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# NEWS

Die Zeitschrift für Aquarianer Nr. 90



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der Felsen**



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## L - NUMBERS

# Panaque "Papa Ojo Rojo"

## A new variant of L90

by Harald Jahn

L90 is one of the variably colored species. This year Aquarium Glaser has for the first time obtained gorgeous specimens from Peru, which have an orange-red instead of a white half moon in the caudal fin. The Spanish name (*ojo* = eye and *chico* = boy) doesn't refer to this, however, but to the relatively small eye, so typical for L90 in comparison with other *Panaque*.

The attractive caudal-fin coloration is also retained in adult individuals. Like all L90 this species grows to at least 30 cm long, and this relates solely to the body. In species with the sort of long caudal-fin filaments seen in L90, quoting a total length makes little sense.

These *Panaque* feed mainly on wood. An aquarium decorated with an abundance of wood and powerful filtration (because of the copious droppings this nutrient-poor food will produce) are the prerequisites for the successful maintenance of these splendid creatures.

Aquarists occasionally have problems with the maintenance of *Panaque*. Despite good appetite they sometimes do not grow properly and even remain pitifully small. In many cases the reason for this phenomenon lies in a disrupted gut flora. It is important never to forget that in the final analysis no animal can feed on vegetable food without the aid of unicellular organisms and bacteria, as all animals lack the enzymes required to digest it.

Any medication of the fishes required can damage the bacteria and unicellular organisms that make up the gut flora to such an extent that the fishes cannot digest the food they take in. Hence, if herbivorous sucker-mouth catfishes become emaciated or stop growing



The new variant of L90.

Photo: Frank Schäfer

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properly despite feeding well, the introduction of droppings from healthy populations can sometimes save the affected fishes. No harm can be caused thereby, so it's always worth a try.

TOP TEN

# Top Ten: Fightingfish

The Siamese Fightingfish, *Betta splendens*, has been kept and bred in captivity for centuries, and this has resulted in innumerable color and finnage variants. The ten most popular have been assembled for us by the company Aquaristik-Service-Reuter GmbH. Many thanks!

Although the majority of the color and finnage forms presented here have been known for decades, they are something of a novelty in the European ornamental fish trade, as interest in these fishes first awakened only a few years ago. From around the end of the 1920s to the beginning of the 21st century only veil-finned fightingfishes were bred in Europe on a wide scale, and even then effectively only in the colors blue, red, and green.

The "Copper" color form is one of the new cultivated variants of the past decade. "Copper" is used to describe fightingfishes with metallic scales. The trade names used in our Top Ten are certainly not those used by breeders (the breeders' name for "Red Dragon" would be "Copper Red", for example), but actually reflect the degree of popularity of these fishes in the trade. The more popular a cultivated form, the more remote the trade name from that used by the breeders. This applies to all pet

animals.

The fightingfishes presented here differ only insignificantly from one another when it comes to maintenance and

breeding. The only exception is *Betta smaragdina*, a wild form that is extremely closely related to the original wild form of the captive-bred fightingfish strains. In practice, *B. smaragdina* differs from wild *B. splendens* mainly in the pattern on the operculum, which is green in *B. smaragdina* (as is the body, hence also the species name), but by contrast exhibits two vertical red stripes in *B. splendens*. But this is visible only in motivated males, and there is hardly anyone alive who can tell the wild fightingfish species apart from one another in their "resting" coloration. The long and the short of it is, *B. smaragdina* can also be kept in groups, as its intraspecific aggression is relatively weakly developed, while *B. splendens* is kept in pairs.

TOP TEN

1 Short Tail Red Dragon

2 Crowntail Black Orchid

3 *Betta smaragdina*

4 Halfmoon Red Dragon

5 Shorttail White Opaque

6 Halfmoon Mustard Gas

7 Halfmoon Violet-White Butterfly

8 Crowntail Copper

9 Shorttail Pitchblack

10 *Betta splendens* wild

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Maintenance in a species aquarium is always best, and in any case this is essentially true of all the long-finned variants, whose finnage often suffers badly in the community aquarium. By contrast, short-finned fightingfishes, often also known as pla kat, can usually be kept without risk in community tanks. In fact pla kat is the name for the real fighters. In

Thailand pla means "fish", while kat signifies "the biter". But, as in the past, genuine pla kat are not seen in Europe in numbers worth mentioning. In addition, the more peaceful (compared to pla kat) long- and short-finned forms in this Top Ten should not, however, be kept together with large-finned guppies, as the latter will almost always be attacked and done to death. The

cultivated forms of *Betta splendens* are short-lived, the average lifespan attained is just one year. Thereafter they age rapidly, develop curved backs, etc.

Note that the sexes are best distinguished in young "short-fins" by the fact that females have a little white "pimple" at the front of the urogenital opening.

Photos: www.fischversteher.de

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# The Crucian Carp Fish of the year 2010

by Frank Schäfer

Every year, various European organizations involved in nature conservation choose animal and plant species as species of the year, in order to use them as examples to draw the attention of the general public to the problems posed by species and nature conservation. The Verband Deutscher Sportfischer (VDSF, German Sport Fishing Association), the Österreichische Kuratorium für Fischerei und Gewässerschutz (ÖKF, Austrian Organization for the Conservation of Fisheries and Waters), the Bundesamt für Naturschutz (BfN, German National Office for Nature Conservation) and the Verband Deutscher Sporttaucher (VDST, German Sports Diving Association) have chosen the fish of the year, and their choice for the year 2010 is the Crucian Carp (*Carassius carassius*).

The Crucian Carp belongs to the carp-like fishes (Cyprinidae), which aquarists know above all from the numerous species of barbs and danios. Superficially the Crucian Carp strongly resembles the wild form of the Carp (*Cyprinus carpio*), from which it is, however, easily distinguished by the absence of barbels (the Carp has four).

Moreover the Carp has a hard, serrate dorsal-fin spine, while in the Crucian Carp all the dorsal-fin rays are relatively soft and flexible. Sometimes, however, the Carp and the Crucian Carp hybridize and such hybrids are often difficult to recognize, even for specialists, as they unite characters of both species.

