NUTRAFIN®

Aquatic News

Issue #1

2,50 US$/3,50 Can$/2,50 Euro/2 £/5 Aus$

Issue #1 - 2002

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Canada: **Rolf C. Hagen Inc.**, Montreal, QC H4R 1E8
U.K.: **Rolf C. Hagen (U.K.) Ltd.**, Castleford, W. Yorkshire WF10 5QH

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Editorial

Dear Reader

I am honoured, and not a little proud, to bring you this, the first issue of **NUTRAFIN** *Aquatic News. You may perhaps be wondering. "Why yet another magazine about fishes and plants, about the aquarium and terrarium hobbies? And editions in several languages, at that. There are already so many!" But just consider: this project - the creation and production of this periodical, the selection of material to interest people of all ages, from 6 to 120, both those who already enjoy and those who are just beginning in this, the best hobby in the world - is the brainchild of no less a personage than* ***Rolf C. Hagen.***

Rolf, like my mother and her father before her, is one of the leading lights of the modern aquarium hobby. We have a lot in common, and for that reason alone I was attracted by the prospect of producing something top quality and timeless for millions of people. Something that would offer them all the opportunity to learn more about the natural world, especially aquatic lifeforms, many of which are today seriously endangered in their natural habitats. In **NUTRAFIN** *Aquatic News (NAN), Hagen hope to bring you an informative, educational, multi-faceted, and practical publication whose quality is independent of price and advertising - there will be only a few informative product features, far fewer than in other aquatic magazines.*

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Contents

Editorial

The "thread" running through each issue will, it is hoped, guide the modern aquarium hobby into the new millennium.

Important themes include the ecology of animals in the wild, their introduction into and history in our hobby, and the provision of suitable biotopes in captivity. In addition I will look back over my own experiences of the natural world and share with you my studies of plants and animals during more than 700 expeditions across six continents. I will endeavour to share with you half a century of practical experience, and to show you that the usual perception of how many (but not all) aquarium fishes live is quite different to the reality. I will try to demonstrate how simple it is to maintain the inhabitants of the wonderful aquatic world and enjoy them to the full, providing tips and ideas on new equipment, foods, and medications, as well as reviewing what is new in the world of aquaria, terraria, and ponds. Nature has always been - and still is - my best teacher. And you too can learn more from a little piece of Nature in your home than from any website, TV program, or other media source. A living aquarium, terrarium, or pond is a school in itself, and my mission will always be to encourage the ownership of such a piece of Nature. Try it for yourself, it will be well worth the effort. Always remember, "living water" is the most important feature of our Planet Earth.

Yours aquatically,
Heiko Bleher

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Lithos: Fotlito '73, Borghetto Lod. (LO), Italy
Layout: Rossella Bulla & Heiko Bleher
Copy editor: Heiko Bleher
Printer: Grafiche Dessì s.r.l., Italy
Photos: Aquapress archives unless otherwise stated
NAN ***is printed on paper produced using chlorine-free bleach***

Fishes in nature and in the aquarium

In 1934 the Frenchman August Rabaut, hunting for caimans and butterflies in the Amazon jungle near the Brazilian town of Tabatinga, discovered and collected a tiny fish whose coloration resembled the beautiful iridescent Morpho butterflies. The posterior part of its body was a bright carmine red, and the overall effect of its colours reminiscent of a neon light. Rabaut brought a few of these fishes back to France alive - one of the most noteworthy events in the history of the aquarium hobby.

The history of the neon and cardinal tetras

by Heiko Bleher

The neon tetra

In Paris the little neon fishes created a sensation, and were soon off on their travels again. They passed from the hands of J. S. Neel of the company Lepant to Mr Griem of Aquarium Hamburg in Germany, who at that time was entertaining a guest from the USA, Fred Cochu. Fred managed to "scrounge" six live specimens, and took them back to America on the 144th (and last) flight of the airship *Hindenburg* (its next flight ended in the catastrophe at Lakehurst, when the *Hindenburg* exploded and most its passengers lost their lives). Although Fred arrived safely, only one of the neons survived the trip. It was named "Lucky Lindy", as, like Charles Lindbergh, it was the first of its species to cross the Atlantic.

The dead neons were given to the internationally well-known publisher William T. Innes in Philadelphia, who in turn passed some of them to the ichthyologist George S. Myers, who had studied under the famous Carl Eigenmann and was already a recognised authority on fishes, amphibians, and reptiles. On 3rd July1936, Myers published the original description of this species in the *Proceedings of the Biological Society of Washington* under the name *Hyphessobrycon innesi,* thus honouring a man who may have had nothing to do with the discovery of the fish, but nevertheless deserves our thanks for his services to the aquarium hobby.

By now Rabaut was aware that he had stumbled across something valuable, and in 1936 he returned to Brazil in order to collect neon tetras commercially. He took his haul, the first shipment of about 4000 specimens, to New York. William Innes had recommended Fred Cochu of Paramount Aquarium, and both were waiting for Rabaut when he arrived. This represented a sensational story for Innes' magazine, and Cochu wanted the neons. He offered US$ 4000 for them - an incredibly large sum in those days. The first neons went on sale in the retail trade at US$ 10 apiece, and all were sold. It took Fred an exciting week to get the money together to pay Rabaut on time, and he now entered into a contract with him to collect these fishes for Paramount Aquarium. Fred thought that only Rabaut knew the original source of the neons and was reluctant to reveal it. But in Germany too the neon "gold rush" was afoot, and a team from Aquarium Hamburg, including Hans Pietch and W. Praetorius, was already on its way to Benjamin Constant (Tabatinga). On their journey back down the Amazon with the first large consignment of neons they stopped in Manaus, mooring close to Rabaut's boat waiting to travel upriver. They spotted the empty cans that were the only practicable containers for transporting fishes in those days, and threw them all overboard. Aquarium Hamburg thus achieved a head start in the neon-collecting race.

At this time Innes and Myers cited the source of the neon tetra as "probably near Iquitos", while others said it was Tabatinga. Nowadays, however, it is known that the species has special biotope requirements. The species is found primarily in Peru, in the so-called *quebradas,* small clear-water streams with a significant blackwater component, where the pH varies between 5.0 and 6.0 and the temperature between 75 and 84°F, and the total hardness is less than 1.0°dGH. Its natural distribution is limited to the upper part of the Amazon drainage, the lower to the middle Ucayali, near Iquitos (Rio Nanay, Rio Maniqui), and near Saõ Paulo in Brazil; it is also reputed to occur in Rio Putumayo and elsewhere.

