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# NEWS

The Magazine for Aquarists & Terrarists!



 **Filefishes -  
Useful and  
neat**



 **Ancistrus -  
Puzzling  
catfishes**



 **The African  
spurred  
tortaoise**



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### Preview:

**News No 105**  
will appear on KW 48/49 2012  
Don't miss it!

### Titelbild:

Guppy Arctic Blue  
Bacopa caroliniana

Photos: F. Schäfer

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Zusätzlich zum traditionellen Einzelhandel wird die NEWS in vielen Filialen der untenstehend aufgeführten Ketten verteilt.

Darüber hinaus liegt die NEWS auf vielen Fachmessen aus und kann auch von Vereinen anlässlich von Veranstaltungen zum Verteilen angefordert werden.

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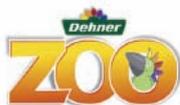


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Filialen mit Zoofachabteilung





## L-numbers

## Puzzling bristlenose catfishes

by Klaus Diehl

Can there be anyone who isn't familiar with the *Ancistrus* species usually known simply as "the" Bristlenose Catfish? The dainty youngsters look very attractive, while adult males with the strange "tentacles" on their heads have a very bizarre appearance. The species occurs in various cultivated forms, namely albino (white with red eyes), lutino (yellow with black eyes), checkered, and long-finned. It has become a real household pet. But this and similar species represent a huge puzzle for scientists.

At present 64 species are scientifically recognized in the genus *Ancistrus*, but well over 100 have been originally described as *Ancistrus*. To the present day the majority of species are known only from preserved specimens that normally no longer exhibit much if any patterning. Hence the identification of *Ancistrus* is virtually impossible, even for specialists, without information on their provenance. For this reason a comprehensive revision of the genus is urgently required, but such a work would take years or even decades. According to the most recent review, by SEIDEL & EVERS, at least 93 *Ancistrus* species are known in the hobby, but only 20 can also be assigned to described species. From this it can be estimated that the actual number of *Ancistrus* species in existence may well be significantly more than 300, as only comparatively few regions in South America have to date been traveled by aquarists and collecting for the trade likewise always takes place in the same, relatively small areas.

### Ubiquitous but undescribed

The Bristlenose Catfish was labeled *Ancistrus dolichopterus* in practically all books, magazines, etc published before 2005. And even today inattentive editors sometimes let this slip past. But it is now generally known that our aquarium Bristlenose doesn't belong to the species *Ancistrus dolichopterus*, but represents either a cross that cannot be given a scientific name (crosses or hybrids, or bastards as they are sometimes termed,

are given names only in botanical nomenclature, while the rules of zoological nomenclature forbid the giving of scientific names to such animals), or an as yet unidentified species. *Ancistrus dolichopterus* is a quite different



Aquarium Bristlenose, albino.

fish that is known by the L-number L183 in the hobby and has often also been termed *Ancistrus hoplogenyis*. But this name too (*A. hoplogenyis*) is used incorrectly, as it is now believed that in reality the catfish L59 is *A. hoplogenyis*. So



*Ancistrus* sp. L144, the newly imported wild-caught specimen.

All photos: F. Schäfer

Normal form of L144, the Paraguay Bristlenose Catfish *Ancistrus pirareta*





to put it plainly: *A. dolichopterus* is one of the so-called white-edged bristlenose catfishes and comes from the Rio Negro in Brazil, *A. hoplogenyis* is the rare Spotted Bristlenose from the Rio Guama and its tributaries (likewise in Brazil), and hence "the" Bristlenose Catfish has no scientific name and must for the time being be termed *Ancistrus* sp.

#### A mysterious bristlenose from Paraguay

In 1992 aquarist Kerstin Holota discovered a yellow-colored *Ancistrus* at an importers in southern Hessen; it had purportedly come from Paraguay along with normal-colored conspecifics. Holota bought the yellow individual and a number of others. The yellow individual turned out to be a male, which was paired with a female from the same importation. Astonishingly the very first brood included yellow fry, which meant that the "yellow factor" in the wild fish was inherited in accordance with the second Mendelian law, so that statistically a quarter of the offspring were pure-strain yellow, a quarter were pure-strain natural-colored, and half carried the genes for both yellow and natural. Holota eventually succeeded in breeding a pure yellow strain. This yellow *Ancistrus* was a lutino, as it had dark, not red, eyes. This

*Hemiloricaria castroi* - the fish was this color when imported from Peru. The small photo above right shows the same fish a year later.



This *Otocinclus vestitus* lost its yellow coloration after just a few weeks and was thereafter indistinguishable from its conspecifics.

yellow bristlenose catfish received the L-number 144. L144 was a rare stroke of luck for the breeder, as for unexplained reasons the yellow specimens of other loricariid species that sometimes turn up in importations change to normal color after a while. As happened a while back with *Otocinclus vestitus* and *O. macrospilus* as well as *Hemiloricaria castroi*.

Unfortunately the appearance of the natural-colored L144 wasn't documented, so its identity remains unclear. Holota seems to recall, however, that it was a red-spotted *Ancistrus* species; a species matching that description was



Aquarium Bristlenose Catfish, Gold cultivated form.



*Hemiloricaria castroi*

widespread in the hobby at the time as *Ancistrus* sp. "Rio Paraguay".

#### A new wild-caught L144 turns up!

A few weeks ago the improbable happened: Aquarium Glaser in Rodgau (southern Hessen!) received another wild-caught lutino in an importation of *Ancistrus* from Paraguay. This *Ancistrus* was the species *A. pirareta*, which is regularly imported from Paraguay for the hobby, although it has become normal for the fish to be labeled *A. tamboensis* in the trade. *A. tamboensis* is, however, a species from the Ucayali drainage in Peru. It looks generally similar to *A. pirareta*, but has the light dots only on the anterior half of the body. As far as is known *A. tamboensis* isn't available in the hobby. The rare lutino – it is an extraordinary stroke of luck for such





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a strikingly colored fish to survive in the wild at all, let alone end up in the net of an aquarium-fish collector – has gone to a breeder of *A. pirareta* along with a number of normal-colored specimens. Who knows, perhaps the history of L144 will repeat itself? L144 has in fact largely died out, supplanted in the trade by a more attractively colored yellow variant of the aquarium Bristlenose (*Ancistrus* sp.).

All this demonstrates that it isn't necessary to travel to the tropics to come across unexplained puzzles in the realm of fishes. Sometimes they can be found in a corner of the aquarium store...

## Lexicon

### Bristlenose catfishes

*Ancistrus*: from the Ancient Greek word for a fish hook, referring to the hook-like spines on the movable interoperculum (interopercular odontodes), which are extended when danger threatens.

*dolichopterus* means "with long fins".

*hoplogeny*s means "with a heavily armed snout".

*tamboensis* means "from the Rio Tambo".

*pirareta* refers to the type locality, "Salto Pirareta".

*Otocinclus* Ancient Greek, meaning "with a latticed ear"; referring to a grid-like bone in the skull, visible from outside, in the location where the ear is in humans.

*vestitus* means "clothed, covered", again referring to the ear lattice.

*macrospilus* means "with a large spot".

*Hemiloricaria* means "half Loricaria"; Loricaria is another catfish genus.

*castroi*: honorific name, meaning "of Castro".



Portrait of the normal aquarium Bristlenose Catfish. At present it isn't possible to give the species a scientific name.