Three species of the genus *Carassius* live in central Europe: the Crucian Carp (*C. carassius*), the Prussian Carp (*C. gibelio*), and the Goldfish (*C. auratus*). The systematics of the genus is poorly understood and there is a great need for further research. At present four species are generally recognized – as well as the three species native to central Europe there is a fourth, *C. cuvieri*, which is distributed in eastern Asia. Young Crucian Carp – such as can be considered for aquarium maintenance – are most readily distinguished from the Prussian Carp and the Goldfish in that the Crucian Carp



The Crucian Carp, *Carassius carassius*, fish of the year, 2010.

Photo: Wolfgang Hauer

normally has a dark spot on the caudal peduncle, absent in the other two species. Moreover in the Crucian Carp the edge of the dorsal fin curves outwards (convex), while in the other two species it is straight or concave. All three species are so immensely adaptable as regards their habitat requirements that a general, species-typical description is virtually impossible – more of this below.

In terms of habitat, the Crucian Carp is the most highly specialized fish in Europe. This can also be formulated in another way: the Crucian Carp is the least demanding fish in Europe. No other species can live in such



bad water conditions as those in which the Crucian Carp manages to exist. It can survive for days or even weeks in the

bottom mud of dried-up waters. Using physiological tricks that have only very recently been studied, it is the only exclusively gill-breathing fish known that can even survive in anoxic water beneath ice in tiny bodies of water. This does not, of course, mean that the Crucian Carp requires unfavorable water conditions in order to live. But its specializations make it possible for it to colonize waters of a type in which no other fish species can survive. And it does that as well. In tiny bodies of water, in which the Crucian Carp is the only fish species present, an effect occurs that is known in "fishery-speak" as "Verbuttung". No energy is converted into growth, the fishes become

dwarfed, and during their lives grow to only 5 – 10 cm long. In the early days of the aquarium hobby, that is in the late 19th and early 20th centuries, Crucian Carp of such populations were known as “Moor Carp”. They were regarded as beginners’ fishes that would apparently survive every possible mistake made by novices in the aquarium hobby.

But on the other hand Crucian Carp can also adapt completely to other conditions. In large bodies

of water with numerous predatory fishes, above all their main enemy, the Pike (*Esox lucius*), Crucian Carp grow large and above all high-backed. In such habitats they can attain a length of up to 60 cm and a weight of 3.5 to 5 kg. Crucian Carp can be classed as omnivores, consuming soft vegetable material as well as any small organisms that will fit into their mouths. Under natural conditions, however, midge larvae (Chironomidae), known to aquarists as red mosquito larvae or bloodworms, may represent the main component in the diet. The above-mentioned “Moor Carp” were known to often develop a “hunger form”, with an outsize head and feeble body, where the food supply in the wild was only sparse.

The breeding season of the Crucian Carp falls in the late spring (May/June). Sexual maturity is attained in the third year of life, when these fishes are – depending on food supply and temperature – a maximum of 8-15 cm long. These fishes are very fertile, and even a small female can produce several thousand eggs; there are references in the literature to up to 300,000 eggs per female, but these undoubtedly relate to really large “old ladies”. There are no details of breeding in the aquarium, but this may be because nobody has published anything rather than because it hasn’t happened. Even the aquarium breeding of that close cousin of the Crucian Carp, the Goldfish, is not normally practiced by hobby aquarists. Anyone who nevertheless wishes to try breeding Crucian Carp should first of all rear a number in the aquarium. As with almost all European fishes the production of eggs and sperm is controlled by hormones that are regulated by the length of the daylight received. A further, but not so significant, regulator is the water temperature. Assuming the fishes are well fed and sexually mature, they should be over-wintered at 6-8 °C and a maximum photoperiod of 6 hours daily. It is also possible to over-winter them in total darkness in a refrigerator.



The Prussian Carp, *Carassius gibelio*, is a close relative of the Crucian Carp.

Photo: Erwin Schraml



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They do not need to be fed during this period. After 8-10 weeks they can then be brought back into the living-room. They can be brought out of their winter within a few hours without problem: simply put them in a bucket in the living-room, and the water will warm up to room temperature; keep the bucket well covered so that the fishes, nervous at the change of environment, cannot jump out!

Ideally the sexes should be separated for a while before the actual breeding attempt. Females are plumper, while at spawning time males develop white tubercles on the operculum and pectoral-fin rays. But breeding will also take place if the sexes are maintained together, it is just that in that case it is not so easy to control the timing of the spawning. The fishes should next be fed well on a rich diet, but water changes should be sparing. Simultaneously the photoperiod should be increased in stages to 14 hours. A large water change (80-90% of the tank volume) using soft water (2-5 °dGH) should trigger spawning. The water temperature for breeding should be 22-24

°C. Because the males drive the females hard, the aquarium should not be too small, at least 100-120 cm long even for small Crucian Carp variants.

So how come I know all this, given that I have stated above that there are no details available on the breeding of Crucian Carp in the aquarium? Well, I have in the past bred Goldfishes in the aquarium, and there is really no reason to believe that the Crucian Carp will differ significantly in its breeding behavior. The fishes can be put together in pairs or as a group. The eggs stick fast to the substrate. The fishes will normally spawn without any special spawning substrate, but it is more practical to provide coarse green filter wool as a spawning substrate, as after the spawning the water will be seriously polluted with sperm and scraps of mucus coating. Given that it is rare to wish to rear several thousand youngsters, the easiest course is simply to transfer the Perlon wool, with those eggs attached to it, into a rearing aquarium with identical, aged water for further development. No harm will come to the eggs if they are exposed briefly to the air

in the process. Thereafter another large water change should be performed on the spawning tank. The excess eggs can be left for the

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parents to eat. The larvae hatch after about three days, and swim free another two days later. They can be fed immediately with *Artemia nauplii*.