The cardinal tetra *(Paracheirodon axelrodi),* well acclimated wild caught specimens from the upper Rio Negro. Photos: Aquapress/Burkard Kahl & Heiko Bleher.

Left: a wild-caught neon tetra *(Paracheirodon innesi)* from the Nanay drainage in Peru, a few weeks after acclimatisation. Above: captive-bred neon tetras from Hong Kong. Note that the colours are not as intense as in the wild-caught specimens.

The cardinal tetra

Just as the neon tetra was a sensation before World War II, in the same way the cardinal was a post-war sensation. Round about 1950 it was rumoured that a new "neon" had been discovered somewhere in the Amazon basin. Harald Sioli, the pioneer of limnological research in Amazonia, was the first white man to see this fish, while working in the upper course of the Rio Negro in September 1952, but thought he was dealing with the neon tetra. A Panair do Brasil pilot, Captain Malm, who was also a fish enthusiast, learnt about this, and towards the end of 1952 commissioned some indians to collect the first live cardinals for him. These were a hit with aquarists in Saõ Paulo, and so Captain Malm organised further collections of *cardinais* (as the Brazilians now call them) whenever he had an opportunity during his adventurous DC3 flights over the jungle. Towards the end of 1953, Amanda Bleher saw some of these "red neons" (as they are known in Germany) in Saõ Paulo during her intrepid expedition across South America in search of discus, and purchased a few specimens, the first cardinals to be exported. The flight to Germany in March 1954 took 37 hours, and unfortunately all the fishes were dead on arrival. And others, which she later transported in fish cans, died in a tragic bus accident which wiped out her entire collection of thousands of new fishes, plants, insects, and reptiles.

This jewel of a fish apparently first came to the notice of people in the USA in 1955/56, when the new species was simultaneously and independently described by prominent American ichthyologists in two different journals - on the one hand by L. P. Schultz of the Smithsonian Institution, and on the other by George S. Myers and Stanley Weitzman of the University of Stanford. This meant that two different scientific names were published, namely *Cheirodon axelrodi* and *Hyphessobrycon cardinalis,* reflecting the views of the two groups of authors regarding its generic placement. This led to an unfortunate dispute, eventually settled in favour of Schultz, and thus the cardinal, like the neon, was named in honour of a man who had nothing to do with its discovery.

The newly-described cardinal was even more colourful than its cousin, as the red coloration extended almost the entire length of the lower half of its body. But commercial collection and export did not begin until the end of the 1950s, when the Austrian animal collector Hans Willy Schwartz, who had recently helped Walt Disney with his film on the black panther, recognised the commercial potential of this fish, selling the first 10,000 at US$ 5 apiece to a Chinese named Louis Chung in Georgetown, Guyana, in 1959. Within 10 years the cardinal had become the most popular of all aquarium fishes, and today, almost 50 years after it was first discovered, it is still number one, the most widely sold aquarium fish worldwide. Every year more than 20 million cardinals are captured during the officially regulated collecting season (August to April), representing more than 50% of the total fish exports from Brazil. But unfortunately the retail price is now only a fraction of what it used to be. Some unscrupulous importers and transshippers sell them on only a few hours after importation or in unopened boxes at the airport, for "peanuts". When such sensitive fishes, originating from extreme water conditions where the pH fluctuates between 3.8 and 4.8 and the temperature between 74.5 and 83.5 °F, and where the total hardness is so small as to be virtually unmeasurable, are denied the acclimatisation period required in order to adapt to our quite different water parameters, their chance of survival is nil.

Some ecologists are concerned that the species may be endangered by overfishing, but this is unlikely as this is an annual fish in the wild. After its breeding period - towards the end of the dry season - it dies, usually from lack of food, although in captivity it can live much longer if treated correctly (a friend has had cardinals survive for more than 10 years in his aquarium, during which time he changed the water only once). Moreover, collecting cardinals is illegal during the breeding season and when the young are growing on, and nowadays both this species and the neon tetra are bred in large numbers in Europe and Asia.

Footnote: see p. 12 for details of setting up an aquarium for these tetras.

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 members of the* Cabomba *genus, which has a pan-American distribution and is particularly suited for aquaria housing neons, cardinals, and other small to medium-sized South American characins.

The red cabomba, *Cabomba furcata* (above) – formerly sold as *C. piauhyensis* in the trade - has a lovely violet flower (right). In nature this plant is found in temporary, still, and slow-flowing waters, where the water is almost invariably very soft (less than 1 °dGH) and the pH lies between 3.8 and 6.5 (depending on the location and the time of year). The temperature varies between 66 and 95 °F. Photos: Aquapress/Burkard Kahl.

The history of aquarium plants

We cannot look at the history of aquarium plants without mentioning Adolf Kiel of Germany, the "father of aquatic plants" as he is still known today. In 1893 he was the first person in Germany to include plants in the aquarium, prior to which our aquaria were rarely more elaborate than a glass bowl containing a goldfish. The aquarium hobby was still in its infancy, and Adolf Kiel wanted to change that. As a child he collected anything that grew in rivers and lakes all over central Europe, cultivating these plants and thus playing a major part in the development of the hobby. It was not long before he had 32 glasshouses in Frankfurt am Main, all devoted to the culture of aquatic plants and fishes. Around 1900 he was the owner of the largest *Wasserpflanzengärtnerei* ("aquatic plant nursery", his own name for it) in the world. Soon aquatic plants - and, of course, aquaria - were all the rage.

Nowadays we know that hardly any plants live a permanently aquatic life in nature. Almost all species that grow in water also spend part of their lives growing emerse, or have a rest period. So why am I telling you this? Simply because I want you to realise that "aquatic" plants are rarely exclusively aquatic, and to bear that in mind when buying them - and, of course, when cultivating them. In the final analysis they are like other plants: you need to understand them and their natural requirements in order to enjoy them to the fullest. And remember, it is easy to create a glorious underwater garden, but this will not be compatible with all fishes. Our section on biotope aquaria will regularly go into this in greater detail.

