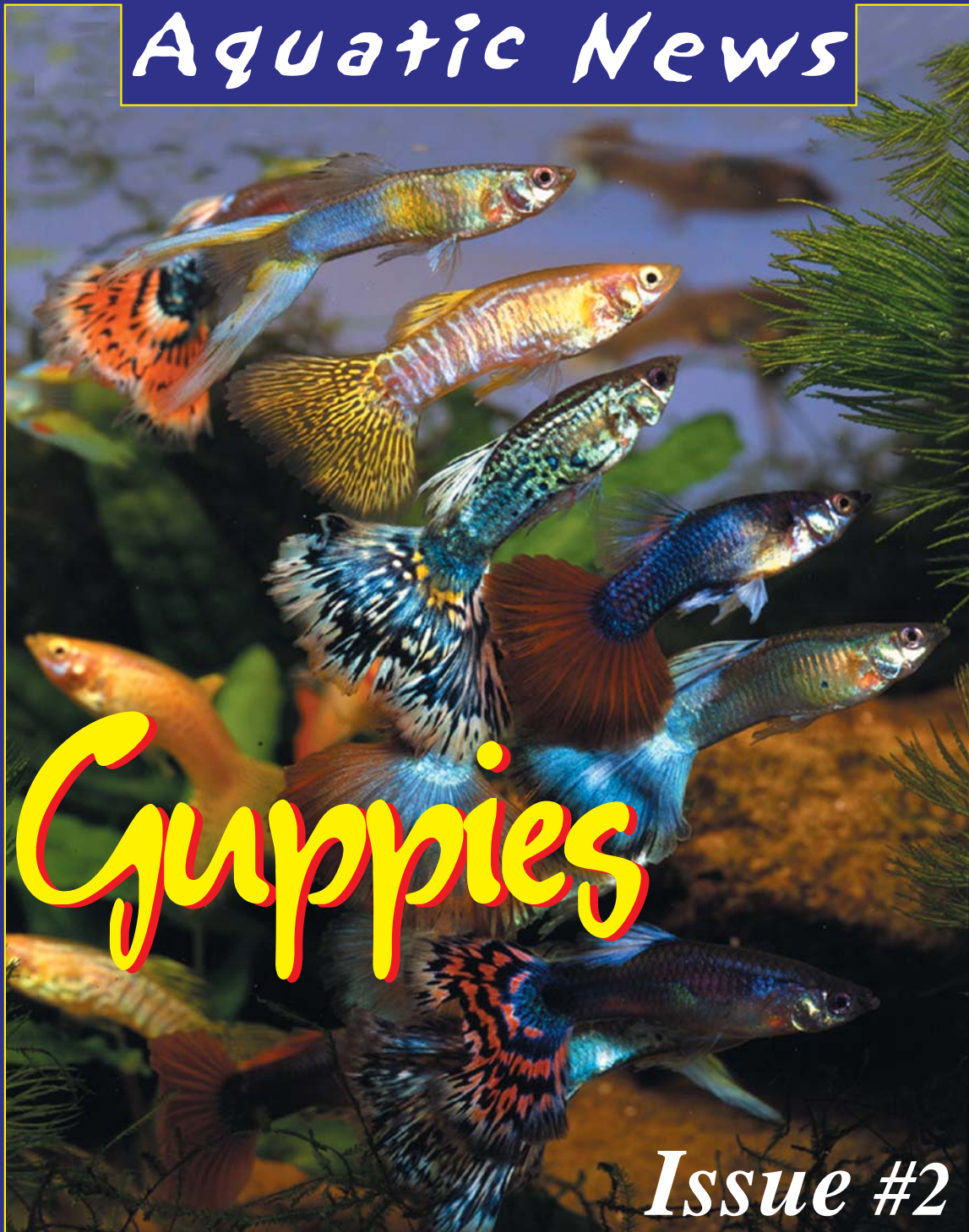


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NUTRAFIN[®]

Aquatic News



Guppies

Issue #2

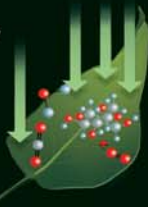
Issue #2 - 2002

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Editorial

Dear Reader

I do hope you enjoyed the first issue of

NUTRAFIN Aquatic News.

And now here is the second issue, which contains just as much information.

Our highlight this time is another of the most popular aquarium fishes around the globe, the guppy. These colourful "swimming tapestries" have a very interesting story behind them, which you will not want to miss (p. 4). Another, very fascinating tale involves Echinodorus, plants which do not deserve their common name of "Amazon sword" as they do not live in the Amazon river (p.6). And, talking about the Amazon, the original source of most of our aquarium fishes and plants (although today most are from captive-bred stocks), I cannot keep an incredible fact to myself. The Sixth Conference on Biodiversity was recently held in The Hague, Netherlands, where representatives of 182 countries tried to devise a plan to protect the last primary forests. A plan of action was adopted and Friends of the Earth International (FoEI) has stated "...it could be a major step forward". But it wasn't! Brazil, Canada, Malaysia and other countries blocked any attempts to include clear targets. And at the end of the two week convention, the director of the environment program of the United Nations, Klaus Töpfer of Germany, said "... I had expected more...". Uncontrolled deforestation and the introduction of exotic species (the second most damaging cause of the extinction of countless aquatic life forms that we love), will continue. I can see only one positive

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Editor-in-Chief: Heiko Bleher

Editorial address: Nutrafin Aquatic News

Via G. Falcone 11,

27010 Miradolo Terme (Pavia), Italy

aquapress@mp.it - www.Hagen.com
Tel. +390382 754707 - Fax +390382 754129

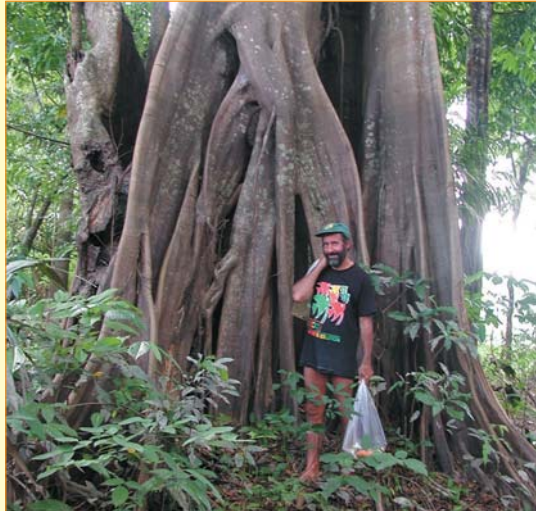


Photo: Heiko Bleher (NAN editor) with new cichlid species collected recently in a remote southern Amazon area. Here the rain forest is still untouched...but for how long?

