which their fish are kept has a huge influence over their health. Direct damage caused by adverse conditions, coupled with the effects of stress, leaves them vulnerable to infection by any number of common 'pathogens' (organisms that can cause disease).

Perhaps less obvious is the importance of a good diet in maintaining healthy fish. This is a current area of research for Tetra, as well as scientists involved in the wider field of fish farming. What we now know is that as well as the need for a good basic diet that supplies all of an animal's nutritional needs, additional dietary components can also be used to improve resistance to disease and reduce the effects of stress. In this article, we will take a brief look at some of the developments in this area of research.

How do you know it's any good?

Before looking at specific ingredients, it is worth taking a minute to consider the process that goes into researching them. Without an extensive period of investigation, it is impossible to know if something actually works. This typically involves many months, if not years, of feed trials to assess whether or not the ingredient affects the overall performance of the diet, and more specifically the fish's ability to resist disease and infection.

At Tetra, for example, independently accredited in-house R&D is combined with external testing by institutes such as Wageningen University, and the Institute of Fisheries in Potsdam. Scientifically valid procedures must be used, to ensure that results are statistically sound, and resistant to scrutiny. For responsible Companies, this ensures that ingredients with real benefits are used, rather than relying on empty claims.

Extensive R&D is necessary to evaluate new ingredients

Vitamins

Although vitamins themselves are not 'novel' ingredients, in recent years it is becoming increasingly clear that they have an important role to play in enhancing resistance to disease, and reducing stress. Various studies have demonstrated the positive effects of certain vitamins on the immune system.

Vitamin C is perhaps the best-known of these, and is important for resistance to environmental conditions, wound repair, and - in certain optimised doses - the immune response. For example, high levels of vitamin C fed to Channel Catfish (Li and Lovell, 1985) led to improved antibody response and survival following a bacterial infection (*Edwardsiella ictaluri*). In other studies, fish fed low vitamin C levels have been shown to have reduced tolerances to stress caused by poor water quality and low oxygen.

Other vitamins, such as A and E, have also been shown to have some enhancing effects on the immune system. What must be remembered though is that the basic vitamin requirements of the species must be met for good health, and only then will additional levels be able to enhance the immune system.

Fatty Acids

Fatty acids are an essential component of fish foods, being important for energy production and cell membrane structure, amongst other things. In addition to their importance in basic health and condition, certain fatty acids also play a key role in enhancing the efficiency of the immune system.

They do this through influencing the properties of cells involved in the immune response, as well as the production of 'eicosanoids' - immunologically active components.

The principal benefits come from the 'essential fatty acids', i.e. those that fish require in their diet for good health. These include certain 'omega-3' and 'omega-6' fatty acids, such as linoleic (18:2n-6) and linolenic acid (18:3n-3). The numbers after the fatty acid refers to its structure, for example:

Linolenic acid (18.3n-3):

18 = Number of carbon atoms in the fatty acid ('length')
3 = Number of double bonds in the fatty acid
n-3 = Position of the first double bond (also referred to as omega-3)

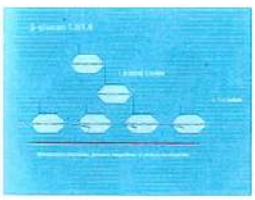
Basic structure of a saturated and unsaturated fatty acid

Fatty acids with more double bonds are more unsaturated, with 'polyunsaturated' ones having two or more double bonds and a length of 18 or more carbon atoms. Fish generally require polyunsaturated fatty acids to be included in their diet, with freshwater species having a requirement for both linolenic and linoleic acid. Longer polyunsaturated fatty acids are also beneficial, provided they are included at the correct levels and ratios. All essential fatty acids, in the correct quantities, can have a positive effect on fish of fish, and their ability to resist infection.

Immunostimulants

Although both vitamins and fatty acids can have an immunostimulatory effect, the term 'immunostimulant' is generally applied to dietary components whose primary function is to enhance the immune response (vitamins and fatty acids have other functions). There are many ingredients that may or may not have these properties, but commonly incorporated ones include ß-glucans, mannan oligosaccharides, and peptidoglycans. Of all the immunostimulants, ß-glucans have had the most research done on them, and are well-proven to have beneficial effects.

ß-glucans stimulate the non-specific, as well as the specific immune response, and thus reduce the ability of a pathogen to cause infection. Research carried out by Tetra has demonstrated that its inclusion in a food can significantly reduce the damage caused by common infections. This is supported by independent research on fish such as Carp, Yellowtail, and Turbot (Yano, 1989; Santarem et al 1997; Matsuyama et al 1992).