The genus *Cabomba*

The following four species are currently recognised as valid; all are aquatic and look particularly attractive planted in clumps.

1. Green cabomba, *Cabomba aquatica,* is found only in South America. It requires bright light and a temperature between 73,5 and 82,5°F. As well as the common green form there is a reddish variety, whose culture is more difficult, known as ***"C. schwartzii".*** This form is usually found in extremely acid blackwaters (pH 3.8 to 5.3), often in the same localities (Rio Negro region) as the cardinal tetra, but is less suitable than the normal form for the cardinal aquarium, as acclimated cardinals can be kept in almost neutral water where the reddish variety rarely thrives. Hence ***C. furcata*** (see lefthand page) is a better choice where reddish colour is desired.

2. *Cabomba caroliniana* was described from the state of Carolina in the USA, but its distribution extends south to the south-east of South America. As well as the form normally seen in the trade (see photo and caption below), there are also varieties var. ***flavida*** and var. ***pulcherrima,*** plus a "silver-green" form, which are are rarely seen.

3. Red cabomba, *Cabomba furcata,* is found in tropical South America and here and there in Central America (see photo and caption, lefthand page).

4. *Cabomba palaeformis* comes from Central America, and is the easiest species to cultivate in the aquarium. It readily tolerates medium hard to hard water with a pH of up to 7.5 and does well under moderate light.

In general, ***Cabomba*** species grow well given adequate light, not too strong a current, ample nutrients (and CO_2-fertilisation), and water that is not too hard and has a neutral to slightly acid pH. Moreover they can be pruned short and new plants grown from cuttings, if desired. They are ideal for tanks containing small to medium-sized shoals of neotropical characins and numerous species of small catfishes and dwarf cichlids.

Cabomba caroliniana **(above). Unlike *C. furcata,* this species is found in fast-flowing as well as still water. In addition, it is sometimes found in rather harder water (up to 5° dGH) and at pH values of 5.5 to 7.0. In the natural habitat the temperature can drop as low 62,5 °F and rise to 82,5 °F. In other words, it is more tolerant than *C. furcata.* On the left is the flower of *Cabomba caroliniana* var. *caroliniana* (a total of four different varieties are recognised).**

Photos: Aquapress/Burkard Kahl.

Aquarium Technology: Filtration

New methods of filtration
New Fluval Plus filters - what makes them so special?

*The UK's best-selling internal filters have been redesigned and relaunched. What's the thinking behind the new **Fluval Plus** internal filters?*

The first thing that catches the eye on these new filters is the casing - it looks completely different.

The new filters have been designed with an opaque body as this protects the filter bacteria that break down ammonia and nitrite, from light - it's been proven that they work better in darkness.

The casing also offers a large media space and is designed to ensure that all water is filtered before flowing back into the aquarium.

The filters are assembled quite differently too it seems?

You'll see that the bottom of the filter casing separates easily from the motor too, for easy maintenance, and the larger **Fluval 2, 3,** and **4 Plus** filters simply lift out of their attachment bracket for maintenance.

There's something different about the media in the filter, too?

Yes - the **Fluval Plus** series filters have new styles of media. In the **Fluval 1 Plus** the filter foam has a unique "wavy" design to maximise the surface area available for colonisation by beneficial bacteria - while the new internal casing on the **2, 3,** and **4 Plus** models slides easily out of the filter body and has two standard foam pads for biological and mechanical filtration, plus a bonus - room for one of the specialist replacement media in the range. These include polyester filter pads for extra fine filtering to polish the water in the aquarium (replace these every two weeks), and special carbon filter pads which remove unwanted coloration, dyes, medications, and harmful chemicals. These can be used for up to a week.

Hagen and Fluval have always said that maintenance is important to get the best out of their filters.

Are there new features to make this easier?

Apart from easier access to the media, the stainless steel impeller shaft can be pulled easily and safely from its chamber, making it simple to keep the impeller chamber clean.

Are the new filters still easy to attach to my aquarium?

There's a new style of sucker attachment on the **Fluval Plus 1** - it fixes securely to the side of the aquarium with two suction cups. The **Plus 2, 3,** and **4** models slot into a removable bracket with three suction cups, enabling the body of the filter to be detached from the motor head for easy maintenance. They can also be coupled directly to the frame of the Hagen Tropiquarium series.

The water outlet on these larger models can be angled through 90°.

All the filters can still be used vertically in aquariums or horizontally for reptile tanks, and all **Fluval Plus** models allow the connection of a flexible hose.

What's this yellow indicator on the Fluval Plus 2?

The **Fluval Plus 2, 3,** and **4** range now have the unique **Fluval Plus** clogging indicator. This lets you see at a glance when the media are clogged and require cleaning (which should always be done in tank water, not under the tap).

I can't see the venturi on the filter casing.

On the **Fluval Plus 2, 3,** and **4** range this is supplied with the suckers and other fittings. The same fitting lets you use a venturi to aerate the water or attach a pipe to direct the outflow into another filter or a water feature. In the same bag you'll find an airflow control device to govern the "venturi effect".

THE AQUARIUM HOBBY ON THE INTERNET

First of all, we would like to recommend the home page of the company Rolf C. Hagen at **www.hagen.com,** where you can quickly click - as more than 420.000 people have done in the last year - on everything important in the pet world. You can also learn about who Rolf C. Hagen is, his product range of more than 6000 items, and where they can be purchased; or just ask for product advice. It takes only a click on the appropriate animal icon to access the web pages for birds, dogs, cats, reptiles, amphibians, and, of course, fishes - with a choice of three languages. And there is no annoying banner advertising.

www.petsforum.com is probably the leader as regards to everything to do with pets on the internet. Every day the home page has a summary of the latest pet news worldwide. There are numerous speciality pages - even pets horoscopes! - and you can join forums discussing aquaria/fishes, cats, and dogs, and other animals. A calendar shows events in the pet world around the globe. You can shop in the Aqua Geo Store and others, and with one click under Pet Offices access most American aquarium associations and view their events. The surfer can book tours to visit our aquarium fishes in nature or join the "Project in the Amazon". And so much more...