Editorial

outcome: for the first time it was stated publicly that **planet Earth has lost more than 75% of its original primary forests...**

something I have been saying for decades. I only wish more of the media would take notice. Like the advert sponsored by FoEI President Brent Blackwater on Earth Day, April 22, with a full-page in USA Today, showing a "For Sale" sign posted on the Earth, accusing governments of selling the environment to corporate interests that pollute and abuse our air, water, and land, for profit. It is a vicious circle, that is for sure. We are living in a time where our population is growing as never before in the history of Man (even though some people would have us think otherwise). And it is perfectly reasonable for everyone to want to live, have a job, take care of his or her family. But it is this uncontrolled growth, and the accompanying pollution and destruction of aquatic habitats - in so-called "third world" countries - that is causing the creatures we love to disappear. Everytime I return to places in the Amazon, or elsewhere - particularly in tropical areas - it is worse. Rivers and lakes have vanished completely or are used for garbage disposal. Especially the smaller streams, which bear the highest concentration of biodiversity - and which are, or were, the source of most aquarium fishes and plants. That is why I say: **"Let us make the most beautiful hobby even more beautiful... and help to keep a piece of nature alive!"**

Yours aquatically,
Heiko Bleher

Scientific adviser: Dr. Jacques Géry
Lithos: Fotlito '73, Borghetto Lod. (LO), Italy
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Fishes in nature and in the aquarium

“The water temperature in the containers of tropical fishes is dropping, we must do something!” shouted the boatswain of the South America – Hamburg Line freighter heading across the high seas from Caracas towards cooler Europe, as the temperature on board fell below 60°F. Making a snap decision, a nameless sailor emptied his jars of expensive Venezuelan honey, filled them with hot water, and placed them in the 4 gallon fish cans. He repeated this procedure night and day, day-in, day-out, often in rough seas. The precious cargo must reach Hamburg alive....

Guppies and their history

by Heiko Bleher

...and it did. In 1908, thanks to the quick thinking and perseverance of the sailor (who staggered ashore, exhausted, in Hamburg) the aquarium hobby would be able to marvel at live guppies for the first time. Real tropical fishes! At that time there were no aquarium heaters, and “tropical fishes” had so far meant just the paradise fishes imported from southern China some 50 years previously and a few gouramies, as well as a number of cichlids and catfishes brought in from Argentina, Uruguay and southern Brazil after the turn of the century. But these “tropical” fishes in fact originated from temperate regions where the water temperature often drops below 60°F for several months each year, and could thus easily be maintained at room temperature.

Unfortunately, despite the sailor’s best efforts, some of the guppies were dead by the time C. Siggelkow in Hamburg opened the cans. Nothing to do with the hardships of their journey – the wild form is very hardy – but the result of poisoning. In those days ships were always disinfected after docking, to prevent the introduction of plague, smallpox, yellow and spotted fever, and cholera, by rats. The tiniest traces of the prussic acid used posed a huge threat of poisoning for all animals.

But the survivors would become known as “millions fishes”. Not just because they breed prolifically in their natural range – Venezuela, Guyana, Trinidad, the Antilles and other Caribbean islands – but also because before long they were being bred in their millions by hobbyists

worldwide (for this reason they were also called “missionary fishes” because more than any other aquarium fish they “converted” people to the aquarium hobby). But at that time neither Siggelkow nor the breeders had any inkling of the future triumphal progress of this little fish or that it was destined to become one of the most popular of all aquarium fishes – but more of than anon.

But first of all, how on earth did this fish get the universal popular name of “guppy”, as its scientific name is quite different – *Poecilia reticulata*? Now, it seems unlikely that the aboriginal peoples in its native lands can have overlooked such a gaudy – albeit small – fish for thousands of years (in nature the 1 inch long males are very colorful, the larger females colorless). Although it is not known whether they gave it a name, the first recorded name dates from 1859. The head of the ichthyology department at the Imperial Prussian Academy of Science in Berlin, Wilhelm

Carl Hartwig Peters (1815-1883) received 61 dead specimens from Julius Gollmer, who had collected them in the Rio Guayre near Caracas. Peters named the new species *Poecilia reticulata*, as the specimens exhibited a reticulated scale pattern. It is interesting to note that he adopted the genus name *Poecilia* from Schneider, 1801 (in Bloch & Schneider), and that in the years that followed more and more specimens were deposited in various museums, each time under a different name so that eventually there were no less than 11! But these are all now regarded as synonyms and once again this fish bears the scientific name *Poecilia reticulata*. (To be precise, *Poecilia (Acanthophaelus) reticulata*). But one of the many synonyms provides the explanation of the popular name guppy. This was down to Albert Carl Ludwig Gotthilf Günther (1830-1914), in his day an ichthyologist (of German-English extraction) at the British Museum in London. He received dead specimens from Trinidad from the Rev. Robert John Lechmere Guppy and in 1866 described these as *Girardinus guppii* – which subsequently, like all other later names, was shown to be a synonym of *Poecilia reticulata*. But *guppii* caught on – and is now the universal popular name. (Incidentally, Guppy was a missionary – again hence “missionary fish”!)

Following the eventful arrival of the live guppies in Hamburg, Siggelkow discovered that each of the gorgeous males had a different coloration and also possessed a clearly visible, laterally-protruding, copulatory organ (known as the gonopodium). Not long afterwards the females, often twice the size of the males, were seen to mate with the males, and then – lo



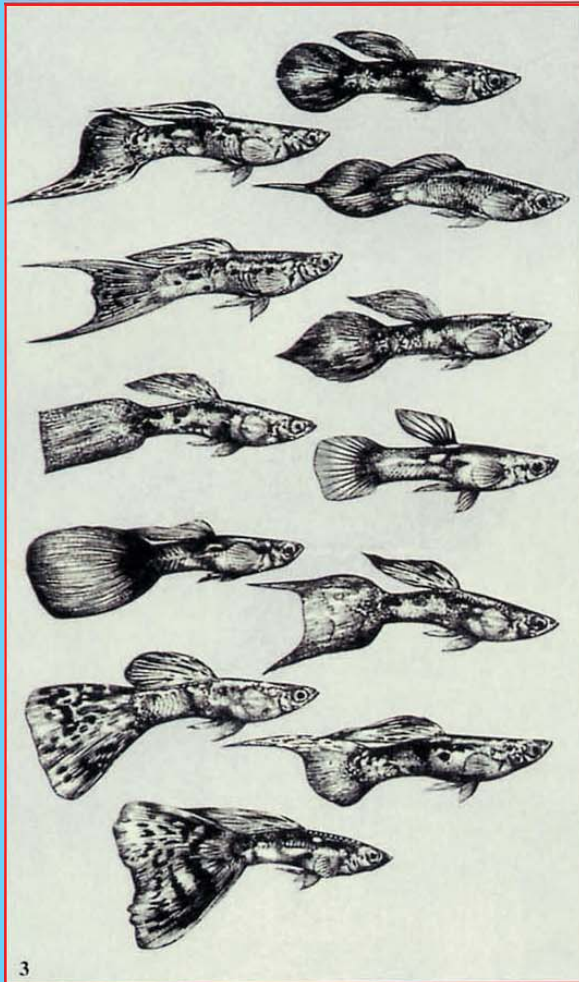
The culture of the guppy knows no bounds. The millions fish is always in the top ten best-selling ornamental fishes even when it isn’t at number one. Some of the “swimming tapestries” bred by Man from the original wild form command astronomical prices – but those above can be had for a few dollars. Photo: Burkhard Kahl

and behold – bring to up to 60 live young into the world. And thus they were classified as “live-bearing” toothcarps – “toothcarps” because originally this group was assigned to the cyprinodontid fishes (family Cyprinodontidae).