Although the Crucian Carp can be kept both in the aquarium and in the garden pond without problem because of its enormous adaptability – it tolerates large temperature fluctuations, high (around 30 °C) as well as low (around 4°C) temperatures, etc – it will never become a popular fish in the hobby because it is relatively unattractive. Nevertheless it is nice that it has been chosen as fish of the year, and attention thus drawn to a remarkable creature that threatens to become ever rarer through the destruction of its traditional habitats, namely small and tiny bodies of water.

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Wild-type Goldfish,, *Carassius auratus*.

Photo: B. Migge / Archiv Aqualog

## NEW SPECIES

# *Poecilia obscura*

## - a truly obscure new guppy species

by Frank Schäfer

The Guppy (*Poecilia reticulata*) swims in countless millions in the tanks of aquarists and in aquarists' minds worldwide. By virtue of deliberate or accidental introductions it is found living wild in all the tropical countries of the Earth. The popular and scientific literature on the species amounts to many volumes. And yet there remain more unanswered than answered questions about the Guppy.

This problem has existed ever since the discovery of the first guppies by naturalists in 1859, as reflected in, inter alia, the numerous repeat descriptions (and synonyms) of the species. Specifically, guppies are extremely variable. This applies not only to their coloration, but also to their body form. Hence the Guppy poses a philosophical question to the scientific community, namely whether our

concept of genetically fixed animal species is valid. Does such a thing as a "species" exist at all, and if so, how is it to be defined?

This question in fact applies throughout the entire field of biology, and one of the main jobs of those working in zoological research is to find answers to it, but hardly any other animal species causes zoologists so much difficulty as the Guppy.



The distinctness of *Poecilia wingei*, the Endler's Guppy, has been genetically confirmed.

Photo: F. Schäfer

Why is this so?

First of all, everything suggests that species do in fact exist and that humans are also capable of recognizing them. Since time immemorial it has been necessary for Man's survival for him to be able to recognize species, as eating a Death Cap toadstool is inevitably fatal, while on the other hand consuming the very similar-looking Field Mushroom can ensure survival during times when food is in short supply.

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For this reason the species definitions produced by botanists and zoologists rely on certain recognizable external characters that perhaps sometimes appear laughably meaningless to the layman.

In fishes, for example, these include the numbers of scales and fin-rays, and details of body proportions that are regarded as characteristic of the species, such as the ratio of the length of the caudal peduncle to body depth, etc. At the same time one should never confuse cause and effect. A new species is not discovered by a museum zoologist with nothing better to do than counting scales and fin-rays. It is more the other way round. After years or decades of study of a group of animals the specialist develops an eye for intuitively recognizing a new species. If this specialist then discovers a new species in this way, the second step is to describe it in such a way that any interested non-specialist can identify it without problem on the basis of the characters described, and distinguish it from other, similar species. A good scientific description can always be distinguished objectively from a bad scientific description by how well the specialist has managed to convey his knowledge to non-specialists.

Life is thus made difficult for scientists by an extremely variable species such as the Guppy, which can change externally, in a very short time and in response to numerous environmental influences, to such an extent that even specialists find it impossible to produce a generally valid description. Because biologists are forever striving for knowledge, it follows that the latest techniques are always brought into play to try and crack hard nuts like the Guppy. In the past 30 years it has been above all behavioral research and the

classic Mendelian rules of inheritance than have revealed information on the reasons why the Guppy is so extremely variable. But these methods have not provided satisfactory answers to the question of whether all guppies belong to a single species, or whether there are in fact various guppy species.



*Poecilia obscura*, the newly described guppy species.

Photo: Dieter Bork

When, in 2005, a new guppy species, *Poecilia wingei*, was described by Poeser et al. and the description relied to a major extent on behavioral characters, the reaction of the scientific world was just as divided as that among aquarists. While some were immediately able to follow the distinction between *P. wingei*, long known in the hobby as the "Ender's Guppy", and the "normal" Guppy (*P. reticulata*), others argued that firstly the characters of the Ender's Guppy were not appreciably more constant than those of the numerous other Guppy populations, and that secondly the two "species" could be crossed without problem and at will in the aquarium.

Apropos of this, it must, however, be stated that the ability of two individuals to breed together is not per se an argument for the two individuals in question being members of the same species. Firstly, unrestricted fertility past the fourth generation inbred is regarded as the criterion of a species. Earlier reductions in fertility suggest to some extent that they may be separate species. But, when using the crossing method experimental errors can only rarely be completely ruled out, hence the ability to interbreed (and the sterility of hybrids) is not by itself an adequate criterion of a species.

continued on page 16

## R A R I T I E S

# Freshwater pipefishes

## The sweet seahorses (part 1)

by Wolfgang Löll

Together with the seahorses the pipefishes form the family Syngnathidae, which contains about 50 genera and 215 species. The overwhelming majority of the pipefishes and all the seahorses are marine or at least found in strongly brackish water, but there are pipefishes that live exclusively or predominantly in fresh water, worldwide.

In Europe there is, for example, the species *Syngnathus abaster* (the Black Sea pipefish), which, however, plays no role in the aquarium hobby. The species of interest for aquarium maintenance come from western Africa, from Brazil, from India, and from South-East Asia.

Before discussing the species being imported and commercially bred, a little general information on the maintenance

of these fishes in the aquarium.

The first and most important basic rule for the maintenance of pipefishes is that all species require live food as the basis of their diet. In the case of small species, *Artemia* nauplii are adequate as the basic diet, though they should not be used long term as the sole food when breeding. And the somewhat larger species must have larger food organisms as well. The best suited are glassworms (Chaoboridae larvae), which are taken enthusiastically by



*Microphis brachyurus*, a freshwater pipefish from South-East Asia.

Photo: Frank Schäfer

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Captive-bred *Enneacampus ansorgii* in the rearing aquarium. Photo: Erwin Schraml / Aqualog Archiv

all species that can manage them as prey. Glassworms will survive for days without problem in the aquarium, and hence they can be fed so copiously that the pipefishes are always up to their fins in food. In addition glassworms also tolerate brackish water very well. For this reason they, along with *Artemia* nauplii, are ideal basic foods for freshwater pipefishes. Other types of live foods will do, but have their drawbacks: black mosquito larvae (Culicidae) are enjoyed, but develop very quickly in the warm-water aquarium. Because the adult females of the mosquito species that "hatch" from black mosquito larvae suck blood, they are apt to wreak their revenge in their own way. Red mosquito larvae (bloodworms - Chironomidae) are a good food, but those that are not eaten immediately creep away and hide, thus eluding the pipefishes. Water fleas (*Daphniidae* *inter alia*) are



*Enneacampus ansorgii*, wild-caught specimen from Nigeria.