For aquarium plant lovers there is **www.aquabotanic.com.** This site has a great gallery of beautiful decorated aquaria - although some are inaccurate (especially the discus biotope). There is a beginner's corner on how to grow plants; a plant book library to help with any problems that may occur; information on substrates and fertilizers, lighting, algae control, etc. Under biotopes, some of the suggestions for biotope aquaria bear little relation to the actual biotopes (eg discus - again! - which is as inaccurate as the general African cichlid biotopes), although the southeast Asian and Zaire rapids biotopes are well done. But, all in all it is an very informative site.

Do it Yourself: Lighting

How to Evaluate and Cater for Lighting Requirements

The Hagen fluorescent lighting program has been expanded to include **Glomat 1** (conventional) and **2** (electronic) remote ballasts, in single and double lamp configurations. These efficient units are the ideal solution to multiple bulb and custom lighting installations. Also available are lighting guides for both freshwater and saltwater systems, loaded with helpful tips and guidelines to help you get the most from any lighting system.

Hagen **Glo** fluorescent bulbs provide real lighting for aquariums. There is a bulb for every type of aquarium, providing the ultimate energy source for healthy, lush growth of aquatic plants and corals. Fish and aquarium displays will be presented the way nature intended.

In this article we provide some information on how to evaluate and cater for the lighting requirements of

Freshwater Aquariums

Appropriate lighting for your freshwater aquarium is essential to create and maintain a healthy aquatic environment. Many factors influence the type and quantity of light required:

- size of aquarium
- fish and other aquatic inhabitants
- plant life
- filter media
- aesthetics.

How Much Light Does My Aquarium Require?

In order to achieve appropriate lighting, a general rule is to have a range of 1 to 3 watts of light per gallon of water in your aquarium, subtracting 10% - 15% of the tank volume to account for inner dimensions and water displacement by gravel or other decorations. This formula may vary depending on aquarium contents and fixture limitations. Thus (1 to 3 watts per gallon) - (10% to 15% of tank volume) = adequate lighting range.

Example: 20 gallon Tank

- Contents: Goldfish and plastic plants.
- Light Fixture: Single bulb canopy.
- Recommendation: 1 x 15 watt Aqua-Glo.
- Effect: Attractive presentation of bright goldfish and plastic plant colors.

How to Maximize the Efficiency of Fluorescent Lighting

1. Keep any glass between bulb and water surface free of algae and mineral deposits.
2. Clean the bulb surface weekly (with damp soft sponge) if directly exposed to water surface.
3. If bulbs or lenses accumulate mineral deposits, clean with a mild acid.
4. In situations requiring higher light intensities, it is recommended to line fluorescent fixtures with a reflective material such as aluminum foil.
5. Replace fluorescent tubes annually, for maximum efficiency.
6. Make a note of installation date of fluorescent bulbs.
7. Combine different tubes for certain specialty applications, to maximize spectral representation.
8. Use electronic ballast(s) when possible, for the following reasons:
   - higher frequency operation, resulting in superior bulb performance and visual presentation
   - higher power factor, greater or equal to 0.96
   - longer ballast life
   - increases bulb life
   - greater flexibility, triggers all bulb diameters, T-8, T-10, & T-12 (bulb diameters)
   - greater energy efficiency
   - less heat production: will not affect aquarium temperature
9. Avoid turning lights on and off unnecessarily.

Lighting Tips

1. Most plants require approximately 12 hours per day of light from a fluorescent fixture.
2. The use of Life-Glo fluorescent bulb is highly recommended when lighting fixture limitations result in less than desired light output.
3. Sudden changes in light may stress fish. When turning canopy lights on or off it is beneficial to have room lights on for at least 30 minutes beforehand or afterwards, respectively.
4. Fish fed during the day should be allowed 30 minutes of light before and after feeding.
5. Use timers when possible. Plants and fish will respond better to consistent lighting periods.
6. Plants and fish will adapt to gradual light changes. When changing bulbs in a multiple bulb installation, stagger them 1 to 2 weeks apart.
7. A remote ballast should be mounted in an area where there is adequate ventilation to dissipate heat efficiently. This is especially important in ballast types that generate more heat.
8. Electrical wiring leading to the ballast should always incorporate a drip loop.
9. Consider a GFI (Ground Fault Interrupter) power bar as an inexpensive insurance to avoid unpleasant circumstances surrounding any potential electrical mishaps.

Note: in issue 2 of **NUTRAFIN Aquatic News** *we will provide information on how to evaluate and cater for lighting needs for the saltwater aquarium.*

Lighting tips for a General Freshwater Community Aquarium

- To highlight fish color
- Light containing a plant growth spectrum

General freshwater community aquariums are a common introduction to the aquatic hobby. Fish are usually the main focus, with emphasis on color and hardiness. Aquatic plants often play a secondary role.

It is recommended to select fish and plants that thrive in similar pH and water hardness values. For example, a livebearer community tank containing guppies, swordtails, and platies will do well with plants such as *Vallisneria spiralis* and *Hygrophila difformis.* These fish and plant species enjoy well lit, slightly hard, alkaline conditions.

2 watts of light per gallon of water are required for proper fish presentation and good plant growth.

Lighting tips for a Planted Aquarium

- Simulated natural daylight
- High light output
- Light containing a plant growth spectrum

Planted aquariums are growing in popularity due to the increasing trend of captivating lush aquatic gardens. They are easily achieved with the vast varieties of aquatic plants and support equipment available. Combinations of Hagen fluorescent bulbs will produce a complete spectral output that efficiently stimulates plant growth. Although fish are not the main emphasis, planted aquariums serve to highlight their beauty and natural behavior.

The quantity of light for faster-growing plant species should approach a minimum of 3 watts per gallon. As wattage is increased, more attention to fertilization and CO_2 levels is recommended.

New practical products

New Equipment

New effective accessories

There are many effective accessories that are indispensible for maintaining a proper aquarium environment and essential for proper husbandry of fish and plants. These accessories are generally tools or devices used directly by the aquarium owner or are connected to a main component with the ultimate goal of maintaining a healthy aquarium.

The **Marina Easy Clean Gravel Cleaner** and **Fluval** and **AquaClear Surface Skimmers** are important maintenance tools which all fishkeepers should have. These two items address two critical areas in all aquariums.