But what is so special about “livebearing”? Do we humans not arrive “alive” in the world, like many species of animals (almost all mammals)? And is it not common for fishes in general to be viviparous (= bringing forth live young)? Today more than 60 families and over 1000 species of viviparous fishes are known and it would be totally confusing to apply the epithet “livebearing” to all of their names! In addition, the word viviparous covers a whole series of different types of live-bearing, too numerous to discuss here. Nevertheless, the term “livebearing” has become established in the aquarium hobby (and among aquarists). Nowadays enthusiasts, aquarists, dealers, breeders, and many others understand the collective term “livebearers” as applying only to the familiar fishes of the family Poeciliidae (order Cyprinodontiformes), including guppies, platies, mollies and swordtails (which will be covered in future issues of NAN).

It should be noted that in the course of evolution animals repeatedly have to adapt, and that species still exist today because they bring their young into the world alive. A live juvenile can swim away, an egg cannot... To sum up, in these interesting species – including, of course, the guppy – the eggs are fertilised inside the mother’s body, develop for a certain period of time in her reproductive tract, and are then released – born alive.

Thus, at the beginning of the 20th century devotees of the new and fashionable trend towards tropical fish, could keep a species that was not only colorful but produced live young before their very eyes. Children and adults alike found something new to study almost every day. But this was not enough. Every newborn male has a different color pattern – just like fingerprints – and no two are exactly the same. This spurred professional breeders and expert hobby-

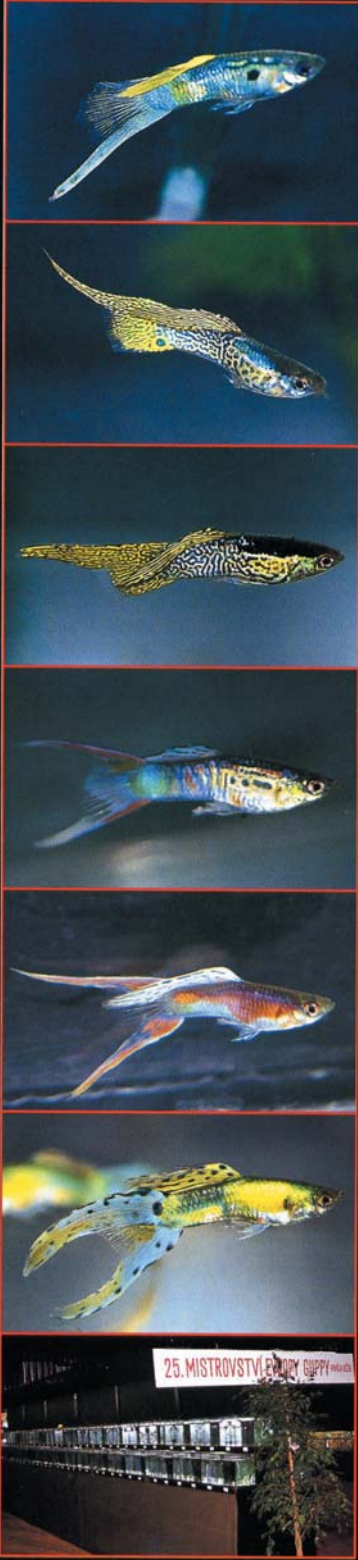


1) Wild guppy from Mexico (male). 2) Wild males from Venezuela are particularly colorful. 3) The 12 standard guppy varieties (from top to bottom): round-tail; bottom-sword; pin-tail; double-sword; spear-tail; flag-tail; spade-tail; veil-tail; lyre-tail; fan-tail; top-sword; and delta-tail.

ists into action. Guppies mate just two months after birth and the females produce young four to six weeks later. In less than 10 years the guppy was not only the best-known aquarium fish, but cultivated varieties of this fish were the most prized of all. The guppy became the “million dollar fish” in America, the land where everything is possible. Little remained to be seen (at least where males were concerned) of the wild form imported in 1908, with its pointed head, gracefully curving, colorful dorsal fin, short – sometimes elongated – tail, and elongate body covered in blobs of color (left). And even females were becoming more colorful through selective in-crossing.

By the time of the First World War a number of guppy varieties were already being bred, including the almost unaffordably expensive “peacock guppy”. Nowadays there are almost innumerable color varieties and forms - practically a “swimming carpet” Mankind’s enthusiasm for something new, or rather, “never before seen”, knows no bounds, and right from the start the guppy helped satisfy this appetite. Anyone can give their imagination full rein and produce their own “creation” in a very short space of time – something that takes many years in other fishes.

To the present day the cult of the guppy remains unbounded. After the first international guppy show in Hannover (2nd–6th September, 1954), at which five European countries and the USA were well represented, the German Guppy Society (Deutsche Guppy Gesellschaft, DGG) was formed in 1955. Since 1978 there have been European guppy championships, and in 1981 international judging standards were established (left). This led to the creation of an international “curatorium” for fancy guppy breeding, based in neutral Austria. But the DGG was just the beginning. Today there are almost innumerable guppy clubs, associations, and societies. On the internet, www.altavista.com alone has more than 420 pages under: “Guppies, *Poecilia reticulata*”. In practice many of the entries there are very superficial and contain information that is incorrect, but



1) Bottom-sword – a near natural cultivated form. 2-3) cultivated top-swords, 4) double-sword - could pass for a near-natural form.... 5-6) cultivated top-swords. 7) A typical guppy show, in this case in Ostrava, Czech Republic.

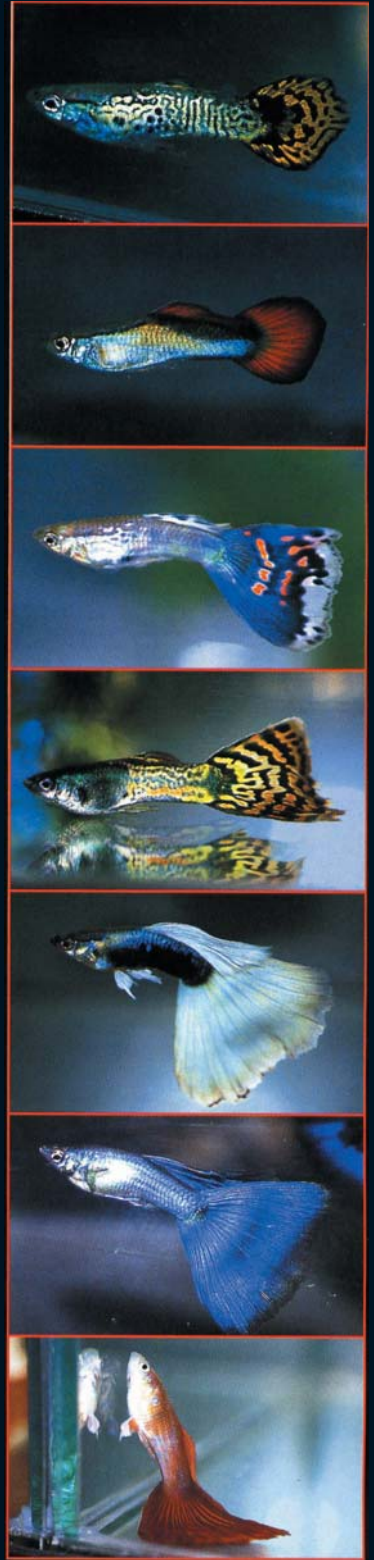
there is also excellent scientific material, and a number of good to excellent clubs. Every month the Japanese publish material on their high-price guppies, and other journals regularly discuss this, the best-known of all fishes. And the Russians and other former Eastern Bloc countries likewise cover the latest guppy “creations”. Guppies are being bred with such huge tails that they can hardly swim, let alone attempt to inseminate females (lower right).