Photo: Frank Schäfer

eaten and survive quite well in the aquarium, but are relatively poor in nutritional value. Copepods (Copepoda) are an excellent food, but can only rarely be collected year-round. New-born fry of livebearing toothcarps (Poeciliidae) are

eaten with enjoyment by large pipefish species, but are only rarely available in adequate quantities. *Tubifex* and other worms are not eaten by pipefishes, or only very unwillingly.

Pipefishes are stealth hunters, which creep up on a potential item of prey and then snap it up suddenly, by surprise.

The stomach in pipefishes is not extensible, so these fishes cannot "stockpile" food. The main cause of death in pipefishes in the aquarium is starvation. Unfortunately it is very difficult to determine the nutritional state of pipefishes, as just like the seahorses they have a bony external skeleton and hence never look emaciated. For this reason it is absolutely essential to feed pipefishes in

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such a way that they have food organisms available all day long. It is not enough to feed them a ration of food organisms once or twice a day. Even though the occasional pipefish may learn to accept dead food (frozen food, de-husked *Artemia* eggs, etc.), it is unwise to rely on this!

Small species of freshwater pipefishes that will tolerate, but don't require, brackish water, are nevertheless better maintained in brackish water. This can quite safely be very weakly brackish water (1-5 g salt per liter), but has the advantage that *Artemia* nauplii will then survive a lot longer so that the pipefishes always have plenty of food. In addition salt in the water (always use only salt such as is supplied for coral-reef aquaria) means that the pipefishes will react less badly to raised concentrations of nitrate in the water.

Although the pipefishes discussed here are among the most peaceful of all fishes, in practice keeping them in a community is exceptionally difficult. In the first place practically all potential tankmates are also competitors for food, and secondly pipefishes do not like being nibbled or finding themselves in over-hectic situations. Maintenance in a species tank is thus essentially the method of choice, but it is nevertheless wise to keep a few small fishy tankmates in the aquarium. The

reason for this is that on the one hand pipefishes are comparatively sensitive to any deterioration in water quality (pollutants, high bacteria counts, oxygen shortage, pH fluctuations, etc), but on the other have only a limited ability to express their discomfort. Clamped fins, shimmying, loss of appetite – in short, pipefishes lack the entire range of body language with which a “normal” fish can show the aquarist that something is wrong and that a catastrophe is imminent. Hence the best course is to keep a very small number of the pipefishes, guppies with the pipefishes as bio-indicators. Depending on the size of the pipefishes, guppies that are a few days old, half grown, or adult should be selected. Guppies can also tolerate brackish water without problem.

Pipefishes can suffer all the diseases that affect other fishes, but one peculiarity needs to be highlighted here: pipefishes should never be held tightly. The skin covering the bony armor encasing the body is very thin. In the event of squashing the affected skin dies, a bacterial infection results, and this practically always leads to the death of the individual concerned. In this regard the dying-off of the tip of the tail is particularly to be feared, as this will lead to a relentless progressive necrosis. Individuals with these symptoms are irretrievably lost.

To be continued in AQUALOG News 92



*Icthycampus carce*, from India, a species very similar to *E. ansorgii*.

Photo: Frank Schäfer

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## LIVEBEARERS

# Frankfurt swordtail

by John Dawes

Swordtails, as we all know, are available in a vast array of colours, fin shapes and sizes. Equally, the majority of today's swordtails – while referred to as *Xiphophorus helleri* – are not pure *helleri*, but the result of hybridisations with closely selected species such as the platy, *X. maculatus*. Such is the ancestry of the beautiful sword that forms the subject of this article: the Frankfurt Swordtail.

First reports of this variety refer to it already being fully developed by 1929. These fish were obtained from a cross between a female green swordtail (*X. helleri*) and a male red platy (*X. maculatus*). Subsequent selection of offspring with the 'right' characteristics i.e. a

Myron Gordon. It had a red front half, sharply demarcated from a black half – just as in the original Frankfurt hybrid. However, this spectacular fish had not been produced by crossing a *X. helleri* female with a *X. maculatus* male. Instead, the original parents, consisting of



Spitzentiere der Frankfurter Kreuzung sind fast nie zu finden. Meist zeigen Frankfurter, wie das oben abgebildete Tier, viele Farbunregelmäßigkeiten und werden mit Berliner Schwerträgern verwechselt. Photo: F. Schäfer

black posterior half of the body and a red anterior half, led to gradual refinement of these characteristics, resulting in a sharp vertical demarcation between the two halves, the actual border between front and back containing a fine dusting of black dots. Other colour features are described as follows in an article by Günther Schramm (Aqualognews 26): "The scales were all covered in iridescent metallic green dots, the belly had an orange-red hue, the iris was whitish-green, and the fins, with the exception of the pectorals, were speckled with dark colour." This pioneering work was carried out by a German breeder, Ph. Stettner, based in Frankfurt, hence the name given to the variety.

In 1956, a similar hybrid, the red jet swordtail, was described in *Tropical Fish Hobbyist* by

wild specimens, were: *X. helleri* female and either *X. cortezi* or *X. montezumae* males. Both are reported as being the original non-*helleri* male parent, the former by Axelrod and Wischnath, and the latter by Schramm and Jacobs (see Further Reading). Interestingly, Axelrod and Wischnath also report that the original Frankfurt crossbreed "...was first



Beim Platy, *Xiphophorus maculatus*, gibt es derzeit eine Frankfurter Linie auf weißer Körperfarbe, die es ermöglichen könnte, auch gute Frankfurter Schwerträger zu erzüchten. Photo: F. Schäfer

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introduced in the specialist literature in 1929, with an incorrect mating analysis..."Quite what they mean by this is, however, unclear.