Structure of ß1,3/1,6 glucan

Of the ß-glucans, ß-1,3/1,6 appears to be the most effective.
The numbers refer to its structure, which in turn affects how it functions within the body.

Others

There are of course other ingredients that have been / are being investigated for their immunostimulatory properties, such as Spirulina, probiotics, nucleotides, and so on. Some of these have a part to play in diets for ornamental fish, and others will remain the reserve of the aquaculture industry. Tetra has recently developed a new, patented health promoting formula called ActiveFormula, that brings together the benefits of vitamins, fatty acids, immunostimulants, and other components in a single package, to reduce stress and improve the immune response. This has the potential to be included in different foods, and is currently in TetraMin and TetraMin Baby.

Although there are potentially many exciting developments on the horizon, it must never be forgotten that the most important part of a diet is its basic formula and quality. A poor food cannot be rescued by the inclusion of a health-booster, and so the first step in maximising the nutritional health of your fish is to acquire a good quality brand. Only then can you consider the additional benefits it may offer.

Know your Fish

Popular name: Philippine Bumblebee

Habitat: Philippine Islands

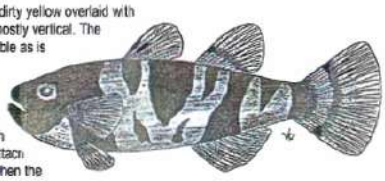
Characteristics: Body a dull, yellow overlaid with irregular black bars and mottling, the pattern is very variable. The fins are clear with just a small amount of colouration at the bass, pre-dorsal has a black leading edge.

Remarks: Inhabits hard alkaline waters, will often attach itself to the side of the aquarium with its modified ventral fins. Prefers temperature on the high side, plus live foods with frozen blood worms are essential in their diet. Brachygobius arregetus (Herre).

Popular name: Doria's Bumblebee Fish

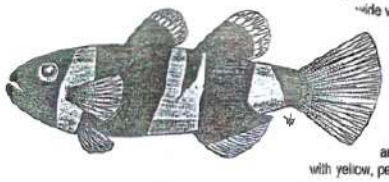
Habitat: Borneo and Malaya

Characteristics: Body a dirty yellow overlaid with irregular black blotches mostly vertical. The body pattern is very variable as is the shade's of yellow.



Remarks: Inhabits brackish waters. Has the ability in common with all the Goby species to attach itself plants and stones when the passing current is strong. Best kept at a temperature between 75f. to 78f. Small live foods are essential, along with frozen blood worms. Brachygobius doriae (Gunther).

Popular name: Common Bumblebee Fish.
Habitat: Malaya, Thailand and Greater Sunda Islands.
Characteristics: Body dull yellow to orange overlaid with four dark/brown wide vertical bands. Small wedge bar markings appear at intervals between the dark bars. Head is sometimes grey. Dorsal and anal very dark, edged with yellow, pectorals and ventrals having black bases.

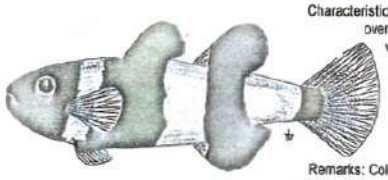


Remarks: The most common of the genus, will cope with fresh water, but prefers brackish conditions. Brachygobius nunus (Hamilton & Buchanon).

Popular name: Bumblebee Fish.

Habitat: Borneo, Java, Sumatra, and River Estuaries.

Characteristics: Body light yellow to orange, overlaid with four dark brown/black vertical bands. Dorsal and anal black, remaining fins pale yellow with variable amounts of black streaking, pectorals, ventrals having black bases.



Remarks: Colour is typical "Bumblebee" this species very variable in colour. Bottom dwelling, requiring sandy substrate and brackish water. Small live foods/frozen are required in their diet.

Brackygobius xanthozona (Bleeker).

Increasing club membership

I have been a member of aquatic societies for nearly thirty years. In that time I have been a club member, a committee member and currently I am chairman.

Clubs in our hobby, and others, such as photography, gardening, painting etc.; are all suffering dwindling membership and are unable to keep prospective new members who do come to visit us. The occasional new member who has "stuck with us" for a while, has found friends and increased his/her knowledge on many aspects of fishkeeping. They also found a group of people with whom they can share their successes or failures and help to keep their interest in the hobby alive.

Go into an aquatic retailers at the weekend and you will see lots of people who are buying and keeping fish, be they pond, indoor coldwater, tropical or marine fish. Very few would consider visiting an aquatic club, yet alone joining one.