*Ancistrus hoplogeny*s



*Ancistrus dolichopterus*

Wild-caught yellow specimen of *Otocinclus macrospilus*



## Buchtipp !

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## Plants

# The Giant Bacopa -

a vivarium plant that can be used almost anywhere

by Sarah Nieten

The well-stocked pet store offers aquarists and terrarium keepers a wide range of plants suitable for the home biotope, though the full potential of many such plants isn't exploited. This is the case with the Giant Bacopa or Water Hyssop, *Bacopa caroliniana*.

Giant Bacopa, submerge habitus

All photos: Frank Schäfer



## Lexicon

### Giant Bacopa

*Bacopa*: from a name used for the plant in Guyana.  
*caroliniana* means "from Carolina".  
*amplexicaulis* means "stem-embracing".

**T**his plant was, so to speak, one of the founding fathers of the aquarium flora and was known as long ago as the beginning of the 20th century in the tanks of our great-grandfathers. The first importation was by Paul Matte (Lankwitz, near Berlin) from Florida in 1905. The botanical term *amplexicaul* (as in the scientific species name "*amplexicaulis*", a well-known synonym) means "embracing the stem" and refers to the leaves, which aren't joined to the stem by stalks but attached from the entire breadth of the base of the leaf.

From a systematic viewpoint, *Bacopa caroliniana* belongs to the figwort family (Scrophulariaceae), which contains some 1,700 species worldwide. Well-known European representatives include the mulleins (*Verbascum*), and the Butterfly Bush, *Buddleia davidii*, a popular ornamental shrub. The family contains only a few aquarium plants. Along with *Bacopa*, *Limnophila* (Ambulia) is probably the most important genus from a vivarium viewpoint.

### The distribution of the Giant Bacopa

The Giant Bacopa is by no means restricted to Carolina but found in large parts of the southern and central USA, with the focus of its distribution along the Atlantic coast. This means it automatically has one of the prerequisites of an "evergreen" aquarium plant: temperature tolerance. While it may not be winter-hardy here in Germany, it readily tolerates



## So wird aus dem Fisch ein echter Hingucker

In der neuen „Aquarienfoto-Fibel“ aus dem Dähne Verlag erklärt einer der bekanntesten und renommiertesten Aquaristikfotografen, wie ein perfektes Bild entsteht und was beim Fotografieren von Aquarien und Fischen zu beachten ist.

Ob das Aquarium in der Totalen oder der Fisch im Porträt – ein optimales Foto ist leichter zu erreichen als man denkt. Burkhard Kahl zeigt, wie es geht.

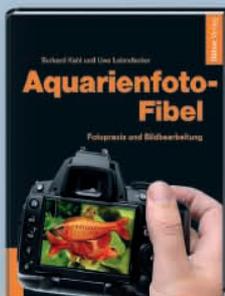
In diesem leicht verständlichen Einsteigerbuch werden viele Beispiele aus seiner Fotowerkstatt gezeigt und er vermittelt, gemeinsam mit dem Fachjournalisten Uwe Leindecker, die Geheimnisse erfolgreicher Aquarienfotografie und Bildbearbeitung.

Das Autorenduo tut dies mit einer systematischen Übersichtlichkeit, die bereits im Inhaltsverzeichnis deutlich wird: Anfangs dreht sich alles um die Kameraausrüstung. Wie viele Megapixel braucht man? Welche Kamera ist am besten geeignet und welche Wechselobjektive sind sinnvoll?

Neben detaillierten Infos zur Aufnahmepreparation geht es dann um die Frage des geeigneten Beckens. Auch die Aufnahmetechniken werden beleuchtet und schließlich die Wahl des richtigen Motivs. Von einfacheren Porträts über schwierigere Gruppenaufnahmen, Burkhard Kahl erklärt die Feinheiten. Alle Fotos sind mit den jeweils wichtigen „Aufnahmeinfos“ wie Objektiv, ISO-Wert, Blende, Belichtung und Blitzlicht versehen. Auch der Pflanzenfotografie und Aquarienlandschaften ist ein Kapitel gewidmet.

Abgeschlossen wird die Thematik mit den Bearbeitungsmöglichkeiten der Fotos am Computer, dem heutigen Fotolabor: Informationen zu Bildformaten und Tipps zu ‚Photoshop Elements 10‘ runden die Profitipps ab. Dank der vielen Beispiele und einfachen Erklärungen verhelfen die Autoren dem begeisterten Hobbyaquarianer schnell zu eigenen brillanten Fotos.

## Buchtipps!



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temperatures between 14 and 25 °C, and can thus be used equally well in cold-water tanks, unheated domestic vivaria, and accommodation for tropical livestock. But the temperature should be allowed to rise above 25°C only briefly, as otherwise *Bacopa caroliniana* will suffer problems.

### Habitus

The Giant Bacopa is a typical stemmed plant that can attain a length of some 40 to 60 cm. Like almost all aquarium plants it usually grows out of the water in the wild,

though it likes to have its bottom part in water. This form of growth is termed semi-emerse, ie half emerse. When a plant grows entirely on land it is termed emerse, while when it grows submerged underwater it is termed submerge. The submerge form of the Giant Bacopa is only rarely to be found in the natural habitat. As well as the original form there is also a variant with reddish leaves known as *Bacopa caroliniana* "Variegata" (some sources use this name for a white blotched, so-called "mottled" form; but neither is available in the trade). The

normal Giant Bacopa can also sometimes develop reddish leaves. This is attributed to low phosphate content, low nitrate, and bright lighting. The underwater form has a typical rich sheen reminiscent of various succulent plants. The emerse foliage is also very shiny: the stems of emerse growth are densely covered with hairs, and this means that emerse- and submerge-cultivated plants can be readily distinguished. If the leaves are rubbed between the fingers or the plant is pressed for a herbarium, then they release an aromatic scent, reminiscent of lemons. Propagation is either by offshoots that form at the base of the mother plant, or by tip cuttings, which almost always root without problem. Removal of the growing tip causes the plant to produce sideshoots and develop a more bushy habitus.

Flowering emerse shoot



### Culture

The Giant Bacopa is light hungry; two fluorescent tubes are advisable with a water depth of 30-40 cm, and there should be three if the water is 50-60 cm deep. Otherwise there isn't actually much that can go wrong during cultivation. *Bacopa caroliniana* requires neither rich substrate nor CO<sub>2</sub> fertilization, though admittedly the plant grows best in soft water. The substrate should be sand or fine gravel, which is good for root formation and encourages the production of off-shoots. In summer the Giant Bacopa can also be readily cultivated in the garden pond, where it will become particularly beautiful and vigorous, but the plant must be taken indoors in October. If you want to use *Bacopa caroliniana* in the paludarium then it will suffice to plant tip cuttings in 5-10 cm of water. The plant will then grow up out of the water and develop into the terrestrial form, which, given a long photoperiod (lighting for more than 12 hours per day), will produce pretty blue flowers. Aquarists can also enjoy the flowers if they allow their plants to grow out of the water. The flowers are usually blue, with white flowers occurring only rarely. They are around 1 cm across and hermaphroditic;



they are self-fertile and hence also set seed, though this isn't usually capable of germination.

All in all, the Giant Bacopa is a beautiful vivarium plant, which can be put to many uses by both aquarists and terrarium keepers, as well as having plenty to offer the pure plant enthusiast.