Checking the TFH archives, the earliest articles date back to 1990. As a result, it was not possible to check the original report Myron Gordon wrote in 1956 regarding the red jet swordtail. Elsewhere, the report is said to have been published in 1959. When dealing with the Frankfurt hybrid/crossbreed swordtail, we therefore find that there are several unclear factors, especially with regard to the Myron Gordon red jet. Perhaps one of our readers has a copy of the relevant article and can enlighten us?

In particular, the different male ancestral lines are interesting because *X. cortezi* and *X. montezumae* look very different to each other. *X. cortezi* is relatively deep-bodied and bears a short, curved sword, and looks quite similar (at first glance) to *X. malinche*. *X. montezumae*, on the other hand, is a slim-bodied fish with a longer straight sword. Myron Gordon's red jet swordtail is slim-bodied (well, at least, considerably slimmer than *X. cortezi*) and has a long straight sword which is very much like the sword borne by *X. montezumae* males. The Gordon hybrid's sword is also longer than that of the Frankfurt hybrid.

Conclusion? Well, at least, externally, the 1956(59?) red jet swordtail looks more likely to have a *X. helleri* x *X. montezumae* ancestry than a *X. helleri* x *X. cortezi* one. One way to resolve this

doubt would be to carry out DNA fingerprinting of all the species and hybrids concerned, which appears not to have been done yet. Finally on this point, could it be that the old names for *X. cortezi* (*X. montezumae cortezi*) and *X. montezumae* (*X. montezumae montezumae*) have given rise to the confusion?

Irrespective of their ancestry, Frankfurt and red jet swordtails are very rare today. Several factors appear to be at the root of this scarcity. Prominent among these is the fact that only few offspring from any crossing are of the appropriate quality with all the desired features



Frankfurter Schwerträger. Photo: G. Schramm

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'in place'. Then, there is the susceptibility of black-hued fish towards developing cancerous growths (originally reported as 'melanosarcomas', but better known nowadays as 'malignant melanomas'). Whatever the case, top-quality half-black swordtails are really hard to come by these days.

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Continued from page 10

A few weeks ago a third wild guppy species was scientifically described and named *Poecilia obscura*. Genetic analyses of *P. obscura*, *P. reticulata*, and *P. wingei* show that all three species are – from a phylogenetic viewpoint – old species and in no way taxa that are in the process of evolving and have a correspondingly broad genetic scatter. However, it must also be said that these genetic analyses rely on the assumption, supported by some indicators but in no way proven, that evolution is a process that can be calculated, based on what may be termed a "genetic clock". This hypothesis requires that the mutations (that is, changes in genetic make-up) that eventually lead to the formation of new species do not occur spontaneously and at random, but follow a set of rules that allow calculation of the point in time at which two currently distinct species developed from a common ancestor.

Unfortunately there are no characters that permit the unequivocal identification of the new wild guppy species without genetic analysis. The only character that

appears usable by aquarists to recognize the newly described species is the number of dorsal-fin rays. *Poecilia obscura* almost always has six dorsal-fin rays, while the other two guppy species almost always have seven. The authors of the new guppy



Wild Guppy, *Poecilia reticulata*, from Jamaica.

Photo: Frank Schäfer

species have thus for the first time described a fish species that can be identified unequivocally only by means of genetic analysis. This method is, however, inaccessible to only a very small number of people, and in addition can be applied to museum material only if the preserved specimens have been fixed in alcohol

rather than in formalin.

Will we in future see a two-class system in science, in which the precise scientific identification of an animal species is reserved for a few members of a scientific elite with access to the necessary

#### Guppies or Guppies?

The popular name of the guppies is derived from a species scientifically described as *Girardinus guppii*, named in honor of the collector, Robert John Lechmere Guppy. The original describer, Albert Günther, first of all created a Latinized version of the surname Guppy – that is, Guppius – and then formed the genitive, replacing the "-us" ending with an "-i". But the species is named after Mr Guppy and hence in German the plural and the genitive are both formed simply by adding the letter "s". In English, however, the majority of nouns ending in "y" have the plural "ies". The first guppies brought alive to Europe were identified as *Girardinus guppii*. Only later was it realized that *G. guppii* was identical with the species *Poecilia reticulata*, which had been scientifically described at an earlier date. Hence the scientific name *Girardinus guppii* became a synonym and *Poecilia reticulata* the valid scientific name. But the popular name Guppy survives to the present day.

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laboratory equipment? We await the answer to this question with bated breath....

## CORYDORAS

# New mailed catfishes from Brazil

by Ursula Glaser-Dreyer

*Corydoras eques* is a splendid mailed catfish, which, although it has long been known to science, has hardly ever been seen in the aquarium hobby. However, a large number of these fishes have just arrived from the Brazilian federal state of Amazonas, more precisely from the vicinity of the town of Anori.

A further *Corydoras*, which undoubtedly belongs to an as yet scientifically undescribed species, has just been imported for the first time. Its unusually high dorsal fin is a little reminiscent of *C. armatus*, but it has a metallic golden spot on the back, which is never the case in *C. armatus*. We also know the collecting locality for this new species: it too comes from the state of Amazonas in Brazil and was collected near to the town of Jutai.

And finally, another recent arrival is a batch of splendidly colored specimens of a supposedly well-known species: *Corydoras duplicareus*. Although the differentiation of this species from *C. adolfoi* is exceptionally difficult from a scientific viewpoint, the fish itself is not and these fantastic mailed catfishes will undoubtedly soon find a happy new owner. It should be noted that the



*Corydoras cf. duplicareus*



*Corydoras eques*



*Corydoras sp. aff. armatus*

All photos: Frank Schäfer

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newly imported *C. duplicareus* looks different, particularly with regard to the dorsal-fin coloration (normally black in *C. duplicareus*). For this reason it seems more prudent to term it *C. cf. duplicareus*.

All these new *Corydoras* are blackwater fishes, as can be told by the gleaming spots that play a role in shoaling.