But this is not the only use Man has made of the millions fish – for almost a century it has been used in countless scientific experiments as well. For example, guppies were cloned long before Dolly the sheep in England. Some 50 years ago scientists stored the sperm of the finest male guppies in order to create other such monsters. In practice a lot of useful knowledge has resulted from this research, especially the studies on wild fishes. *Inter alia*, biologists have discovered that females are attracted to the most splendidly colored males (just as in Man?), while males, on the other hand, prefer inconspicuous females that have a better chance of surviving pregnancy (less visible to potential predators). Or that where predation pressure is low, the fishes become sexually mature later, live longer and healthier lives, and grow appreciably larger.

The guppy remains a fish for seekers of knowledge, whether they be scientists or laymen. And I am of the opinion that even the wild forms, which look as if they have been daubed with color (see photos), will enrich a child’s – or even an advanced aquarist’s – aquarium. The guppy is not only virtually problem-free in its maintenance (see the biotope aquarium article in this issue), but a miniature textbook, from which we can often learn more than from the TV, magazines, or internet. The guppy has always been and remains the ideal beginner’s fish, and hardly anyone in our wonderful educational hobby will not have kept them at some time. The missionary fish continues to delight both young and old – there is no lower age limit, and certainly no upper one!

It is worth noting that the Polish word *Gupi* means stupid, and the fact that it has a Polish-sounding name has led to a special interest in these fishes in Poland, where mass breeding has produced some splendid “sports”.

Finally, it should be noted that these fishes originate from equatorial regions and are generally found along the margins of rivers large and small, sometimes in lakes, but always in shallow water, and often among vegetation and stones. Water parameters are variable across its range: pH 6-8, conductivity 10-2000 $\mu\text{S}/\text{cm}$ and temperature 68 - 86°F (or even higher - up to 90°F).



1) Cultivated (?) spear-tail. 2) Cultivated round-tail. 3) Flag-tail? 4) Fan-tail (the “fan” is too heavy, the guppy has to rest frequently). 5-7) Delta-tails – cultivated forms that can swim only with difficulty (5-6), or hardly at all (7).

Aquatic plants in nature and in the aquarium

by Heiko Bleher

It is our intention to show our readers how various aquatic plants live in nature, and how best to cultivate them in the aquarium for long-term enjoyment. This time we will look at the swordplants. Their pan-American distribution makes them suitable for the guppy – or other livebearer – aquarium, and, of course, these plants are also ideal for the majority of medium-sized and small South American characins and community aquaria, while large specimen plants can form the centrepiece of the aquarium decor, etc.

The swordplant genus (*Echinodorus*) belongs to the family Alismataceae. It remains to be seen whether it comprises 47 good species (following Rataj, 1975a) or 26 species with a number of subspecies (according to Haynes & Holm-Nielsen, 1994). In practice, about 25 species – almost all of them very beautiful – are available in the aquarium trade, plus at least 30 hybrids (a number of these were illustrated in NAN #1).

Entire books have been written on this genus alone – undoubtedly at least in part because they are the most important aquarium plants worldwide. No other genus of plants offers the aquarist such a wealth of different growth types, and so much potential for creating a splendid underwater landscape. For example, a full-grown specimen of *E. amazonicus*, *E. bleheri*, *E. cordifolius*, *E. horizontalis*, *E. martii*, or *E. osiris* makes a splendid centrepiece. Species such as *E. grandiflorus* (which also forms beautiful emerse leaves), *E. palaefolius*, and *E. paniculatus* (which likewise rapidly produces emerse foliage) are suitable for the background. And there are also a number for the foreground of the aquarium: *E. bolivianus*, *E. quadricostatus* (below), and the smallest species of all, *E. tenellus*. The last two

of these can create real “lawns”! A few *E. angustifolius*, *E. berteroi* (rather tricky), or *E. griesebachii* are ideal for the sides. And, of course, if you want something really special, *E. ascheronianus* or the rare *E. opacus* and *E. portoalegrensis* are real gems.

The numerous hybrids are a matter for personal taste and choice. Almost every month there are new varieties, and the situation is so confused that a few hybrids have been described as species (but with no locality details!). Many of these cultivars add more color to the aquarium, in particular *E. cordifolius* “Tropica Marble Queen”, *E. “Oriental”* or *E. “Little Bear”*, *E. “Green Panda”*, *E. “Red Devil”*, and many more.

The majority of these crosses have, of course, been engineered by breeders. “More color”, because almost all natural swordplants are green (albeit every shade of green, and sometimes red even in the wild). It should be noted that there are species that live for only a year (eg *E. berteroi*), but the majority are durable, long-lived, undemanding aquarium plants as long as you remember that many like to grow emerse part of the time, as in nature (in particular, *E. grandiflorus*, *E. macrophyllus*, *E. paniculatus*). They are very adaptable - happy in soft or hard water and at a pH between 6.5 and 7.5, and temperature-tolerant (72 - 82°F is optimal). There are even species such as *E. horemanni* (a good species), *E. opacus*, *E. osiris*, *E. portoalegrensis*, and *E. uruguayensis* which periodically live at temperatures of less than 60°F in nature. 10-12 hours of light is naturally and optimal.



Here you can clearly see (centre) how swordplants (*E. grandiflorus*?) change to an emerse form during the dry season and their delicate submersed leaves (left) take a quite different form. Both photos were taken in August, at the start of the dry season, in Roraima state. Above we

see a typical swordplant flower (and seeds) – often the only way to establish the species. (This is the flower of *E. paniculatus*). Far left is a beautiful decorated aquarium full of *E. quadricostatus* in the foreground with a large *E. osiris* behind to the left.

Aquarium Technology: Plant System

CO₂ Natural Plant System

A beautifully planted aquarium creates a stunning focal point for any setting. Live aquatic plants bring a living, breathing, exquisite part of nature into your own home.

It's easy

The CO₂ Natural Plant System helps you achieve beautiful, thriving live aquatic plants, and ultimately, a healthier aquarium. **Visible results in just 15 days!** When comparing plant systems using CO₂ versus those that don't, the differences are very apparent. Most rapid growth plants obtaining CO₂ injection, are more lush, colorful and grow faster.

How it works

This system is designed to supply any aquarium with a safe, economical, and efficient method of providing nature's most powerful carbon source for plants. Em-

ploying a natural fermentation process for CO₂ eliminates the need for inconvenient pressurized cylinders. It allows quick, easy,

opened to support consistent carbon dioxide output.

A Natural Process

1. All-natural Activator and Stabilizer ingredients are added to sugar and water in the Fermentation Canister.

2. Once sealed, fermentation commences. As CO₂ forms, pressure builds, creating CO₂ bubbles that travel through CO₂-resistant tubing into the aquarium.