## Buchtipp !

### Aquarienpflanzen

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Flower of *Bacopa caroliniana*

## Marines

# Filefishes - useful and neat

by Matthias Reising

*Oxymonacanthus longirostris*

All photos: Frank Schäfer



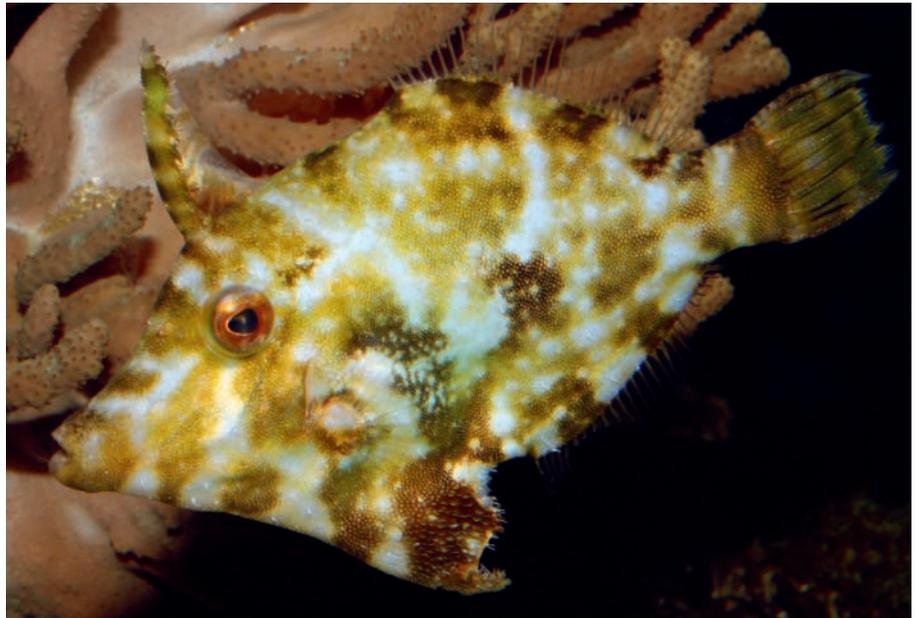
The filefishes (Monacanthidae) are a family in the puffer assemblage (Tetraodontiformes), which means that their closest relatives include puffers, porcupinefishes, boxfishes, and triggerfishes. Externally they are most similar to the triggers, with which they share a locking mechanism for the first dorsal-fin spine. This mechanism serves to lock the dorsal-fin spine firmly in place. While the majority of the puffer assemblage have powerful biting tools with which to crack open mussels, snails, sea urchins, and the like, the dentition of the filefishes is designed solely for feeding on small organisms.



It was this dentition and above all the associated feeding habits that first brought the filefishes to the attention of marine aquarists, as some species are especially fond of consuming the “glass roses” (*Aiptasia*) that are such a nuisance in the coral-reef aquarium. However, these filefish species are not trophic specialists. The species currently most frequently offered for combating *Aiptasia* is *Acreichthys tomentosus*, which has become so popular that it has acquired a whole set of common names – Aiptasia-Eating Filefish, Bristletail Filefish, Matted Filefish.

#### The Bristletail Filefish - the most popular of them all

This species is a very common and widespread fish. It occurs in large parts of the western Indo-Pacific and received its scientific name back in 1758 from the father of zoological nomenclature, Carl von Linné. With a maximum size of 12 cm (aquarium specimens, which are known to live considerably longer than those living in the wild, may perhaps grow somewhat larger), it is ideally suited to aquarium maintenance. Like almost all members of



*Acreichthys tomentosus*, adult specimen.

the puffer group, the Bristletail Filefish is not an active swimmer and hence doesn't require much swimming space. Its coloration is such that it may easily be overlooked. As can be seen from the photos, it usually comes in assorted shades of brown and gray. But anyone who takes the time to observe these fishes more closely will find that they are capable of rapid, mood-dependent changes of color, and that immediately makes them more

interesting. They can even turn bright green!

The Bristletail Filefish is very fond of eating *Aiptasia*, but will often also consume other sessile invertebrates. Hence long-term



Juvenile *Acreichthys tomentosus* are exceptionally dainty.



maintenance in the coral-reef aquarium is only sometimes possible, as there are considerable differences in the habits of individuals. The ideal is to have a fish-only tank available as well as the reef aquarium, so that the *Acreichthys tomentosus* can be transferred to the former when the *Aiptasia*

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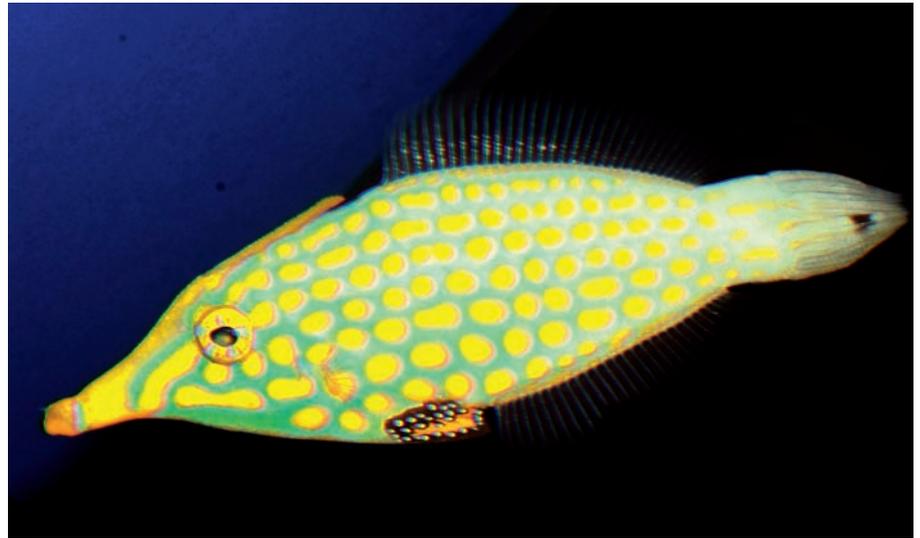
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have all been eaten. Because the total eradication of these survival specialists can be achieved only with difficulty, the filefish needs to be returned to the reef aquarium from time to time. So it is definitely not a good idea to give it away after the first plague has been eliminated.

### The Harlequin Filefishes - the loveliest of them all

Only a few of the roughly 100 filefish species currently known are noted for their bright coloration. But there are two exceptions: the Harlequin Filefishes (*Oxymonacanthus longirostris* and *O. halli*). The two species look so similar that until the 1950s they were thought to be a single species. Only then was it realized that the Harlequin Filefishes from the Red Sea were different to those from the Indo-Pacific, and they were described as *O. halli*. Both these species are again common and widespread and grow to only 10-12 cm long, but unfortunately they cannot be recommended for the marine hobby in general. They are extreme trophic specialists that feed exclusively on polyps of the stony coral genus *Acropora* in the wild. In addition these fishes are sociable, such that specimens kept singly waste away. It is in fact possible to get Harlequin Filefishes used to substitute foods (E. Thaler managed it with frozen glassworms, which she placed in dead *Acropora* branches using forceps).



*Oxymonacanthus longirostris* is gorgeous, but suitable only for experts.

Such acclimated fishes may even spawn in the aquarium. But difficult species like this are best reserved for specialists who know precisely what they are letting themselves in for. Because, as already mentioned, these fishes are common and widespread, it isn't a problem to import them when required.