I believe part of the problem is our image. One of the few times a club has the opportunity to display what they do to outsiders, is at their open show. We don't aim these shows at trying to gain new members or even explaining what is happening. I enjoy our open show, meeting old friends, discussing how things are going and all the usual panics of an open show. But they aren't aimed at explaining to people interested in fishkeeping what is going on. During benching everyone is too busy, judging is often done behind closed doors and when finally people can get into the hall, there are rows of small tanks under lettered or numbered classes with usually no names of the fish on display. Often as soon as the results are known, tanks start to be de-benched as well. This re-enforces a visitor's belief that clubs are only for very experienced fishkeepers who would look down on anyone with only one tank of community fish, especially if they didn't know all the Latin names of the fish they were keeping. I wish they could see the average club member, who does only have one tank and struggles to find what class to put his fish in, yet alone it's Latin name.

I can understand, that for some, the modern busy way of life does not allow for set days, or evenings that can be put aside for hobbies or leisure interests. We need to get the message over that an aquatic club is not like evening classes, you can miss a few and not fall behind on the curriculum.

It is very difficult to please everyone on a club evening. The backbone of any club are its members and most have been in a club long enough to understand the basics of fishkeeping. Too many evenings dedicated to teaching the basics, in the hope of attracting new members, would soon alienate the more experienced in the club.

Our club, like many others, is trying to find ways to get the message across that we welcome new members. Our Web-site, run by Dick Mills is really excellent and has given us new contacts. If anyone wants to see it, the easiest way is to go via the FBAS Web-site (fbas.co.uk) and go via "links to member societies" to Hounslow & District AS. This year we are trying to think of other ways to attract new members. Our clubs thoughts are, continue with the Web-site, flyers at aquatic outlets (how supportive are your local shops?), program published and displayed in shops, local libraries and community centre etc.

We allowed people in to our open show during judging last year and it worked fine. We hope to do the same again this year and to try and advertise the show to local interested fishkeepers. This we hope should attract the possibility of new members.

If anyone has any other ideas please reply via the Editor, Malcolm Goss. I would be interested to know of any methods that have worked for others, or even ideas we could try. I will do an update later in the year, to let you know our progress. In the meantime good luck to all and happy fishkeeping.

Peter Anderson. Hounslow and District Aquarists Society

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DICKIE DOVE

1920 - 2003

Dickie Dove was the FBAS Treasurer for many years and who became, as those knew him will tell you, a legend. One senior Council Member describes him as the best Treasurer the Federation ever had, or could wish to have. In one particular year, 102 Societies affiliated– some say it was easier to join than argue with him!

His 'economising' knew no bounds and his inventiveness in saving (or not spending) money were amazing to behold.

He organised printing of the Minutes and was proud of the money saved: sadly, he could have done with spending some on the typewriter/printer ribbon as they were usually too faint to read!

If you ever got a letter in the mail from Dickie, you knew it was from him instantly. Although it did have a stamp - even Dickie couldn't avoid this - usually the envelope had been recycled from a previous existence (cut in half and re-taped up) and the actual letter paper was often on its second or third life too. Letters written on the back of old Jubilee flyers were quite common.

An accomplished fishkeeper, he bred many species for local aquatic shops, whom he supplied with self-caught *Tubifex* worms.

Dickie had a very colourful life bound up with aircraft. After serving in the Royal Air Force in Rhodesia he worked for Imperial Airways at Croydon, before moving to Heathrow with them.

Following retirement from British European Airways, he threw himself in local affairs and revitalised the Pinewood Community Centre near his home in Crowthorne. With his wife May, he attended a Buckingham Palace Garden Party last year in recognition of his years of outstanding services to the community.

Our condolences, and those of Federation fishkeepers everywhere, go out to 'Auntie May' and the rest of his family at this sad time.

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WHERE ARE THEY NOW

Once again at the Festival of Fishkeeping 2003 we meet up with an aquarist that had not been seen for a decade or more. How nice it was to see **Andy Constantine** who just love to show his fish. Andy who was a Hounslow member for many years back in the 70's and early 80's gaining awards from open shows all over the country. Andy was a very active member, not only in the hobby in general, but serving on Hounslow's show team whilst being a committee member for many years. Andy told me his best achievement that stands out above the rest was receiving an Aquarist Gold-Pin for "Best Fish in Show" at Ealing clubs open show in 1961 with a Green Sailfin Molly(*Poecillie latipinna*). Of course Andy still likes to see fish, that's why he travelled to Bracklesham Bay from his home in Feltham, Middlesex. But will he return to his old hobby "not enough time" was Andy's reply, well he certainly looks as if he has his hands full.

Andy with his wife Elaine and friend Shirley Wilks

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Last entries for the next edition
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FESTIVAL OF FISHKEEPING & WATER GARDENING WEEKEND

15th-17th October 2004

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

For more information or to place your booking please call:

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