The bottom of an aquarium is where waste matter settles and accumulates and is also the site where colonies of beneficial bacteria live (they require oxygen). The surface is an interface where an essential gas exchange takes place. Since oxygen input most commonly takes place at the aquarium surface, any problem, such as surface film, can result in a life-threatening situation for aquarium inhabitants.

Regular water changes are a vital part of effective aquarium management. A standard device used is a gravel washer, which provides the additional benefit of extracting debris from the gravel.

The aquaristic team at Hagen has carefully evaluated this essential function and developed the **Marina Easy Clean Gravel Cleaner.** Loaded with ingenious features, this unique gravel cleaner employs an oval design that provides a comfortable grip and easy access to aquarium corners. It also has a built-in flapper valve for fast, easy, siphon starting and a gravel guard that prevents gravel clogging in both the unit itself and household drains. There is also a ribbed flexible hose connector that is designed to eliminate hosing collapse over the aquarium's top frame. A bucket clip is included to ensure the siphon hosing remains where it belongs. The bucket clip also allows the user to dial in the required flow rate (and accommodates any aquarium volume).

Surface film prevents proper gas exchange in aquariums, resulting in potentially dangerous oxygen deficiency. The **Fluval** and **AquaClear Surface Skimmers** can quickly and easily be adapted to their respective line of filters and to many other filter systems. These units can easily be adjusted with a simple turn of a handle that provides complete and rapid control of surface skimming intensity.

Normal evaporation will not affect performance as the skimming cup responsively adapts to a wide range of changing water levels. With the skimmer installed, a marine aquarium not equipped with a surface overflow would have an economical and effective solution. Saltwater aquariums in particular have a high oxygen requirement due to salinity levels, and especially if compounded with warmer temperatures and organic debris.

Indispensible accessories for excellent water quality and a healthy aquarium, the **Marina Easy Clean Gravel Cleaner** reduces organic substances, and the **Fluval** and **AquaClear Surface Skimmers** promote higher oxygen levels.

New Foods

New colour enhancing flakes

The bright, reflective and alluring colors of tropical fish highlight and accentuate every beautiful aquarium. A number of important factors contribute to bringing out the beauty of aquarium fish. Appropriate lighting conditions, substrate color, water chemistry, and other environmental factors should be adjusted to bring out the maximum attractiveness of any fish.

One common factor is nutrition, regardless of the species of fish being considered.

Nutrafin *max* Color Enhancing Flakes contain a natural ingredient that promotes spectacular colors as well as health and growth in fish.

Nutrafin *max* Color Enhancing Flakes utilize R.A.P. (Red Algae Pigment), a natural ingredient and potent source of astaxanthin. A versatile carotenoid, astaxanthin not only provides fish with rich colors but also supports their immune systems due to its powerful antioxidant properties.

This highly beneficial carotenoid (natural lipid soluble pigment) is generally available to fish in nature only through the food chain. **Nutrafin *max*** employs a natural, concentrated, source of this versatile pigment which is specifically processed to ensure that astaxanthin is readily absorbed by fish.

Plant Food

New Plant Gro Iron Enriched

An important micro-nutrient is iron, which is required at the greatest concentration and is necessary in trace amounts for various metabolic and enzymatic functions.

Tap water added to aquariums may not contain adequate amounts of iron or other micro-nutrients. In fact, iron levels are often nearly zero. New aquariums, especially those populated with dense, rapid-growing, aquatic plants need iron supplementation. Test iron levels regularly using the **Hagen Iron Test Kit (A-7835).**

Nutrafin's new **Plant Gro Iron Enriched** is a fast and easy way to add iron to aquarium water.

The iron in **Plant Gro Iron Enriched** is chelated, which ensures availability and safety under a variety of aquarium conditions.

Plant Gro Iron Enriched also contains a properly balanced combination of other essential micro-nutrients, in trace amounts, that provide plants with a key element for optimal growth and condition.

New in the trade

Fishes

New rainbowfishes

The rainbowfishes of the family Melanotaeniidae are found only in Australia, New Guinea, and the surrounding islands. Some authorities class members of other families as rainbowfishes as well, for example the blue-eyes of the family Pseudomugilidae. Almost all melanotaeniid rainbowfishes are very easy to keep, eminently suited to community life, and almost always easy to breed (the majority are continuous spawners, laying eggs almost every day). They have won the hearts of aquarists for almost three decades, and the fascination of these colourful fishes remains undiminished today. A new form enters our hobby almost every year, but we actually have no less than three of these jewels to present to you as new.

1. The millennium rainbowfish
Glossolepis* cf. *pseudoincisus


Photo by N. Khardina

Glossolepis cf. *pseudoincisus,* never before seen alive, was collected by Heiko Bleher in a crater lake on New Guinea at the beginning of January 2001, right at the start of the new millennium. Only four males and a single female survived the long journey back to Europe, but they have subsequently been bred and will shortly be available in the better aquarium stores around the world. There is no doubt that this dream fish, which displays the coloration shown above at an age of just four months, will win the hearts of aquarists everywhere. A small shoal in a community aquarium is a real eye-opener. It is an adaptable little (2,15-2,75 inches TL) fellow, that will adapt to a pH of from 7 up to 9, a total hardness of 5 to 30 °dGH, and temperatures between 73,5 and 84 °F.

2. The orange rainbowfish
***Chilatherina fasciata* var.**


Photo by N. Khardina

This new colour variant of *Chilatherina fasciata* was first discovered by Bleher in 1999, in a karst lake in Irian Jaya, Indonesia, but he had to return a second time in order to collect females. Available since last year, this little jewel has a broad orange stripe from the tip of its snout to the first dorsal fin. Water parameters in the natural habitat included a pH of 7.8, a conductivity of 60mµS, and a temperature of 76 °F at 1600 hours. However, they will spawn with water parameters of pH 8, 10 °dGH, and 79 °F, so there are no problems with acclimatisation to the aquarium. They attain a total length of about 3,7 inches and are an ornament to any rainbowfish aquarium.