3. There, the bubbles encounter the CO₂ Bubble Counter/Diffuser, the key to efficient CO₂ diffusion into the water. The CO₂ bubble follows a patented 3-dimensional, extended path. As it travels within the unique matrix, the bubble becomes

smaller and smaller, finally disappearing almost entirely. This indicates that CO₂ has fully dissipated into the water.



and affordable refills of ingredients to provide continuous CO₂ for a 3-4 week period. Our special fermentation canister was devel-



THE AQUARIUM HOBBY ON THE INTERNET

Brief notes on various homepages: at www.hagen.com quite a few things are new, click on English as language, then Aquatic – you will be amazed. A fantastic new site at is under construction at www.biotopeaquariums.co.uk, with exceptionally realistic biotope set-ups. The website www.thekrib.com/plants has a lot on plants, and anyone looking for information on discus – worldwide – shouldn't miss <http://discus.pagina.nl>. The site www.fritzies.de has almost everything the heart of a marine lover could desire, with fantastic photos. In **altavista** search for Guppies "**poecilia reticulata**" and you will find over 420 pages – although much

of it can be skipped, there are some good, especially scientific, publications. For beginners and those who want brief but worthwhile information there are two sites: <http://groups.msn.com/guppytalk>, which is well done. They even provide a "Guppy Start Page". If you want to see a video then www.aquahobby.com/video.html is the place to go for: "A Guppy is Born". And if anyone is interested in an aquarium job click www.aza.org/JobListings. The American Zoo and Aquarium Association has vacancies for aquarists and reptile keepers, care interns and vets - all the way up to aquarium curators and even directors of conservation.

The website www.planetcatfish.com will be a real hit with catfish fans. A fabulous homepage. So far 27 of the 34 families are listed, and 797 siluriform species (of some 2600 known) are illustrated. A few of the names are incorrect or out-of-date (e.g. *Bunocephalus caracoides* should be *Dysichthys caracoides*; *Hemibagrus wyckii* belongs in *Mystus*; the *Corydoras geryi* is an undescribed species, etc). But the layout is excellent, the photographers are listed as well (under **cat-elog**), the information is available in a wide choice of languages, and there are numerous links. In short, almost everything you need to know about catfishes.

Do it Yourself: Lighting

How to Evaluate and Select Lighting Needs for Marine Aquaria

Marine aquaria, which are intended for the keeping of photosynthetic corals and invertebrates, require serious consideration and understanding when the issue of lighting is addressed. Quality, intense, full-spectrum lighting is essential. This can be achieved by combining multiple Hagen Fluorescent Glo Bulbs.

The chlorophylls found in various algae, invertebrates, and corals require exposure to specific wavelengths of light for proper function. These chlorophylls are essential for the basic survival and growth of many species of coral, invertebrates, and algae commonly kept in marine aquaria. In general, it is the blue spectrum that is important for various chlorophylls to function. Light wavelength absorption by water is another critical factor for marine aquarium lighting. Blue light, which represents the dominant wavelength in the aquatic envi-

ronment, penetrates to depths of hundreds of feet. Red light is almost totally absorbed by water within the first 16 feet. Sunlight present over tropical reefs is extremely intense (high lux values). In comparison to calm waters, waves and turbulent conditions can reduce light penetration due to reflection.



How Much Light Does My Aquarium Require?

The quantity of light required for marine aquaria will vary depending on the life forms kept. In fish-only setups, 2 watts per US gallon is sufficient. Reef-type systems containing primarily soft corals should

have a ratio of 2 to 4 watts per gallon. A deduction of 15% to 20% of the rated tank volume is permissible to allow for water displacement due to live rock formations. Reef systems containing species of hard corals need a minimum of 4 watts of light per gallon. It is often impossible to determine the origin (which ocean, the depth and surroundings) of a coral or an invertebrate. Even hard corals, requiring more intense lighting, have been found in lower light conditions. Knowing a coral or invertebrate's origin would allow simulating lighting requirements more accurately, however, only general guidelines can be followed. If a coral is not responding in its present location, it is recommended to place it in a different area of the aquarium where the lighting conditions and water movement may be more suitable.

For **How to Maximise the Efficiency of Fluorescent Lighting** and for useful **Lighting Tips** please refer to NAN #1.



Marine Fish Aquaria

- Bright Cool Light
- Higher Blue Spectrum
- Red Spectrum for Certain Fish (Red, Yellow, Orange)
- High Color Temperature

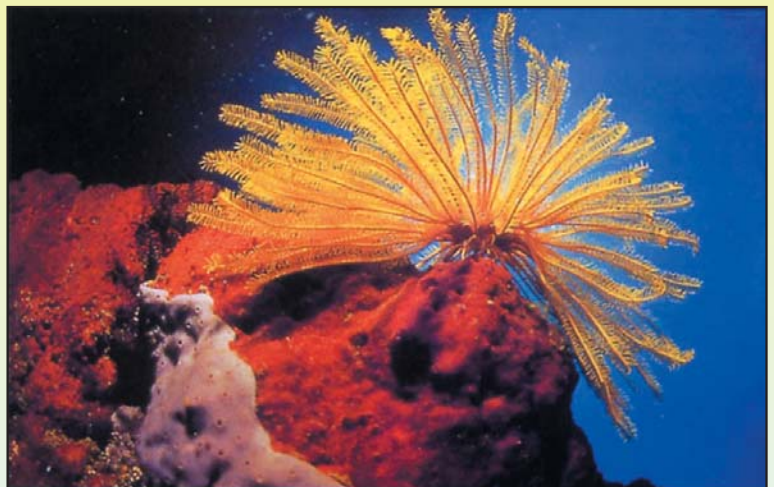
Not all marine aquaria contain corals and can include a mixture of other invertebrates and fish. In the case of fish only, the aesthetic aspect of lighting requires a combination of 2 bulbs to accentuate the variety of pigments found in many commonly kept marine fish.

2 watts per US gallon is adequate for this type of aquarium. 2-3 watts of light per gallon of water are required for proper fish presentation and good plant growth.

Marine Reef Aquaria

- High Light Intensity
- Higher Blue Spectrum
- Higher Color Temperature

Reef systems can vary in content. Aquaria containing predominantly soft corals and invertebrates can function effectively with lower light levels than systems including stony corals. Mushroom corals frequently open effectively in lower light conditions. Placing them at the bottom of reef structures is generally recommended. Certain species of green marine algae are desirable in marine aquaria. They contain pigments very similar to those of other plants and are very attractively displayed using Life-Glo bulbs. Systems containing varieties of hard corals require intense lighting with much emphasis on higher color temperatures. A minimum of 4 watts per US gallon is recommended for this type of aquarium.



New practical products

New Cycle

New Improved Cycle

New Cycle contains more bacteria responsible for the oxidation of ammonia and nitrates. This allows for greater stability and faster activation. Species of heterotrophic bacteria (*Bacillus* sp.) provide essential balance between autotrophic and heterotrophic bacteria.

Cycle contains thousands of tiny particles in suspension

These flocs are the visual proof of the incredible increase of the nitrifying bacteria. The concentration of these beneficial bacteria is so high that it is now possible to see them without magnification. A single one of these little flocs observed with a microscope reveals millions of bacteria cysts which need only to be added to an aquarium to become activated.



More nitrifiers

Each floc contained in New Cycle is packed with bacteria sealed in a protective bio film. The concentration of nitrifying bacteria is significantly higher in comparison to other similar products.