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# Current pumps - not just for the reef aquarium hobby

by Henrik Weitkamp

**Corals, being sessile (sedentary) life forms, are adapted to the currents of the sea, which, for example, bring them food and carry away metabolic waste products. Hence in the reef aquarium hobby the current in the aquarium has long been a central theme in the successful maintenance of the aquarium.**

It is true that the successful maintenance of numerous freshwater fishes and plants is possible even without special regard to current conditions – under standard conditions so to speak (see below). However, our popular aquarium fishes include species or even entire genera that occur in waters with a strong current, be it year-round or periodically. As well as adaptations in behavior (particularly during reproduction), this has also led to morphological adaptations in these so-called rheophilic (current-loving) fish species. These include a shallow or cigar-shaped body; a reduced swim-bladder; spoiler-like fin structures, which keep the fishes close to the bottom; a powerful caudal musculature with a large caudal fin, so as to be able to swim against the current when necessary; and various other features.

Regardless of whether rheophilic species or fishes from still waters are maintained, the water volume should be turned over by the existing aquarium filter once or twice per hour. In the first instance this will ensure that pollutants occurring in the aquarium will be broken down correspondingly quickly and not accumulate in the water. An increase in the turnover rate provided by the internal or external filter systems normally available in the trade is disadvantageous in fresh water. On the one hand the then relatively short period of time spent by the water in the filter will be counterproductive to the breakdown of pollutants that occurs there.



The European Minnow, *Phoxinus phoxinus*, is regarded as very difficult to breed in the aquarium. But it can be done with a powerful current pump immediately adjacent to the bed of gravel. Photo: H. Weitkamp

And moreover it is unnecessarily expensive to create any additional current desired using a relatively energy-expensive return pump.

Hence the best way to produce a stronger current is to use one of the modern current

pumps, which, inter alia, have already revolutionized the reef aquarium hobby by virtue of the low energy usage required in relation to the turnover rate achieved. These are induction-drive submersible impeller pumps with current-optimized propellers and a large inlet area, and whose broad outlets produce a wide-angled and particularly regular current. By comparison traditional submersible impeller pumps with a small outlet produce a comparatively concentrated stream with a

narrow angle and a very high current speed at the center, which can damage many corals, is avoided by fishes, and if suitably powerful can also wreak havoc on the aquarium landscape.

By contrast, because of their mode of

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construction modern pumps can circulate large amounts of water with a reduced current, producing a wide-angled, gentle flow. Where these pumps are used in reef aquaria the ratings for pump turnover range from 10 to 60 times the tank volume in liters per hour.

This sort of turnover is not, of course, suitable for every freshwater aquarium and naturally there are also fishes that really don't like much current at all – some labyrinthfishes, for example. Hence appropriate information on the natural requirements of the species maintained should always be researched in advance. But if the turnover of the water in a freshwater aquarium is limited by the size of the external filter to once or twice the aquarium volume per hour, and even if the fishes are not particularly current-loving, it can nevertheless make sense to augment the aquarium system with a separate current pump. The turnover of a current

pump (using the propeller-type pumps described earlier) can be between three and five times the aquarium volume in liters per hour. The flexibility of these pumps in use means it is relatively easy to create additional surface movement, which improves gas exchange, increases the oxygen supply, and prevents a film of scum from forming on the surface. Likewise a separate current pump can also help to prevent accumulations of mulm, something that is otherwise often difficult to achieve in decorated tanks with only a filter outflow providing current. Last but not least, increased current can also be helpful in combating a number of parasitic diseases. For example it is more difficult for the free-swimming stages of Whitespot disease, *Ichthyophthirius multifiliis*, to find a host in water with a strong current.

Where the decision has been made to maintain truly rheophilic fishes, however, the installation of a powerful current

pump is strongly recommended, even indispensable. In the wild rheophilic fishes do not generally spend all day in the strongest current. However, their physical adaptations enable rheophilic species to visit zones of strong current where their actual capabilities can be put to the test.

One doesn't necessarily need to have a warm water aquarium in order to observe this. The native European Minnow, for example, can demonstrate in the aquarium how at spawning time it is drawn, as if by magic, to areas of gravel with a strong current, where in spring it deposits its eggs during passionate embraces.

Whether we keep native species or tropical, an aquarium with current, in which rheophilic fish species can exhibit their natural behavior, is without doubt one of the most fascinating facets of the aquarium hobby.



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## CICHLIDS

# Mbuna – the kings of the rocks

by Erwin Schraml

Lake Malawi in southern East Africa is the third largest lake on the black continent. The majority of the fish species in Lake Malawi are cichlids (Cichlidae). The people living around the lake have their own names for some of the ecological groups of these cichlids – a very modern classification. The small species that inhabit rocky zones are called mbuna.

**W**hen the first mbuna arrived in German aquaria in the 1970s, they aroused a veritable storm of enthusiasm. "Freshwater coral fishes" they were termed, as just like the gaudily colored coral fishes these fishes exhibited bold, bright colors. The commonest color combinations are blue, orange, yellow, white, black, and occasionally also red. All mbuna feed on **Aufwuchs** (algae growing

on hard substrates and the small organisms the algae contain) and are maternal mouthbrooders. These fishes do not usually form pairs, in other words, there is no permanent bond between sexual partners. Dominant, territorial males normally look completely different to females. Ripe females swim into the territories of courting males and mate with them there. They subsequently leave



White male of *Maylandia estherae*.

the males' territories again and brood the eggs in their mouths. Juveniles and males with no territory either look like females in color or are pale all over.

These facts have a number of knock-on effects for the aquarium maintenance of these fishes. Thus, for example, courting males regard any female that comes near as being willing to spawn. If, however, the female is not ripe, the courtship of the male turns into aggression. For this reason it is fundamentally incorrect to maintain these fishes in pairs and this usually ends with the death of the female. Instead five

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Males *Pseudotropheus* sp. "Lime, Nkomo".