3. The red zigzag rainbowfish
Glossolepis dorityi

This fairytale fish is almost unrivalled in the splendour of its coloration. The striking, broad, highly zigzagged longitudinal bands are the reason for the common name of this new *Glossolepis* species, discovered by Bleher in May 1999 (but not scientifically described (by G. R. Allen) until October 2001). Unfortunately only males were collected at that time. Like the orange *Chilatherina fasciata,* this species lives in Lake Kali Biru, which is extremely deep and full of trees and branches.
Not until December 2000 was Bleher able to collect a single female, from which thousands of young fishes have subsequently been bred, so that this 14 cm TL dream fish will soon be available for aquaria worldwide.
As well as the popular rainbowfishes, we also present a relatively recent member of the pencilfish group:

The coral red pencilfish
Nannostomus marginatus mortenthaleri


Photo by D. Bork

This fish was collected by the Austrian Mortenthaler in an upstream branch of the Río Nanay in Peru some two years ago, subsequent to which it was identified as a variant of the dwarf pencilfish *N. marginatus.* It is questionable whether the scientific description of this subspecies will stand, but there is no doubt that courting males have a quite unique coloration, with a red like that of the red coral of the Mediterranean, as can be seen clearly in the photo. This pencilfish has been successfully bred in the meantime, generally in very soft water (1-2 °dGH) with a low pH (about 6.0-6.5). This subspecies is one of the smaller (max. 2,7 inches TL) known pencilfish, and a real sight for sore eyes, eminently suited to the small characin aquarium.

Plants

Cultivated swordplant varieties

The swordplants known under the Latin name *Echinodorus* are some of the most popular of aquarium plants. Their natural distribution is restricted to the Americas, and although most are swamp plants in nature, many grow very well underwater. Their foliage is generally highly decorative. Over the decades numerous crosses have been made, so that today there are almost as many *Echinodorus* hybrids as natural forms in our aquaria. The 22 currently available forms - 'Exquisite', 'x *barthii'* (and *E. barthii* is itself a hybrid), 'Jungle Star No. 16', 'Frans Stoffels', 'Gabrieli', 'Green Flame', 'Green Panda', 'Indian Red', 'Little Bear', 'Lothario', 'Oriental', 'Ocelot', *parviflorus* 'Tropica', 'Python', 'Rainer's Felix', 'Rainer's Kitty', 'Red Flame', 'Regine Hildebrandt', 'Rubin', *schlueteri* 'Leopard', 'Dancing Firefeather', 'Tropica Marble Queen' – have now been joined by a new hybrid variety, known as *Echinodorus* 'Red Devil'.


Photo by W. Ise

The new cultivar is a cross between *E. uruguayensis* and *E.* 'Red Flame' (a derivative of *E. osiris).* It is a vigorous variety which remains relatively compact when grown emerse and attains a height of about 35 cm. The individual leaves are up to 13 cm long and 3.5 cm wide. Its underwater growth can be seen in the photos – the distinct red edges to the leaves (below) are particularly striking. It is relatively undemanding and thrives in hard as well as soft water. This new 'creation' produces an attractive touch of "autumn colour" in the aquarium. The red color is brought out particularly well by bright light, but even limited light will not retard its growth. CO_2 fertilisation is beneficial.


Photo by W. Ise

Biotope aquaria: for neons & cardinals

Introduction

Nowadays we live in a world where "wildlife conservation" and "appropriate animal husbandry" are written about extensively and the subject of legislation in many countries, including much of the European Union. People are no longer allowed to keep animals - or do anything, for that matter - according to their own ideas, and we must bear in mind that sooner or later it will likewise become obligatory to keep ornamental fishes "in the proper way" for the species in question. But how many people actually know what the proper way is for any particular species? How are they to find out? Neither the legislators nor the existing hobby literature offer any concrete help. How so? Because only a handful of people have conducted on-the-spot research and the legislators rely almost entirely on their data. In rare cases this may mean information from just one expert. Assuming there is one!

For this reason, we at **NUTRAFIN Aquatic News** plan to cover one or more of the most popular aquarium fishes in each issue, with details of how they live in nature; for example, this time we present the neon and cardinal tetras (see pp. 4-5). In addition we will show you how best to simulate the natural habitat of these fishes in your home, so that you not only maintain them in the "proper way" but also find them a source of immeasurable enjoyment.

The neon and cardinal tetra aquarium

First and foremost, we implore you to buy your tetras ONLY at a retail outlet you can trust. One where the fishes are visibly maintained and cared for properly (eg no dead or dying specimens floating around), and where all purchases are netted and packed with the utmost care - always remember, these are living creatures just like you, and should be treated accordingly. But, before you buy a single fish your tank must be established, ie set up and the filter matured for at least 7 days.

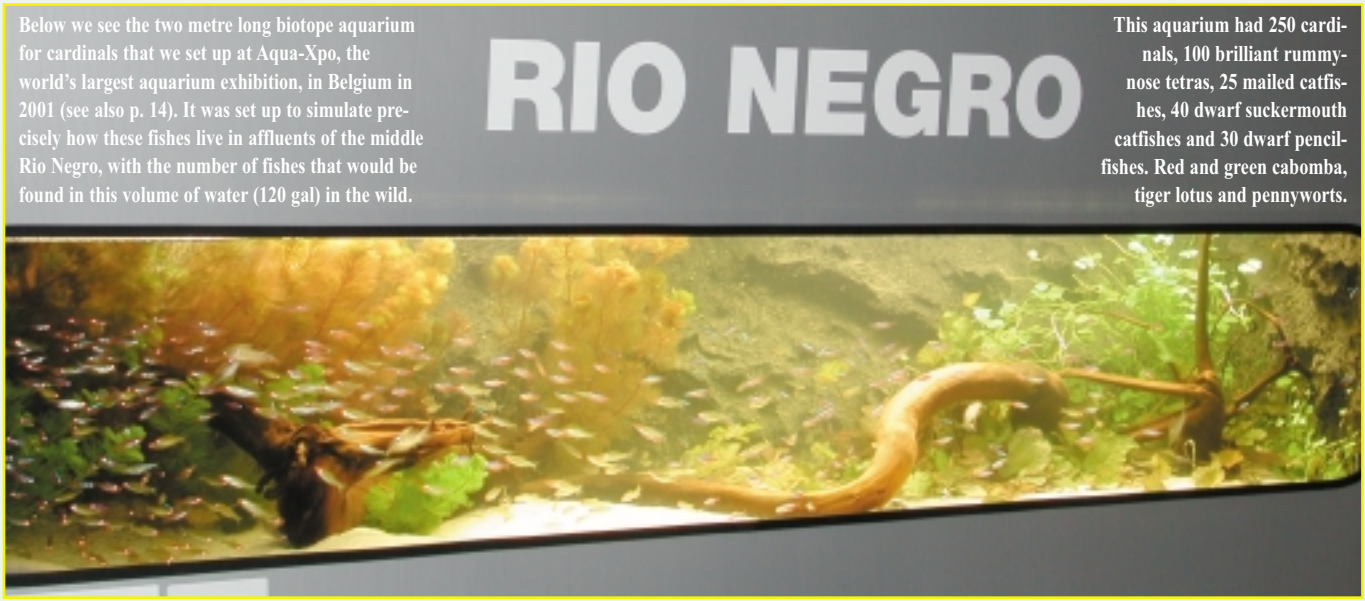
Setting up the aquarium: first of all, bear in mind that both species are shoaling fishes, and hence the aquarium should be at least 32, and if possible 40-60 inches (or more), in length, with a width and depth of at least 16 inches (the wider the better, for ease of setting up and from the viewpoint of the fishes). Use very fine white sand for the substrate. Then position one or two pieces of well-washed bogwood or driftwood. Half fill the tank with water before adding the following aquatic plants, if possible: a *Cabomba* species *(C. furcata* or *C. aquatica),* and a reasonable amount of it; then a few tiger lotus *(Nymphaea lotus)* of varying sizes; one of the pennyworts *(Hydrocotyle leucocephala* or *H. ranunculoides);* plus the aquatic moss *Mayaca fluviatil*is or Bleher's swordplant *(Echinodorus bleheri)* - although the last two are not in fact biotope-correct, they are well suited to the cardinal tetra aquarium. You may also like to include two other swordplants, *E. parviflorus* and *E. horizontalis,* in the neon tetra aquarium. Both these *Echinodorus* species occur in the biotope of the neon tetra, but there are no swordplants in the natural habitat of the cardinal. Once the plants have been set in place, the rest of the water can be carefully added.