No refrigeration is required

Because the bacteria cysts found in the micro flocs rapidly sink to the bottom of the container they are protected from oxygen that would enter the bottle. The stabilized environment prevents any activity, even at room temperature, serving to maintain the integrity of the product.

Cycle is the most active product on the market. Laboratory tests show its capacity to oxidize more than 10 ppm (mg/L) of ammonia per day.

New Cycle is fully activated immediately. Ammonia at a concentration of 100 ppm (mg/L) is consumed in 10 days. Fish can be introduced at start-up without delay.

New Canopies

Light Glo Canopies

Aquarium canopies represent a conventional method of illuminating and protecting an aquarium. The new Light Glo canopy takes a step beyond with innovative design and numerous practical, useful features. The sleek profile blends well with any décor and provides function as well.

This new line of canopies consists of seven different sizes ranging from 19.68" to 47.24" in length, including four that feature dual fluorescent lighting (see blow). The two largest sizes are available as double lighting units only and come equipped with efficient electronic ballasts. All but the smallest size offer a built in automatic feeder slot, located on the front lid for easy and convenient access.

Other additional advantages include a built in frame with anti-capillary lip to eliminate humidity and condensation. Disposable white reflectors are employed to ensure optimal light reflection and are inexpensively and easily replaced if necessary. Water-proof light bulb sockets (T-8 bulbs only) eliminate the need for light reducing lenses and ensure safe isolation of electrical connections. The attractive design not only provides aesthetic enhancement but increases additional under-hood air volume, contributing to beneficial gas exchange.

The new Light Glo canopies are the perfect accent to an attractive display aquarium and benefit both aquarium inhabitants and owners.



Light-Glo sizes available

- 19.68" x 9.84" 23.62" x 11.81"
- 23.62" x 13.77" 31.49" x 11.81"
- 31.49" x 13.77" 39.37" x 15.74"
- 47.24" x 15.74"



New Foods

NFM Beta Food

Siamese fighting fish (*Betta splendens*) are well known and appreciated for their graceful fins and rich colors. These ideal aquarium fish have rather small stomachs and benefit from a diet enriched with ingredients that promote superior coloration and condition.

Nutrafin Max Beta Food incorporates R.A.P. (Red Algae Pigment), a natural ingredient rich in astaxanthin. This potent pigment accelerates color development while significantly enhancing disease resistance and improving fish condition. Bettas will also appreciate

the inclusion of freeze dried Blood-worms. High in protein, they provide a naturally palatable nutrition source. Easily digested, the combination of a floating freeze-dried food and flakes provides an excellent basic diet for bettas.



Plant Food

Plant Gro NPK

It is commonly understood that regular additions of micro-nutrient supplements, such as Nutrafin's Plant Gro Iron Enriched are essential for proper growth and condition of aquatic plants. In fact, the major nutrients Nitrogen (Nitrate, NO₃), Phosphate (PO₄) and Potassium (K) are of great importance for optimal condition and growth of aquatic plants. Nutrafin NPK Aquatic Plant Fertilizer delivers these key major nutrients in three convenient sizes, 118ml (4 oz.), 236 ml (8oz.), and 473 ml (16oz.).

It is recommended to use this product in aquariums that are densely planted and feature limited fish populations. Nutrafin's NPK is often required for heavily planted aquariums equipped with high intensity lighting and CO₂ injection. Nutrafin Test kits for Phosphate and Nitrate are available for determining existing levels while also accurately revealing when to re-dose with NPK.



New in the trade

Fishes

New characins

Characins belong to the order Characiformes. They are found only in Africa (about 250 species) and in the Americas from Texas to Argentina/Chile (more than 1500 species). They have occupied almost every imaginable ecological niche, whether it be mountain streams (up to 3500 m above sea level), waterfalls, rapids, ponds, lakes, and rivers of every kind, even subterranean rivers and caves. There are species that live almost exclusively at the water's surface, on the bottom, or even buried in the sand and/or in submerged tree-trunks – in the bark! But the majority live in mid-water, for example, the neon tetra (see NAN #1), the Congo tetra, the silvertip, and the glowlight. The species most often kept in the aquarium hobby are undemanding and suitable even for beginners. Many are shoaling fishes and should be kept as such. They are the most commonly purchased fishes of all – which itself speaks for their popularity. Unfortunately, new species are no longer common in the hobby. But we are nevertheless able to bring you four of these jewels that are either completely new or rare:

1. The dwarf neon – newly discovered *Tytocharax sp. aff. tambopatensis*



In 2002 Heiko Bleher collected 13 specimens of this species in an unexplored part of Bolivia, in tiny watercourses at about 3000 ft above sea level. They have subsequently produced thousands of youngsters. The barely 0.4" long adults are brilliant light blue little fishes with a yellowish tail. These dainty little fishes are problem-free and ideal, in a shoal (of appropriate size), for any community aquarium, large or small. They will rapidly win the hearts of aquarists as they are a sight for sore eyes. (The photo above doesn't do justice to their brilliant colors.) They are very adaptable and can be kept at a neutral pH (but tolerate up to pH 8), with a total hardness of 5 - 20 °dGH and a temperature between 75 and 85 °F. A perfect shoaling fish.



Photo by N. Khardina

2. The red-banded headstander *Synptolaemus cingulatus*

This characin, which is found only among rocks and large stones – often hovering vertically head-down and feeding on *Aufwuchs* in 3-16 feet of depth – is not a new import but a very uncommon one. And it certainly isn't a fish for beginners. Back in the 1950s Bleher discovered this fish while diving in the upper Rio Xingu, and subsequently in the Iriri (a tributary of the Xingu). These fishes are horrendously difficult to collect as they live solitary – or at most in twos and threes – in strong currents, often rapids. There are no known reports of successful breeding. These fishes require a 36 inch tank with numerous large stones, white sand, bogwood, and a strong current. Water parameters should be pH 6-7, conductivity below 50µS/cm (1-2 °dGH), and a temperature between 76 and 82°F. Adults measure 3.5 to 4.5" and are a fantastic eye-catcher for the biotope aquarium. It is not regularly imported.



Photo by N. Khardina

3. The new dream characin

New discovery – identity unknown
This fabulous fish was first discovered by Heiko Bleher in August 2002, in rocky crevices in six feet of depth in the Rio Iriri. This dream tetra has bright orange-red eyes, orange pectoral, anal, caudal, and dorsal fins, a longitudinal band of the same color (sometime bright silver as above), and a velvet black lower body – so striking you can hardly miss it. Certainly worth breeding, although this hasn't yet been achieved.



4. The unique Cameroon tetra *Phenacogrammus major*

Did you ever see such an adipose fin? Only this species from southern Cameroon has anything of the sort. An entirely new tetra experience for the larger aquarium. Easy to keep at a pH of 6-7.5, a total hardness of 1-15 °dGH, and a temperature of 79-85°F. And if possible in small groups of 3-8.

Plants

New swordplants

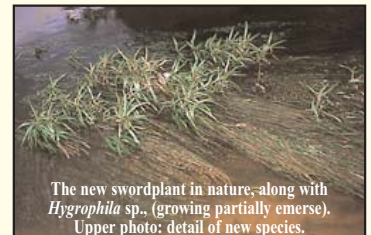
In NAN #1 this spot was devoted to new hybrids among the swordplants, some of the most popular aquarium plants (see also this issue, page 7). This time we bring you a totally new discovery, an *Echinodorus* species first discovered recently by Heiko Bleher on the border between Brazil and Guyana. Bleher was able to find the species only in running water, growing submerge (during both dry and rainy seasons), often sympatric with a long-leaved *Hygrophila* species. Although most members of the genus have an emerse form, none is as yet known for this species. So maybe it is a true aquatic plant?