All photos: Frank Schäfer

to six females should be kept per male, so that the aggression of the male is shared (an alternative is to keep lots of males, which likewise spreads the aggression). Several courting (!) males of a species are an amazing sight that can be observed only in very large aquaria – in tanks of normal size it is usual for only one male to "color up," and in practice any other males present look like females in color or remain pallid; this is a defense against persecution by the dominant individual. An mbuna male will react the more aggressively, the more similar another male is to him in appearance. For this reason it is far better to mix mbuna species that are as differently colored as

possible, rather than species that are similar in coloration.

The females of closely related species often look rather similar to one another. Nevertheless hybridization between the species occurs only very rarely in the wild, as it is the females that seek out the males rather than vice versa. The females have an innate concept of what the correct "husband" looks like (and in addition olfactory and acoustic stimuli also play a large part in choice of partner). So they spawn with the right males and no others. In the aquarium hybrids can nevertheless occur, as here the females normally do not have a wide choice and the males all

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Female *Pseudotropheus* sp. "Lime, Nkomo".

display with great enthusiasm, even to anything that bears only a remote resemblance to a female. In the wild, by contrast, the females are so selective that local variants can evolve in a relatively short period of time. The females select their partners from an aesthetic



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viewpoint, so to speak, and as a result the males of the same species can sometimes look very different at various sites around the lake. By contrast the females look more or less the same everywhere. Hence it is very important always to keep only males and females of the same geographical variant in the aquarium. The fishes from different locations may cross in the aquarium without further ado, and the offspring may also be fully capable of survival and reproduction, but – compared to the wild forms – they always look rather poor. Unfortunately these facts were not yet known back in the early days, the fishes were very expensive and

science, and these haven't yet been cracked by aquarists either. First of all, of course, there remains the question of what constitutes a species and what a local variant.

This may be a rather academic question without any great practical significance for the aquarium hobby, because, as already discussed, there exists no such distinction for the breeder who wants to avoid producing useless crosses. But it would be nice if aquarists were able to make a contribution to the debate on the subject being conducted by scientists by adducing arguments based on observations made in life. More over the

unexplained phenomenon is polychromatism (= multiple color variants), which in some mbuna can occur within a population. Thus, for example, we have our old friend *Maylandia\* estherae*. Here the males are usually blue and the females orange. But there are also whitish males. So how does that relate to the mate choice by the females discussed earlier, and what is the point of it at all? We simply don't know.....

And then, why do the females of many mbuna species have eggspots in the anal fin? As we all know by now, the eggspots in the anal fins of male mouthbrooding



Normal-colored female *Maylandia estherae*. The eggspots in the anal fin are clearly visible.

imported only in small numbers, and as a result such "hybrid" aquarium populations were very common and no longer able to compete with the original imports in terms of beauty.

In ignorance of the real reasons, inbreeding was held responsible for this loss of color. But that makes no sense. Real damage from inbreeding can easily be avoided by careful selection of the fishes used for further breeding. Inbreeding is essentially not a problem given the huge reproductive capability of fishes, as long as the breeder understands his craft.

The matters discussed so far have been known for decades. And yet the mbuna present numerous unsolved puzzles to

question of the actual number of species of cichlids in Lake Malawi also plays a role in species conservation. Unfortunately variants are not regarded by the authorities as deserving protection. But because many mbuna occur in only very limited regions, it can easily come to pass that a major environmental change can wipe such a local form off the face of the planet. In the case of the mbuna it would not require any major effort or skill to protect them from extinction through conservation breeding. But for that it is first necessary to know what their status is, and that is something that normally happens only if they are recognized as species.

Leaving aside these philosophical thoughts, a further completely

cichlids serve as egg dummies. During spawning the female snaps at what she thinks are eggs on the anal fin of the male and hence takes the sperm into her mouth to fertilize the real eggs. But why in the world do female need such spots? Yet another unanswered question.

These and other interesting questions form part of the subject matter of a new journal called "eggspots", published in both English and German.

Issue 1 can be downloaded free of charge as a PDF file at [www.worldfish.de](http://www.worldfish.de). The PDF of the recently published issue 2 costs 1.50 Euros. This journal should prove dear to the heart of anyone who is seriously interested in mouthbrooding cichlids from Africa (not just mbuna).

#### \*Maylandia or Metriaclima?

There are international rules governing the scientific naming of animal and plant species. When the mbuna of the *Pseudotropheus zebra* complex were separated off as a distinct genus, the scientists who did this interpreted these rules such that they believed the existing name of *Maylandia* for these fishes did not conform to the rules, and instead created the new genus name *Metriaclima*.

Since then some scientists have agreed with the arguments adduced and used the name *Metriaclima*, while others think otherwise and use *Maylandia*. Here at Aqualog we have decided in favor of *Maylandia*.

If, dear Reader, you go searching for more information on these fishes, make sure you also look under the name *Metriaclima*, as otherwise you will miss a lot.

## MARINES

# The Fingered Dragonet

## Imposing presence – inconspicuous coloration

by Joachim Frische

The term dragonet is dominated by a fish known to every marine aquarist: the Mandarinfish *Synchiropus splendidus*. By contrast, only a few are aware that this family contains at least 26 genera (Worms, 2009), a number of which have even made their way into fresh water, for example *Tonlesapia tsukawakii* (Motomura & Mukai, 2006).

### Rarely imported

Despite the wealth of species only five members of the dragonet family have actually been imported regularly. The Fingered Dragonet (*Dactylopus dactylopus*) isn't one of them. It is a true rarity! This is actually a good thing, as with a body length of up to 15 cm (other sources, such as Fishbase 2009, cite as much as 30 cm in length) it cannot really be regarded as one of the small members of its family. Its coloration is not particularly striking, but instead the fascination of this imposing fish lies in its behavior.

### Tapping out food

Like all dragonets, the Fingered Dragonet is a bottom-dweller, preferring above all sand- and mud-flats in the immediate vicinity of the coast (Debelius, 1994). This species exhibits an anatomical peculiarity in the form of finger-like extensions to the ventral fins. The fish moves across the bottom using these "fingers" like feet. When searching for food it "taps" on the bottom with these fingers in order to scare small creatures out of the substrate to where they offer an easy target for the protrusible mouth (Haase, 2006, pers. comm.). As a defense against predators these fishes bury themselves lightning-fast so that only the eyes remain visible. In addition numerous dragonets produce foul-tasting and -smelling substances, which they secrete in their mucus coating, thereby effectively denying



*Dactylopus dactylopus*, male, from Cebu (Philippines).