If your aquarium does not have an integral filter, then you can choose a suitable external filter. Either way, it is important that the filter media should be one third peat, one third activated carbon, and one third your personal choice of medium. Let the filter mature, and do not add your fishes until the minimum of one week has elapsed. (Note: Once your aquarium is biologically balanced and the water clear, you can discontinue the activated carbon medium and replace it with peat to provide optimum water conditions for this particulary biotope).

The fish population for the aquarium: As mentioned initially, find a reliable dealer. Purchase a nice shoal of neons or cardinals - the number will depend on the size of your aquarium: you can keep 50-60 medium neons or 40-50 medium cardinals in a 40 gal. aquarium without worries. In addition, a neon aquarium of this size can house about 10 dwarf cichlids of the genus *Apistogramma* (ideally *A. cacatuoides* or *A. bitaeniata),* 6-8 splash tetras *(Copella* species), the same number of pencilfishes (*Nannostomus marginatus marginatus, N. m. mortenthaleri,* or *N. eques* - or 2 of the three). You will need a few dwarf suckermouth catfishes *(Otocinclus arnoldi)* and mailed catfishes *(Corydoras elegans* or *C. leucomelas)* - in each case about 12 indviduals. For the cardinal tetra aquarium the general composition of the fish population can be similar, but omitting *N. m. mortenthaleri,* and substituting just *C. schwartzi* as the mailed catfish and, as the dwarf cichlids, only *Apistogramma mendezi* or *A. steindachneri* or *A. iniridae,* and adding 20-30 brilliant rummy-nose tetras *(Hemigrammus bleheri).* Both biotopes can also include about 6 marbled hatchetfishes *(Carnegiella strigata).* Larger fishes are not recommended, apart from the angelfish *(Pterophyllum scalare)* and then only 3 or 4 small specimens. For larger or smaller aquaria the population can be increased or reduced *pro rata*.

General: maintain the water temperature at 77-80°F and allow 10-12 hours of good lighting. The water should not be too hard and have a neutral pH (± 7) - but a lower pH will produce better coloration in the fishes. Change the peat regularly, and periodically wash your filter media in warm aquarium water. It remains to wish you good luck.

Below we see the two metre long biotope aquarium for cardinals that we set up at Aqua-Xpo, the world's largest aquarium exhibition, in Belgium in 2001 (see also p. 14). It was set up to simulate precisely how these fishes live in affluents of the middle Rio Negro, with the number of fishes that would be found in this volume of water (120 gal) in the wild.



This aquarium had 250 cardinals, 100 brilliant rummy-nose tetras, 25 mailed catfishes, 40 dwarf suckermouth catfishes and 30 dwarf pencilfishes. Red and green cabomba, tiger lotus and pennyworts.

Aquarium history

Part 1

How it all began

Today no-one can say for sure when people first started to keep fishes in containers (for want of a better word, no aquaria back then), whether for decoration, educational purposes, or breeding. We do know that fishes carved in stone about 50,000 years ago by the Australian aborigines, who have never possessed a written language, represented a didactic language with an underlying significance. The species can still be identified today. For example, the barramundi *(Lates calcarifer)* shown here was a tribal, family, or personal totem but also reflected the considerable respect in which this species was held. The "spirit fish", the spinner dolphin *(Stenella longirostris),* was reserved for the *kurdaitscha* (leader), and an unidentifiable rainbowfish species (family Melanotaeniidae) was used for instruction in religious ceremonies. The Aborigines venerated fishes, which they regarded as very special creatures and worthy of protection, but they did not maintain them in captivity.

1

2

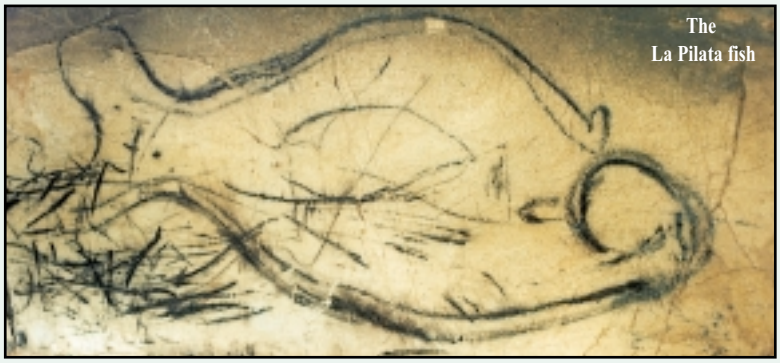
1-2) This very well preserved model of two ornamental ponds – containing tail-wagging fishes! - was discovered in a grave from the Han period (25-220 AD). Could this have been the first aquarium?