### The Scribbled Filefish - the largest of them all

The majority of tropical filefishes remain manageably small and can be purchased without too much thought as long as a fish tank is available, because the main distribution of the somewhat larger filefishes lies in subtropical waters where no exportation for the aquarium hobby takes place. Here the fishes are so common that

they are even caught as food. While the majority of the members of the puffer assemblage mentioned earlier are deadly poisonous when consumed, this doesn't apply to the filefishes. At least not in most cases. As the Scribbled Filefish (*Alutherus scriptus*), a species distributed worldwide throughout the tropics and which can grow up to 110 cm long, sometimes takes its revenge on people who eat it via ciguatera poisoning. This can arise through the consumption of otherwise non-toxic fishes if the poison from an alga has accumulated in their flesh. But aquarists don't normally eat their pets, of course. It is nevertheless important to be familiar with the Scribbled Filefish in order to avoid accidentally buying it as a dainty youngster. The long caudal fin makes the species easy to recognize. In public aquaria, however, the Scribbled Filefish is, of course, a real eye-catcher, as it is very attractively colored. The species presents no difficulties as regards feeding, as it is a rather opportunistic omnivore.

### The Blackbar Filefish - the most interesting of them all for the hobby?

This filefish species, correctly termed *Pervagor janthinosoma*, is again widely distributed in the Indo-Pacific. It too grows to only around 12-14 cm long. The Blackbar Filefish is significantly more aggressive towards conspecifics than the previously mentioned species, which can readily be housed with conspecifics, and in the case of

*Alutherus scriptus*, male. This species grows to more than a meter long and is the largest filefish.

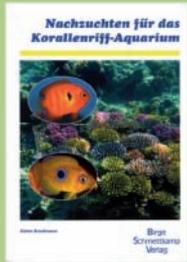




# Buchtipp!

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*Oxymonacanthus* even should be. Nevertheless one should always try to put pairs of this species together. So far not much has been published on the Blackbar Filefish. There are reports that the species is difficult to get to feed, but these are mostly ancient (before 1980) and it isn't completely clear whether the problems may not have been down to inappropriate treatment of the fishes. When adult (around 8 -10 cm in length upwards) the Blackbar Filefish usually lives in pairs. The male can be recognized by rough, bristle-like scale structures on the caudal peduncle, which are absent in females. Should *Pervagor janthinosoma* turn out to be a good *Aiptasia*-eliminator, which also looks attractive and can be bred, then it would certainly be the dream filefish for the reef hobby. However, it must be stressed once again that there are as yet far too few experience-based reports available on this fish, let alone on breeding it.

### Breeding essentially possible!

Filefishes have proved fairly amenable to attempts to breed them. Even the extremely tricky *Oxymonacanthus* have already spawned in the aquarium. However the Bristletail Filefish is probably the only species that has so far been bred with any degree of success worth mentioning. Unfortunately the sexes cannot be distinguished in the youngsters usually

available in the trade, and only with the arrival of sexual maturity do males develop the spiny scales on the caudal peduncle, already mentioned for *Pervagor*, that have led to the popular name of Bristletail Filefish.

Hence it is best to obtain 5-6 youngsters and wait for them to form pairs. The fishes spawn in pits in the bottom that are stringently defended by the male. The young will readily take the usual plankton (rotifers, plus phytoplankton) cultivated by private breeders, the main difficulty in rearing being maintaining a sufficiently high food density - the young filefishes should always literally be up to their fins in food - and at the same time the water quality mustn't be allowed to deteriorate too much.

All in all, filefishes are interesting aquarium fishes, about which there is still much to learn. And we haven't even discussed here the fact that there are filefishes that imitate the highly poisonous puffers. But more of that another time, maybe ...

If you are now filled with the desire to keep filefishes, then your pet dealer can undoubtedly order one or another species for you from a wholesaler of his acquaintance, for example Meeresaquaristik Reising in Alzenau-Wasserlos, Fax +49 (0)6023-31502

*Pervagor janthinosoma*



## Lexicon

### Filefishes

*Aiptasia*: meaning unknown (not explained in the original description).

*Acreichthys*: from Latin acer = "pointed" and Greek ichthos = "fish". *tomentosus* means "hairy".

*Oxymonacanthus*: means "pointed *Monacanthus*"; *Monacanthus* is another filefish genus. *longirostris* means "with a long snout".

*halli*: named after Major H. W. Hall, M.C., the owner of the M.Y. Manihine.

*Acropora*: "acro" means "extremity" (including in the sense of branch), "pora" refers to the similar genus *Millepora* (= "with thousands of pores").

*Alutherus*: meaning unknown. The originator of the name, Baron Cuvier, called these fishes "les *Alutères*", which was later Latinized into a valid scientific name.

*scriptus*: means "covered in writing", referring to the scribble-like body pattern.

*Pervagor*: means "one who wanders far".

*janthinosoma*: means "violet body".

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## Invertebrates

# One for everyone: *Neocaridina heteropoda*

by Max Leber

Dwarf shrimps of the genera *Caridina* and *Neocaridina* are all the rage in the 21st century aquarium hobby. When Uwe Werner published the very first book on the subject in 1998, *Shrimps, crayfishes, and crabs in the freshwater aquarium (Aqualog)*, a few species were already known in the hobby. But it was virtually impossible to get reliable information on the little creatures imported more or less universally as bee or bumblebee shrimps.

That has undergone a fundamental change during the last 14 years. In the meantime the massive hype surrounding these shrimps has abated somewhat and in particular prices have dropped to a reasonable level; this has meant that maintaining shrimps has once again become a hobby for a broad market and not just something for aquarium fanatics - a development that can only be welcomed. Moreover it is nothing new for animals or plants to command sometimes ridiculous

prices among enthusiasts. We have only to recall the tulip mania in the Netherlands in 1620-1637, whose eventual collapse even triggered a sort of world economic crisis. In those days the price paid for some tulip bulbs was as much as the cost of the most expensive houses in Amsterdam...

### Miracles of adaptability

What makes breeding dwarf shrimps so interesting is the huge mutability of these

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little creatures in captivity combined with a very rapid succession of generations. The maximum age of a dwarf shrimp is around 1.5 years and the females of *Neocaridina heteropoda* produce clutches almost continuously at temperatures above 18°C. Each clutch contains around 20-50 eggs which are carried around (and hence protected) by the mother shrimp on the legs (pleopods) of her abdomen until the young hatch. Even in the wild many dwarf shrimps are extremely variable in

Blood Red variant of *Neocaridina heteropoda*, female in front, male behind.

All photos: Frank Schäfer





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coloration. I remember one case where a breeder in Karlsruhe saw dwarf shrimps he had never seen before at a breeder friend's. He asked the friend for a few specimens and was told that the shrimps were some he had bred himself and passed to the friend a few months previously. That is how mutable these shrimps are!

*Neocaridina heteropoda* was originally known from eastern China, but has now also been introduced in various other parts of the world. Its ease of breeding combined with a wide tolerance of the most diverse water conditions made it seem particularly suitable for use as a food animal in aquaculture. Hardly surprisingly, the little shrimp sooner or later escaped and created free-living colonies. Nowadays it is found in large parts of China, Japan, and Taiwan, and further away in Hawaii. The shrimps widespread in the hobby supposedly originated from Taiwan. Because *Neocaridina heteropoda* can also survive outdoors year-round in Germany, great care should be taken not to let them

escape into the wild. Anyone who, intentionally or unintentionally, releases livestock – be it dogs, cats, birds, or aquarium-dwellers – is committing a criminal offence, a point worth bearing in mind.