Bleher at the type locality Photo by N. Khardina



It could be the true *E. intermedius*, never yet imported, although the type locality for that species is in the state of Maranhão, some 1550 miles to the southwest. Whatever it may be, this swordplant will certainly soon be seen in aquaria worldwide. Specimens with about 100 leaves are not unusual in the wild. Its elegant form, with its long, narrow, crinkly leaves, will be an ornament to any aquarium, just like the most popular species of the genus, *E. bleheri*. The water parameters were at pH 5.85; conductivity 8 µS/cm; temperature 80°F (air 86°F - at 5.30PM).



The new swordplant in nature, along with *Hygrophila* sp., (growing partially emerse). Upper photo: detail of new species.

Biotope aquaria: for guppies

The Guppy Aquarium

Every beginner in the aquarium hobby should start with guppies – but experienced aquarists can likewise find great pleasure in these swimming rainbows. But everyone should first of all ask themselves, “Do I want an aquarium with a population of wild-type guppies, or would I prefer a “tapestry” of the larger cultivated forms – or a mixture of both types?” The wild forms are more active. It is easier to observe their courtship, and they breed more rapidly. On the other hand, the “fancy” types give the aquarium more color.

Once that is decided – there is plenty of advice in the literature and on the Internet (eg at www.altavista.com search for: Guppies, “*poecilia reticulata*”) – then you can decide which colors you like best and visit a high-quality dealer to obtain healthy stock – never buy guppies that can’t swim properly, or from tanks where there are fish lying on their sides, wobbling around, or even dead. But, before you buy any fishes, you must first set up your aquarium.

Setting up the aquarium: When buying an aquarium, always remember that the larger the aquarium the more attractive it will look, and the more space the fishes will have for swimming. But a 30” (long) x 12-14” (wide/deep – the wider the better where the decor is concerned) will suffice in this case.

If possible, obtain some fine white sand or light quartz gravel for the substrate – about a 2” layer is required, a little deeper at the back. First rinse your new tank well with warm water – no soap or detergent! – and check whether the sand has been well washed (regardless of what it claims on the packing). For decor we recommend a few nice pieces of bogwood and stones, and a good selection of attractive aquatic plants. Particularly good (and biotope correct)

choices include *Cabomba species* and the Guiana willowleaf, *Hygrophila guianensis* (small-leaved willowleaf, *H. polysperma*, will do instead). The dwarf chain sword (*Echinodorus tenellus*) is ideal for the foreground; it will form a carpet above which the fishes will be seen to best effect. Alternatively you can use the somewhat larger dwarf swordplant *E. quadricostatus* (see below, left-hand biotope). And, finally, one to three specimens of the larger swordplant *E. horizontalis* or *E. osiris* (as in the left-hand corner of the biotope below left) which is highly decorative. You can also plant lots of *Ludwigia repens* (as in the biotope below right) – again very attractive decoration.

Put in the sand, wood, and rocks, then half-fill the aquarium with water before planting. Finally fill up the aquarium. Always bear in mind that guppies feel particularly happy and show their best colors with good plant growth as cover (see photos below and on page 7). So don’t stint on the plants.

If the aquarium purchased doesn’t include a built-in filter, then you can add either an internal or an external. The filter should be filled with biological media, and if you use a biological starter (eg Cycle from Hagen) then you can add your fishes a day later.

Fishes for the aquarium: As already mentioned, choose the guppies you like. As a rule of thumb you can add 1” of fish per 1 gal. (U.S.) of aquarium water, ie a 16 gal. (U.S.) aquarium will house 16” of fish or 16 male guppies at 1” (average adult body length) apiece. Note that this rule is based on the body length (= Standard Length, SL), ie not including the tail. If you want to keep other fishes with your guppies, then we recommend other livebearers of the family Poeciliidae, eg green or red swordtails (*Xiphophorus helleri*) and

platies (*Xiphophorus maculatus*), which are available in numerous color varieties at any good aquarium store. Other good tank-mates include bristlenose catfishes such as *Ancistrus hoplogenys* and *A. temminckii*. These “suckermouth cats” remain small and eat unsightly algae. They do not in fact occur in the natural habitat, where there are instead other suckermouths, of the genus *Hypostomus*, but the latter are not recommended as they grow too large and may nibble the plants. Another catfish that does occur in the biotope is the bronze catfish (*Corydoras aeneus*), ideal for sandy substrates. If you decide to keep these then make sure you have a small group and that you leave an area of open sand as they like to “nose around” in the substrate for small organisms.

When you buy your fishes don’t forget that the trade almost always offers cultivated forms of guppies, swordtails, and platies, and these, of course, are not found in nature. So, if you want to be “biotope correct” you will have to hunt for wild fish or captive-bred wild forms. They are available, and then you can proudly display an aquatic microcosm representing Venezuela, Trinidad, or even Mexico in your home. And you will certainly learn more than from the cultivated forms.

General: Maintain the water temperature at 75-80°F and light the aquarium for 10-12 hours each day (see also NAN #1 under: *Do it Yourself: Lighting*). The water should be slightly alkaline, pH values below 7 are unnecessary. Let the biological filter media do their job and change some of the water regularly.

The only other thing these little splashes of color need for successful maintenance and regular breeding is food. And you will have hands-on experience of evolution in your biotope-in-miniature.



The story continues.....

It is difficult to say whether it was the Sumerians, Assyrians, Chinese, or Romans (see NAN #1) who first kept fishes in containers or ponds (before glass - and hence aquaria - existed) for decoration, display, or other purposes. But we do know that in China, as long ago as about 2000 BC, carp eggs were artificially incubated and silkworms were used to rear the young. This is detailed in a book by Fan Lai dating from 475 BC. Lai wrote that silkworm culture began in 2698 BC and that right from the start the faeces and pupae of the silkworms were an important fish food. For this reason the fish ponds were located below the silkworm colonies. These records may be the proof that the Chinese were the first to culture fish.

Even so, we must not forget the Greeks. No less a personage than Aristotle (384-322 BC) mentioned fishes in his works of *On Nature* and described 116 species. *Inter alia* he tells of the marine electric ray *Torpedo marmorata*, feared on account of its 50 volt electric discharge. But it was also kept in ponds as that discharge could be used to treat migraine. Aristotle, who published thousands of pages - more than 2,500 have survived the ravages of time - dedicated over one third of his work to nature. Interestingly he mentions therein that there had been a succession of Greek thinkers (known as the Ionians) interested in nature some 300 years before his own time, and cites as the first Thales, who stated (about 600 BC) "...that everything began with water, and everything may be composed of water today"! Now, our fishes definitely originated in water - just as all other life forms trace their origin to that element. And Thales realised this some 2,500 years before Darwin... In addition, Aristotle was very far-sighted and also wrote "...just as the eyesight of the night owl fades at sunrise, thus our understanding of nature is increasingly fading..." - it was ever thus and today is much worse than ever. During the 20th century alone more than 75% of the Earth's primary forest was destroyed, and millions of aquatic life forms perished along with the trees! What would Aristotle say about that if he was alive today? Perhaps, "...the eyesight of the surviving owls still fades at sunrise, but we have become totally blind to nature...". And the more so following the 2002 Earth Summit in Johannesburg, South Africa.