Photo: F. Schäfer

predators what might otherwise seem an easy meal.

### Sexual differences

Adult males can be distinguished from females by the filamentous extensions to the rays of the imposing first dorsal fin. As with all dragonets, the males are quarrelsome among themselves, making the maintenance of several males together impracticable. The females are more peaceful, but it is equally advisable to keep just one of this sex in the aquarium. Hence the maintenance of a pair is recommended.



If you aren't sure about sexing them then it is better to buy just one individual in the first instance.

### Maintenance

Fingered Dragonets should be housed only in well-established aquaria, where they will initially be able to feed on the abundant population of small crustaceans until they learn to accept frozen foods of appropriate size for their mouths. There are contradictory reports on ease of maintenance. While some marine aquarists report that maintaining the species is easy, others have had bad

experiences as regards feeding these fishes. This may on the one hand reflect the nutritional state of the fishes, which is difficult to estimate, and on the other be due to tankmates being lively and boisterous fishes. It should also be mentioned that these fishes will jump out of the aquarium in extremis.

A further reason for the variable experiences may lie in the confusion of two species.

***Dactylopus dactylopus* or *Synchiropus kuiteri*?**



*Synchiropus kuiteri* from Cebu.

Photo: F. Schäfer

These two species are often confused on the basis of external appearance. Because of numerous anatomical similarities *Synchiropus kuiteri* was initially described as *Dactylopus kuiteri*. It was, however, the discoverer of *Synchiropus kuiteri* Fricke, 1992 who transferred the species into its current genus. A good distinguishing character is the orange color of the upper jaw in *Synchiropus kuiteri*, readily visible when the mouth is protruded. Moreover the dorsal fin in males of the Fingered Dragonet is prolonged into filaments, while that of *Synchiropus kuiteri* is leaf-like in shape. *Synchiropus kuiteri* is regarded as difficult in its maintenance, as artificial food is often refused.

If, despite all the negatives, you are now interested in keeping these fishes, your dealer will undoubtedly be able to order them for you from a wholesaler of his acquaintance - for example Meeresaquaristik-Reising in Alzenau-Wasserlos, Germany, Fax +49 6023 31502.

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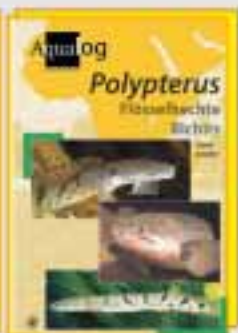
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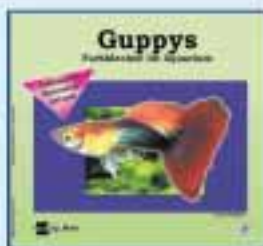
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# *Agalychnis callidryas*

## - from rarity to beginner's frog

by Thorsten Holtmann

The Red-Eyed Tree Frog is one of the most colorful frogs in existence. Then there is its ghostly appearance. But its most striking feature is the bright red eyes. Hence this frog has always been coveted among terrarium keepers.

However, until the mid 1960s these frogs remained largely an unfulfilled dream, as at that time imported specimens were an expensive affair. In the 1970s and 1980s, however, these frogs, whose homeland lies in Central America where they are widespread and common, became relatively commonplace and cheap, though they were usually very susceptible to problems and our enjoyment of them was often only brief. Nevertheless, determined terrarium keepers eventually managed to breed and rear them, and nowadays these splendid frogs are part of the standard stock-in-trade of the pet trade.

The captive-bred stocks usually sold today are fairly unproblematical in their maintenance and can even be kept very readily by newcomers to the hobby.

The original susceptibility of the imported specimens can be traced largely to inadequate holding accommodation in the countries of origin. Red-Eyed Tree Frogs are inhabitants of the upper levels of the forest, where they spend the day sleeping. They become active only at night when they descend to take in water, filling their anal bladders in ponds and puddles or in the water-filled "goblets" of bromeliads. As tree-dwellers such frogs hardly ever come into contact with their own excreta in the wild. But the reproductive stages of the majority of frog parasites live in their faeces. In the overcrowded and rather unhygienic

collecting stations of earlier years the frogs very rapidly acquired a massive parasite burden, which quickly laid them low.

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as on the one hand, unlike in the early days, suitable medications are now



*Agalychnis callidryas*, photographed in the wild in Costa Rica.

Photo: Archiv Aqualog

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The brilliant red eyes of the species are fascinating. Photo: Frank Schäfer

available for treating the frogs, and on the other the exporters have learnt a lot and now maintain these frogs under favorable conditions at the stations.

Regardless of whether captive-bred or wild-caught frogs are purchased, their essential maintenance is the same. Red-Eyed Tree Frogs are inhabitants of the Tropics, which should be kept all year round at a daytime temperature of around 30 °C and about 23 °C at night, with a photoperiod of 12 hours.

Although these frogs are strictly nocturnal and always sleep during the day, the terrarium should be well illuminated. On the one hand this will produce the necessary day-night temperature gradient, while on the other the lighting will encourage the luxuriant plant growth desirable in a terrarium for Red-Eyed Tree Frogs.

Use a terrarium around 60 x 60 x 80 cm (length x width x height) for the maintenance of 3-4 specimens - females grow significantly larger (up to around 7.5 cm) than the males (4-5 cm).

Breeding can be triggered by the imitation of a rainy period. Initially the frogs should be kept at about 60% relative humidity, which should then be raised to around 80% through heavy spraying while feeding heavily. The spawn will be laid on the undersides of the leaves of terrestrial plants, and on hatching the tadpoles will fall into the water beneath. They can easily be reared on fish food.

If you are now filled with the desire to keep these frogs then your pet dealer can undoubtedly order them for you from a wholesaler of his acquaintance, for example from Tropenparadies in Oberhausen, Fax +49 208-665997.

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