#### It all started with the Cherry Red

*Neocaridina heteropoda* is so variable in coloration in the wild that it cannot be identified on the basis of color. The spectrum ranges from black to transparent, with shades of green brown, and red in between. Bluish individuals also occur. But if there is such a thing as a golden rule when it comes to breeding ornamental animals – be they canaries, Goldfishes, or indeed dwarf shrimps – then it is that if it is possible to breed a red form, then a red form will be bred. And thus the cultivated form Cherry Red soon came into being, and rapidly made *Neocaridina heteropoda* the most popular dwarf shrimp of all. The coloration became even more intense in the "Fire Red". But gradually these little

## Lexicon

### Dwarf shrimps

*Neocaridina* means "new *Caridina*"; *Caridina* is another shrimp genus. *heteropoda* means "with different feet".

shrimps also started receiving derogatory nicknames such as "Guppy shrimps", denoting that it is as hard to prevent them from breeding as it is with Guppies. Now that is nonsense in the case of the Guppy. Such statements can be made only by people who have never been involved in the breeding of Guppies. But there will always be counter-currents. So the Japanese-sounding name "Sakura" was coined for red *Neocaridina heteropoda* in which the legs are also an attractive red, the idea being to imitate the terminology used for Koi or the classification of Crystal Red shrimps. That sort of thing is remarkably effective.

This attractive variant of *Neocaridina heteropoda* is called the "Rili". The photo shows an egg-carrying female.





Male of the Rili variant. Males can be recognized by the slimmer abdomen.



### No end in sight

But in the meantime not only red but also bright yellow *Neocaridina heteropoda* are being bred. One very attractive variant is the red and white checkered "Rili" form. This is thought to have been bred in Taiwan and is sometimes also known as the Kohaku Shrimp. Again reminiscent of Koi... The Rili Shrimp breeds true and can be kept and bred in exactly the same way as the familiar Cherry Red.

To sum up in brief: if possible these shrimps should be kept in groups of 10 or more specimens, with an underwater landscape offering as much cover as possible, ie plants, dead wood, dead leaves, large pebbles, etc.; the substrate should consist of medium-coarse gravel (grain size 3-6 mm) to provide cover for the numerous offspring, which are initially bottom-oriented; water parameters

(hardness and pH) are of secondary importance as long as extremes are avoided; the water temperature can be between 4 and 28 °C, though abrupt temperature fluctuations should be avoided; feeding should be with a staple diet of ornamental-fish food (ideally tablet foods). Males and females of *Neocaridina heteropoda* differ noticeably in body form; in this regard I

Juveniles of all variants are inconspicuously colored..



suggest looking at the photos accompanying this article. Note that *Neocaridina heteropoda* doesn't yet have an established popular name. "Dorsal-Stripe Dwarf Shrimp" is sometimes suggested, but the name isn't very diagnostic as on the one hand there are also other species with dorsal stripes, and on the other some color variants of *N. heteropoda* don't exhibit any dorsal stripe at all.

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## Frogs

# Dwarf aquatic frogs

by Thorsten Holtmann

The maintenance of many aquatic frogs is largely something for dedicated animal enthusiasts who are prepared largely to overlook the fact that decorative planting of the aqua-terrarium is not entirely compatible with their pets. As the vast majority of aquatic frogs, that is frogs that live year-round in the immediate vicinity of water, grow to significantly more than 5 cm long. So delicate plants don't stand much of a chance in the long term... But for a while now there has been a little frog on the market that grows to only around 3.5-4 cm long and is perfectly suited to the attractively planted aqua-terrarium: the Green Puddle Frog, *Occidozyga lima*.

This little frog has a vast distribution that encompasses Cambodia, China, Hong Kong, India (West Bengal), Indonesia, Laos, Malaysia, Burma, Thailand, and Vietnam. However, the species isn't equally common everywhere. In parts of its range this frog is common in association with human cultures, but in West Bengal it appears to be far less commonplace, as the author of a scientific work on the amphibian fauna of the state had to rely solely on data from the literature: not a single preserved specimen was available! That may, of course, simply reflect the fact that the Green Puddle Frog is often overlooked because of its small size and in

addition is of no economic value. In Hong Kong the once abundant population has purportedly almost completely collapsed for reasons unknown. These frogs are imported for the pet trade from Indonesia, where they occur in vast numbers, and hence can be purchased cheaply here in Germany.

## Appearance

*Occidozyga lima* is rather variably colored, but generally inconspicuous. Every specimen has its own individual coloration consisting of shades of gray, brown, and green on the upper surface of the body.

*Occidozyga lima* only rarely goes onto land.

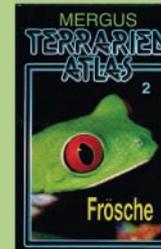
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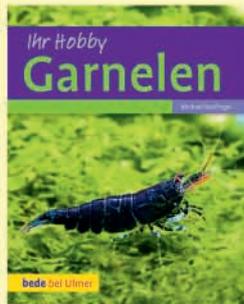
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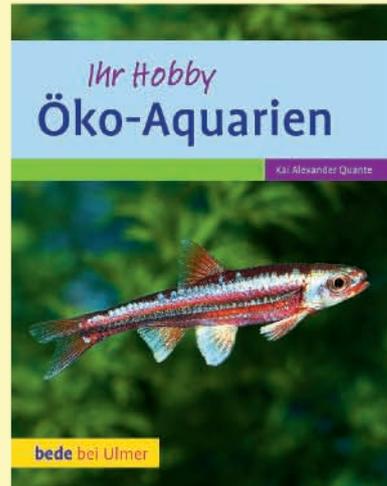
The skin is warty. Two main color variants can be roughly distinguished, namely specimens with and those without stripes on the back. This is not a sexual characteristic. The males remain about 0.5 cm smaller than the females and are more delicately built, but otherwise there are no noticeable external sexual differences. Even the throat sac of the male, with whose aid these little chaps can call very loudly, lies inside the body and is invisible when the frog isn't calling. The churring-clicking call, usually a sort of "ae ae ae", is far from melodious, but at the same time not so loud as to make the maintenance of *Occidozyga lima* inadvisable in the living- or bed-room. The underside of the body is just as uniform in color as the upper surface of the frog is variable. On the inner side of the front legs there is a dark stripe that continues along the edge of the belly as a flank stripe. Often there are extensions of these arm stripes on the breast as well, in the form of narrow bands at a 90° angle to the main stripe. A particularly striking feature is the L-shaped dark bands on the undersides of the hind legs; these are very characteristic of this frog species. Apart from the breast stripes, which are absent in some individuals, the underside is dirty white without any striking patterning. The eyes are sited high up on the head and allow the Green Puddle Frog an almost 360



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° view. This positioning of the eyes is closely linked to the ecology of the Green Puddle Frog.

### Ecology

There are frogs that spend their entire lives under water. These include the honeycomb toads and clawed frogs well known in vivarium circles. They leave the water only exceptionally and then briefly, and come to the water's surface only to breathe. Then there are frogs that usually sit out of the water but only so far from it that they can reach the wet element in a single leap. These include, for example, the aquatic frog *Rana kl. esculenta*, native to central Europe. These ubiquitous green frogs are stationary hunters that lie in wait for insects on land, driftwood, or waterlily leaves, capturing the prey with a single leap. They don't move around on land any more than necessary, and territorial battles with conspecifics, and indeed all their social behavior, take place in the water. The Green Puddle Frog has evolved a third form of life in water. It spends most of its life

floating on the water's surface, only occasionally leaving the water and scrambling onto a floating leaf or similar.

*Occidozyga lima* hunts both above and below the water's surface. It swims over to small insects that have fallen on the surface and captures them with its mobile tongue. But the Green Puddle Frog can also find submerged worms such as *Tubifex* and often stuffs these into its mouth with the aid of its forelegs, a behavior familiar from the clawed frogs. The high-up eyes serve not only for detecting prey, but also and in particular for spotting enemies. For many snakes, birds, and even larger frog species threaten the life of the little Green Puddle Frog.