But back to China. There are reports that red-coloured goldfish were being bred

there as early as the 4th century BC. It is known for certain that Huan Ch'ung (328-384), who lived at the time of the Chin Dynasty, saw wild fishes (*Carassius auratus* - the ancestral form of the goldfish) with red scales in a lake on Mount Lu. We know that at the time of the T'ang Dynasty (618-907) every high official wore a goldfish badge. And that the first undisputed evidence of maintenance (and therefore breeding) of goldfish in captivity occurred during the Sung Dynasty (960-1127). In the *Poem on the Pagoda of the Six Harmonies*, written around 1030, the author recalls standing on a pine bridge and waiting for the golden *Chi* (goldfish). The pagoda was built near Hangchow in 971 and repeatedly restored thereafter. But whether golden *Chi* still



Above: A bowl from the Ming Dynasty (1368-1644) with goldfishes.

Below right: The fish, "Yu", was the basis of one of the earliest Chinese characters, dating from the 11-13th centuries BC. During the Han period (202 BC - 220 AD) these characters were refined into graphic symbols, with more than 49,000 signs that continue in use today.

swim there..... who knows?

It was probably Governor Ting Yen-tsan who established the first "ornamental fish pond" for cultivated forms of goldfish in Kiahsing, and subsequently in Hangchow and Nanping. At this time golden *Chi* were held in high regard in China, but keeping and cultivating these divine creatures was reserved for the priests. Not until 1163 were private citizens allowed to keep these revered fishes. Even so, there were still no aquaria.

It should be noted that in Europe the first long-distance transportation of fishes took place in the 6th century AD. Cassiodorus (490-585) wrote how live carp were sent from the Danube to Ravenna in Italy. Live, because everything had to be absolutely fresh for the table of Theodoric, King of the Goths. But it was to be almost a thousand years before there was any men-

tion of "ornamental fishes" in Europe. The first book on nature, including fishes, by the German Konrad von Megenberg (1309-1378) appeared in 1478, and was the most important work on the subject during the Middle Ages. The Swiss Conrad Gesner (1515-1565) - who sadly died prematurely of the plague - published four volumes with more than 4500 pages in the period 1554-58. In that on fishes we can read about the carp (*Cyprinus carpio*). The pages of detailed description state "Carp are useful fishes that are kept in ponds and ditches by some of the populace in various villages; they are used for food and also bred for sale, which brings in large amounts of money." So carp were already being kept.

At the same time (1554) another book appeared, by the famous Guillaume Rondolet, Professor of Medicine at the University of Montpellier. In it he wrote of how his wife had kept a fish alive for three years in a glass. (Was this the first aquarium?) Unfortunately the Frenchman did not say what sort of fish it was - certainly not a goldfish.

Meanwhile in the Far East the culture of the first "ornamental fishes" was well under way, and by 1547 a permanent fixture among the high-ranking populace. Nobles and mandarins kept these pieces of gold in splendid - sometimes fabulous - bowls of precious jade. The man-in-the-street kept them in earthenware tubs, vats, and bowls. These containers were very popular as goldfish would even breed in them. Perhaps the first author to write extensively on these jewels and

breeding them was Chang Ch'ien (1577-1643), and his work was undoubtedly the first ever book on ornamental fish.

Towards the end of the Ming Dynasty (1644) every Chinese household had a small (or large) goldfish basin. This was the centrepiece of the dwelling and brought people much pleasure, acting as a source of interest and entertainment. The goldfish had risen to the status of the absolute darling of the Chinese people, and already the first cultivated forms were appearing, such as the bubble-eye, the celestial, and the twin-tailed lionhead.

But we will tell you about that, and the first glass aquarium to appear on the world scene, in the next issue of NAN. Until then...



yu (Fish)

Nutrafin news

Nutrafin presents world first - Heiko Bleher's biotope stand at the Zierfische & Aquarium 2001, German's largest exhibition

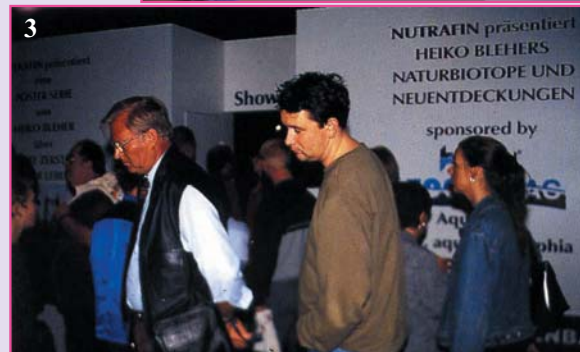
Once again Nobert Zajac, the organizer, enthusiastically plied his art in Duisburg at the fifth Zierfische & Aquarium exhibition, by now a German "institution" renowned worldwide. More than 100 exhibitors from 6 nations displaying the most beautiful aquaria and other exhibits in the approximately 64,500 square feet of the Kraftzentralehalle (an industrial monument) – an unsurpassable show. With Nutrafin literally at the forefront – just inside the entrance.

Thanks to the support of the Hagen company, Heiko Bleher had planned something unique as the main feature: a biotope display such as the world had never seen before. A room some 24.5 x 21 feet and 8.75 feet high, with a single entrance, white on the outside and pitch black inside, so that the visitor would be entering another world. The world of the aquatic biotope. It was Bleher's desire to present the fishes

exactly as he had seen them time and again in nature, that is, in the environment where they live and thrive.

In the 9 specially manufactured aquaria - 2 of about 625 gallons, 6 of 140 gallons, and a small one – he portrayed specific habitats from 4 continents. One of the large tanks simulated a section of the lower Rio Juruá where large stingrays (*Potamotrygon* spp.) live together with giant arowanas (*Osteoglossum bicirrhosum*) and huge red-tailed catfishes (*Phractocephalus hemiliopterus*) – fishes that require tank of this size, with plenty of sand and a few large plants. The second large aquarium was also an authentic replica of an underwater habitat, in this case in the Lago Nhamundá (also in Brazil - see below). There were also biotopes from New Guinea – a crater lake and a karst spring; a section of the San Antonio River in Texas; the Iténez (known as the Guaporé in Brazil) at Vila Bela, the river with the greatest wealth of aquatic plants; an Assam biotope (India); and a special exhibit of two dwarf snakeheads living together happily among the vegetation (photo below).

During the five days of the exhibition more than 54,000 people thronged the hall to marvel at the futuristic aquarium show. The biotope display was such a success that further stagings are planned, worldwide.



Photos 1-2): On the 3 outer walls of the biotope stand Nutrafin presented photos of the inexorable destruction of aquatic habitats together with fish species that are extinct or endangered in nature. 3) Visitors "stormed" the biotope stand. 4) The interior was black and the aquaria lit from in front (as well as the Hagen lighting tubes above the tanks).

5) Dwarf snakeheads were exhibited in appropriate surroundings and 6) Discus as they live in the Lago Nhamundá – all just as in nature.

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