3

4

5

3-5) Certain fishes carved in stone represented a didactic language for the Australian aborigines. For example, the Barramundi (3) and the rainbowfish (4), the latter used in religious instruction. Only the "spirit fish" (5) was reserved for their leaders.



The La Pilata fish

In Europe, a representation of a fish was discovered in 1911 in the La Pilata cave in Spain, dating from the latter part of the Paleolithic period and the work of the Cro-Magnon people who lived between 40,000 and 20,000 BC. We do not know whether it represents some sort of symbolic sacrificial offering or had a magical purpose, to ensure good hunting - but it certainly wasn't a pet fish!

The first known fishponds date from the Sumerian culture more than 4000 years ago. In all probability the fishes placed in them were for purely decorative purposes, as the Sumerians did not cultivate livestock and the containers were architecturally associated with temple buildings. The Sumerian pantheon included the fish-god Oannes, who was believed to have emerged from the Persian Sea and come ashore back at the dawn of time. His head and feet were human, but he had the body of a fish. The Sumerians also, round about 3000 BC, developed the first known form of writing; the second most important character in their most ancient cuneiform script signified "fish", and the fish was also the most important of their pictograms.

The Assyrians also built artificial ponds, and the fish was also the second "letter" in their "alphabet". Later in their history they too worshipped a fish-god, Dagon, whose lower body was that of a fish.

The ancient Egyptians are known to have regarded the fish as sacred, representing a symbol of fertility. Certain species were taboo for the high priests. Some of their temple complexes contain marble ponds for tilapias, and the Nile perch *(Lates niloticus)* was worshipped as a god. Thousands of mummified specimens have been found.

Pliny the Elder (23-79 AD) was the first author to mention a fishpond, a *vivarium* that stood in the home of the noble Lucinus Muraena towards the end of the second century BC (a rich man whose name is now commemorated in the scientific name for moray eel *Muraena muraena).* Moreover Marcus Trentius (116-27 BC) owned two *piscinae* (fishponds) in Casinum. In his book *de re rustica* he even differentiates between two types of fishpond, the *dulces* (= freshwater) ponds used by country folk to temporarily house fishes before taking them to market, and the *salsae* (= saltwater) or *maritimae* (= marine) ponds which wealthy nobles installed for show and ostentation. For them the red mullet *(Mullus surmuletus)* was a delicacy and the joy of eating it greatly enhanced if the fish were brought alive to the table, so that the flickering iridescence and color changes of the dying fish could be appreciated before it was eaten. A particularly fine specimen cost as much as a cow. The real status symbol, however, was the moray. Gaius Hirrius built a special pond for them and declined to present a single specimen to Julius Caesar (which led to a frightful row), although he is said to have loaned him animals - 6000 in total - for a huge banquet.

But it remains a matter of debate whether it was the Romans or the Chinese who were the first to maintain ornamental ponds, for a very well preserved model of two ornamental ponds - containing tail wagging fishes! - has been discovered in a grave from the Han period (25-220 AD). Could this have been the first aquarium?

To be continued

Nutrafin presents Heiko Bleher's unique biotope aquaria at Aqua-Xpo 2001 in Belgium, the world's largest aquarium exhibition

The Belgian aquarium club DE ZILVERHAAI were proclaiming the world's greatest aquarium and terrarium exhibition for the third time in 20 years. Because I had participated in the past, and didn't want to miss this mammoth and incomparable exhibition, I spoke with Rolf Hagen jr. about it, and he was very interested. And so the participants included not only all the aquarium and terrarium societies of Belgium, the Flemish Minister of Culture, the province of Limburg, and the Flemish Prime Minister, Mr Patrick Dewael, in person, but also Aquapress and Rolf C. Hagen with Nutrafin.

Aqua-Xpo had previously honoured me on their website by presenting a biotope containing *Hemigrammus bleheri,* the brilliant rummy-nose tetra. Jos Jansen, whom I have known for more than 20 years, had contacted me the previous year - "Heiko, you really must come." - to which I had replied, "Only if you set up the aquaria the way I want them." And he had promised to do so. The main problem was how to support aquaria weighing up to 11,000 pounds each safely at viewing level! But De Zilverhaai & co. came up with an answer: the tanks would be constructed from panels of marine plywood, screwed together, with the front glass glued in place. The stands were built from 248,000 beer crates from the local brewery - still containing a total of 2,976,000 bottles as it was too expensive to empty the crates! The whole construct was panelled, and subsequently recycled.

For 7 days (and nights) more than 300 aquaria and terraria, including my 23 biotope aquaria, were set up in the 172,000 square feet Grensland Hall in the lovely town of Hasselt. The result was incredible: about 30,000 visitors from all over Europe in the space of 4 days, plus no less than 3 TV channels presenting "The Greatest Show on Earth" on the Saturday evening!

Nutrafin presented my biotopes (which I set up myself), earning the thanks of the Prime Minister himself, while I received a diploma. The exhibits were: **South America:** a section of Lago Nhamundá with 60 red discus (collected by me), including youngsters, swimming majestically in a 10 foot (1050 gal) tank; Santarém at high water (800 gal); Rio Negro cardinal tetra

biotope (see also p. 12); Rio Nanay angelfish biotope (above); rocky habitat in the Rio Xingu, home of loricariid catfishes; the Rio Guaporé (below); the most plant-rich river in the world and the Rio Napo; **Central America:** Rio de la Pasion (800 gal); **Africa:** Malebo Pool (800 gal); the Ubangi (800 gal); Cape Agulhas; Cape Province; **Asia:** Assam; Bihar; Hunan; the Chao Phraya; and seven from **Australasia**.

The Nutrafin biotope displays were such a success that other people in other countries wanted to copy them, and sure enough, Act II was to follow at the **Zierfische & Aquarium** (Ornamental Fish & Aquarium) **2001** in Duisburg. But more of that next time.

Footnote: for photos of the individual biotope aquaria, or information on their dimensions and contents, please contact the editorial address, and we will be pleased to help you.

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