### Maintenance

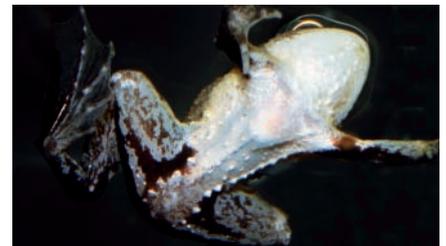
The maintenance of these dainty little creatures is easy. They pose no particular demands regarding either water chemistry or food. A standard aquarium measuring 60 x 30 x 30 cm is perfectly adequate for the maintenance of 6-12 specimens. The males

sometimes fight among themselves, and this is interesting to watch as it looks like a boxing match when the little frogs meet while floating on the surface and attack each other with their front legs. These squabbles are, however, completely harmless.

The aquarium must be only half filled with water, and the depth of substrate (fine

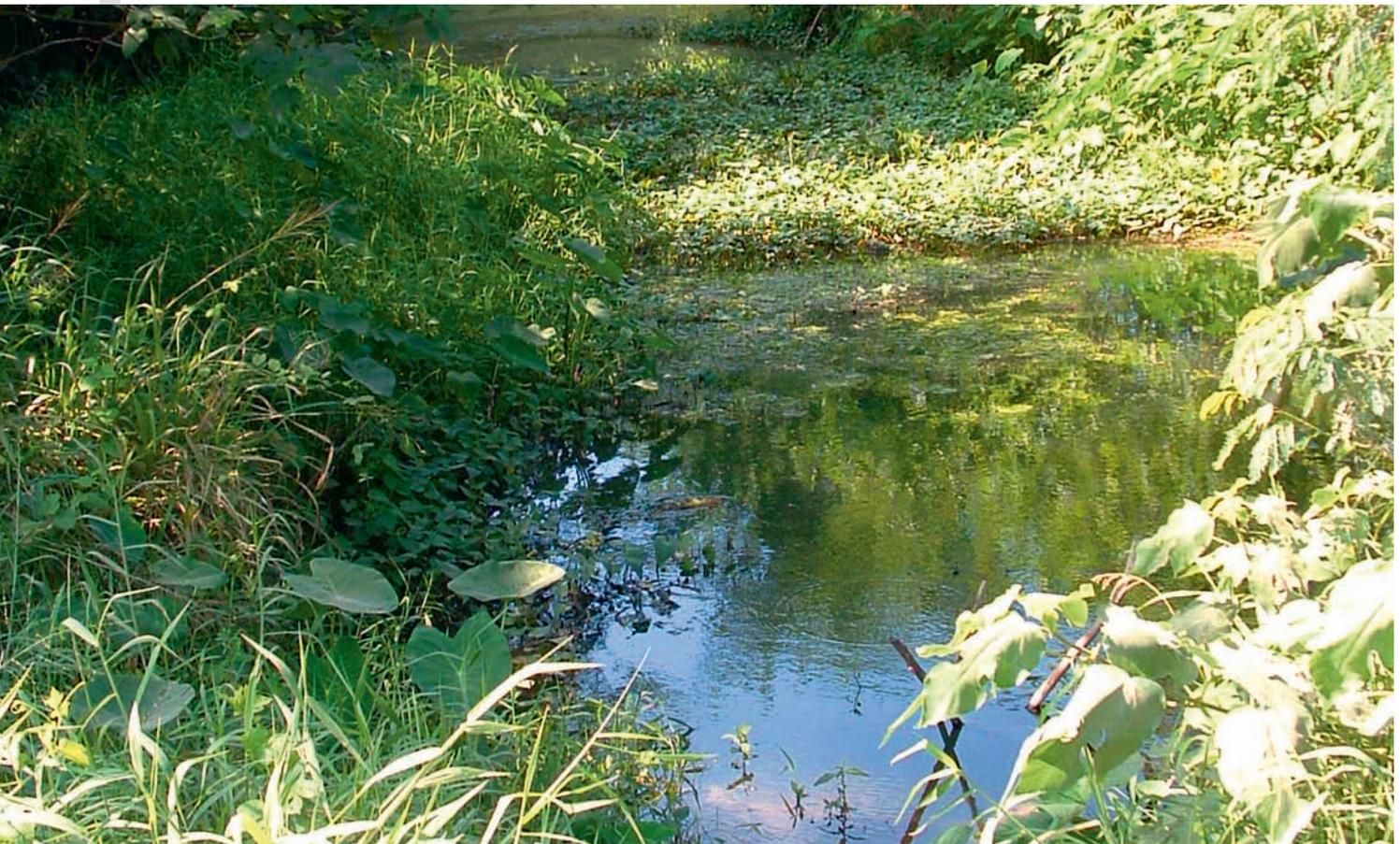


Green Puddle Frog in typical pose.



This is what the little frogs look like underneath.

Habitat of the Green Puddle Frog in Thailand.





## Wohliger Schauer

Die Systematik der Wirbellosen rückte erst vor ca. 200 Jahren in das Blickfeld der Wissenschaft – vielen Menschen jagt ein Schauer über den Rücken, wenn sie an diese meist vielbeinigen Lebewesen auch nur denken. Die Gründe für diese Ängste sind uralte, berichtet doch z.B. die Bibel beeindruckend über zerstörerische Heuschreckenplagen.

Fast 1 Million Insekten sind bisher beschrieben worden, und Schätzungen sprechen von der fünf- bis zehnfachen Menge unbeschriebener Spezies. Eine ernsthafte Bedrohung für den Menschen stellen aber nur einige wenige Ernteschädlinge oder Krankheitsüberträger dar.

Die riesige Artenzahl spiegelt sich auch bei den Wirbellosen in einer grandiosen Vielfalt unterschiedlichster Überlebens- und Fortpflanzungsstrategien wider. Hier nun jagt es dem Terrarianer einen wohligen Schauer über den Rücken: Bei artgerechter Haltung lässt sich dieses weite Spektrum auch zu Hause entfalten.

Will man also Wirbellose zu Hause pflegen, dann sollte man sich zuerst Gedanken über ihre Lebensweise machen: Eine Gottesanbeterin stellt andere Ansprüche als ein Hundertfüßer und auch die Lebensumstände eines adulten Käfers unterscheiden sich sehr von der seiner Larve.

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gravel or sand is most suitable) should be 5-7 cm, so that the open water is only 8-10 cm deep. The aquarium must be topped with a cover glass as these little frogs are accomplished climbers. Gaps in the cover glass should be blocked with filter wool. Numerous plants will grow very well in the enclosed air space of the aqua-terrarium, for example swordplants (*Echinodorus*) or (more biotope-correct) *Cryptocoryne*. In addition there should always be some floating plants, for example Water Lettuce (*Pistia*) or Amazon Frogbit (*Limnobium laevigatum*), which will quickly spread abundantly. Until the plants are growing properly a piece of cork bark should be placed on the water's surface so that the frogs have somewhere to rest when they so desire. The lighting - a single fluorescent tube is quite adequate for the tank - will raise the air temperature to 28-32 °C by day. At night, when the light is switched off, the air temperature will drop to room temperature. This closely matches conditions in the wild and is essential for the health of the frogs. Additional heating is required only if the temperature drops below 18 °C.

Any small insects can serve as food, for example fruit flies (*Drosophila*), small House Crickets (*Acheta domesticus*), and aphids. It



Green Puddle Frogs mating.



Specimen with abroad dorsal stripe.

is very interesting to watch these frogs hunting underwater, with Large Water Fleas (*Daphnia magna*), live bloodworms, and *Tubifex* being most suitable for the purpose.

#### Breeding

Green Puddle Frogs can breed year-round, but our winter (November to February) appears to be the preferred breeding

The way of life of the Green Puddle Frog is the reason why the eyes are sited high up on the head.



## Lexicon

### Dwarf aquatic frogs

*Occidozyga* means "oval toad".  
*lima*: not explained; the author Gravenhorst, who made the name available in 1829, refers it to a name given by Kuhl in an older manuscript; perhaps derived from the Indonesian word *lima* meaning "five".

*Rana* means "frog".

*kl.*: the abbreviation *kl.* stands for *klepton* (Greek) which means "thief" and indicates that this is a hybrid species.

*esculenta* means "edible".

*Echinodorus*: means "hedgehog bag", referring to the spiny fruits.  
*Cryptocoryne*: means "with hidden spathe", referring to the structure of the flowers.

*Pistia*: from *pistos* meaning "watery".

*Limnobium* means "swamp-dweller".

*laevigatum* means "smooth".

*domesticus* means "connected with the house".

*Drosophila* means "dew lover".

*Daphnia*: means "water flea".

*magna*: means "large".

season, at least in the case of the specimens currently imported from Indonesia. The male embraces the female in the hip region. The eggs - which, depending on the size and condition of the female, can number between 50 and several hundred - have a diameter of 0.6 - 1.1 mm. The tadpoles are light olive in color and have a dark edging to the tail. They will eat the flake foods available in the trade for ornamental fishes. By the time of metamorphosis the tadpoles attain a length of up to 3.9 cm. A terrarium life span of more than five years has been reported, which is far more than the natural life expectancy of these little creatures in the wild.

If you are now filled with the desire to keep these dwarf aquatic frogs, then your pet dealer can undoubtedly order them for you from a wholesaler of his acquaintance, for example Tropenparadies in Oberhausen, Fax +49 (0)208-665997.




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ist anerkannter Ichthyo- und Herpetologe und bekannt durch zahlreiche Vorträge und Fachbeiträge in Zeitschriften. Er ist Chefredakteur dieser Zeitschrift und ebenfalls verantwortlich für die fachlichen Inhalte auf Aqualog.de



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## Corydoras

# New mailed catfishes from Peru

by Frank Schäfer



*Corydoras* sp. C91

One would think that with more than 200 scientifically described, and as many again scientifically undescribed, mailed catfish species (the latter have C- and CW-numbers) there would have to be a halt at some time. Far from it! Whenever the fish collectors leave the trodden paths and look for fishes in new areas, there are always new mailed catfishes among them!

The species that we bring you exclusively in the NEWS this time were imported by Aquarium Glaser in Rodgau and originate from the Madre de Dios region. This region lies in the extreme south-east of Peru and is particularly interesting zoogeographically as regards fishes, as the main river of the region, the Rio Madre de Dios, flows east, rather than north to the Amazon like the other rivers in Peru that rise in the Andes. Instead the Rio Madre de Dios first flows past Bolivia, where it empties into the Rio Beni, which joins with the Rio Marmoré in Brazil to form the Rio Madeira,

which eventually empties into the Amazon. With a length of more than 1,100 km, the Madre de Dios is the largest tributary of the Rio Madeira. It flows through three provinces in Peru, one of which is the province of Manu, from which some of the new imports take their provisional trade names.

Three of the new *Corydoras* from a typical species trio with a round-nose (body form and coloration similar to *C. julii*, but with a gorgeous, boldly striped caudal fin, list name "manu 5 short nose"), a long-nose (list

name "manu 2 semi long nose"), and a saddle-nose (list name "manu 1 long nose"). The round-nose is known in the hobby as C120, the saddle-nose as C115/116. Whether three additional saddle-noses with striped caudal fins (list names "manu 4, 7, 8") are actually new species or only pattern variants of the same species (C115/116) requires further research. But given the well-known variability in coloration in the saddle-noses the latter is more likely. C115/116 was brought back years ago on the private initiative of Martin and Peter Hoffmann and also successfully bred. This demonstrated that C115 and C116, originally regarded as different species, were in reality just variants of the same species, as even identically colored parents produced very variant-rich offspring. The

*Corydoras* sp. C91 Longnose, pair.

All photos: Frank Schäfer





*Corydoras* sp. C115/116, variant with caudal striping and without shoulder spot.



*Corydoras* sp. C115/116, variant with caudal striping and shoulder spot.



*Corydoras* sp. C115/116, variant without caudal striping and with shoulder spot.



*Corydoras* sp. C115/116, variant without caudal striping and shoulder spot.

species in the current importation also exhibit a whole multitude of color variations: individuals with or without shoulder spot, with or without stripes on the caudal peduncle. Note that the strongly metallic green-golden sheen exhibited by freshly-imported specimens disappears over time in the aquarium.

However, another saddle-nose (list name "manu 6 batman") is clearly distinct from C115/116 by virtue of its unpatterned fins. This one is definitely a first import. Moreover in this species of the male – recognizable by

the much-thickened pectoral spine - is precisely the same size as the female, while in "manu 1, 4, 7, 8" the male is considerably larger than the female. The "Batman" can be regarded as the saddle-nose variant of a gorgeous metallic mailed catfish from the Madre de Dios that is imported under the trade name "*Corydoras aeneus* Puerto Maldonado". Puerto Maldonado is a port on the Madre de Dios. At present all metallic mailed catfishes are repeatedly lumped together under the catch-all species *Corydoras aeneus*, although this is certainly incorrect. The group is in urgent need of

revision. The "Puerto Maldonado" belongs to the Gold Shoulder group of mailed catfishes, formerly known as *Corydoras schulzei*. In addition to the gold-colored shoulder stripe the Puerto Maldonado exhibits a large dark spot on the anterior half of the body, just like the "Batman".

The attractive *Corydoras* sp. C91 has been available for some time, albeit irregularly

*Corydoras aeneus* Puerto Maldonado



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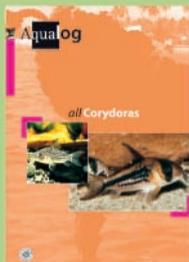
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and only in small numbers. This species is a typical round-nose, similar in its maintenance to the species *Corydoras julii* and *C. trilineatus*, with which C91 is undoubtedly closely related. And the long-nose equivalent of C91 has now been imported for the first time as well. Unfortunately we have no information on the collecting location for these fishes. C91 supposedly comes from the Rio Huallaga, a roughly 1,100 km long tributary of the Marañon, which in turn is the larger of the two headwaters of the Amazon. The



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longnose equivalent of C91 is a very attractive fish, strongly reminiscent of *Corydoras leopardus*, but with an appreciably more contrastingly patterned caudal fin.

And finally the consignment included a further round-nose, superficially reminiscent of *Corydoras xinguensis* and bearing the list name "morse Madre de Dios". This mailed catfish is again as yet unknown in the hobby. The name "Morse" almost certainly refers to the patterning, which – with a little imagination – resembles the dash and dot pattern of the morse code.

These new mailed catfishes are as yet

## Lexicon

### Mailed catfishes

*Corydoras*: from Ancient Greek, meaning "with helmet and lance", referring to the external bony plates and the powerful fin spines.

*aeneus*: Latin, meaning "made of copper or bronze", or simply "brassy";

*schulzei*: honorific, = "of Schulz"

exceptional rarities with a price to match. Let us hope that they will soon find devotees among the *Corydoras*-fan community.



*Corydoras* sp. Batman pair



*Corydoras* sp. Batman



*Corydoras* sp. Manu (1, 4, 7, 8)

*Corydoras* sp. Manu 5 short nose



*Corydoras* sp. Morse

*Corydoars* sp. Manu 2 semi long nose





## Rarities

## New knifefishes from Peru

by Paul Menzler

The knifefishes of the New World (Gymnotiformes), with at least 173 known forms, constitute a species-rich order. However, only a very few species are regularly seen in the aquarium hobby: the Black Ghost Knifefish (*Apteronotus albifrons*), its brown-colored relative *A. leptorhynchus*, and a number of *Eigenmannia* species (glass knifefishes). The mighty Electric Eel (*Electrophorus electricus*), which likewise belongs to the New-World knifefishes, is more frequently imported, for public aquaria - and thus ends the list of species always available in the hobby. So it is all the more pleasing that several very unusual New-World knifefishes have just been imported simultaneously from Peru.

The reason for the rarity of knifefishes in the trade isn't, of course, because they are rare in the wild. The opposite is the case, as they represent a significant percentage of the biomass in Amazonia. But the demand for such unusual aquarium occupants is small, as, apart from a very few exceptions, New-World knifefishes are unsuitable for the standard community aquarium. Being chiefly crepuscular and nocturnal creatures, the small knifefish species can easily go short

of food, and large knifefish species regard small tankmates as snacks. Some particularly attractively colored species are also very quarrelsome among themselves. Hence the majority of species of New-World knifefishes are suitable only for species aquaria and kept only by very specialized aquarists, and there aren't that many of them. But a few more would be very welcome, as New-World knifefishes are highly interesting creatures about which far from everything is known - a



*Gymnorhamphichthys* sp. Peru

all photos: Frank Schäfer

rewarding exercise for the keen aquarist!

To better distinguish the New-World knifefishes from the Old-World knifefishes (*Notopterus*, *Chitala*, & Co.), with which they aren't closely related at all, the New-World knifefishes are often also known as knife eels. All knife eels belong to the electric fishes that constantly emit electrical impulses. They use these impulses for the location of prey, for spatial orientation, and for intraspecific communication. Only in the Electric Eel are the impulses so strong that they can be used to stun prey fishes or enemies. All other knife eels are so weakly electric that a human who grasps them won't feel a



*Gymnorhamphichthys* portraits: above, *G.* sp. Peru and below, *G. cf. hypophthalmus*.



..and the fishes in their entirety: again, above, *G.* sp. Peru and below, *G. cf. hypophthalmus*.





Portrait of an adult male *Compsaraia samueli*



Above: female *Compsaraia samueli*, below, full-length photo of the male.



thing, and any tankmates in the aquarium will likewise come to no harm from the electric impulses.

#### *Gymnorhamphichthys cf. hypostomus*

The sand knifefishes (Rhamphichthyidae) are assigned to their own family within the New-World knifefishes. There are currently three genera with 16 species known. The genus *Gymnorhamphichthys*, sometimes called thermometer knife eels, contains six described species. Not much is known about these fishes, as they are strictly nocturnal and bury themselves in fine sand by day. Hence comprehensive field observations are practically impossible.

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The *Gymnorhamphichthys* presented here, like the other species discussed in this article, was obtained from Peru by Aquarium Glaser, Rodgau. According to the Checklist of the Freshwater Fishes of South America, however, there are so far no *Gymnorhamphichthys* reported from Peru. The markings of the fishes are most reminiscent of *G. hypostomus*, though they have a significantly longer snout. So perhaps this is an undescribed species, and for this reason we have chosen the species designation *G. cf. hypostomus* to be on the safe side. These knife eels are peaceful among themselves. However they don't possess any teeth or other ways of harming one another. They are easy to feed as they enjoy eating bloodworms, which are also a major dietary element in the wild, as shown by stomach contents analysis. Maximum size for *G. hypostomus* is given as somewhat more than 20 cm, while the imported specimens are currently some 14-18 cm long.

In addition to *G. cf. hypostomus*, the consignment of knife eels from Peru contained a further member of the genus





*Gymnorhamphichthys*, which differs from the rest of the fishes by having a different pattern and a different head form. This means that there are at least two species of *Gymnorhamphichthys* in Peru.

### *Compsaraia samueli*

This knife eel, a member of the family Aptereronotidae, is probably the most bizarre of all the New-World knifefishes. Many Aptereronotidae develop distinct sexual dimorphism, in that with the onset of sexual maturity the males develop a much-elongated snout or undergo other changes in the head region; in addition the males often grow larger than the females. The differences are so considerable that they have often led to double descriptions because male and female were thought to be different species. The males of *Compsaraia samueli* develop such long jaws that one cannot help but wonder how they manage to feed at all! Were this fish a cultivated form rather than a natural species, it would undoubtedly be regarded as a case of animal cruelty by so-called animal

protectionists. This prolongation of the jaws is used by the males during mock battles. Two males face one another, open their mouths wide, and push each other to and fro with their jaws, very much like deer during the rut. Unfortunately we know very little else about this knifefish, which attains a length of around 20-25 cm. One has to wonder whether the females are in some way impressed by the "luxury-model jaws" of the males. Only extensive aquarium observations can answer this and further questions. Unfortunately to date only a very few specimens of the species have reached Europe, although it occurs in the immediate vicinity of Iquitos and is by no means uncommon there.

A specimen of an identically colored species of the genus *Sternarchella* reached Aquarium Glaser as a bycatch with the *Compsaraia samueli*. Could this be a case of mimesis in knife eels, ie species that mimic one another? And what could be the purpose of such a mimesis? Again, only aquarium observations can provide answers to such questions.

*Sternarchella* sp., bycatch with *Compsaraia samueli*



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### *Adontosternarchus nebulosus*

The genus *Adontosternarchus* also belongs to the Aptereronotidae. It currently contains five species, one of which, *A. nebulosus*, wasn't described until 2007. These species are generally of moderate size, rarely exceeding 20 cm total length. In this genus the males remain somewhat



## Lexicon

### Knifefishes

*Gymnorhamphichthys* means "naked Rhamphichthys".

*Rhamphichthys* is another genus of knife eels.

*hypostomus* means "with underslung mouth".

*samueli*: named in honor of Samuel Albert, who collected the type specimen.

*Adontosternarchus* means

"Sternarchus without teeth";

*Sternarchus* is another knifefish genus.

*Sternarchella* means "small *Sternarchus*".

*Compsaraia*: means "with elegant fin-ray"; the genus name refers to the anal fin. *Apteronotus* means "without fin on the back".

*Eigenmannia*: in honor of Carl H. Eigenmann (1863-1927).

*Electrophorus*: after an early device of the same name in physics, used to produce static electricity.

*electricus* means "electric".

*albifrons*: means "with a white forehead".

*leptorhynchus* means "with a small snout".

smaller than the females and the differences between the sexes are nothing like as eye-catching as in other species of the family. On the other hand, *Adontosternarchus* have an attractively marbled pattern. The coloration is species-typical and serves as an important character for distinguishing the different species. These knife eels are fairly tolerant of one another, so group maintenance should at least be tried.

When keeping New-World knifefishes there are a few fundamental rules that should be observed. Firstly, never forget that these are weakly electric fishes; it has proved very beneficial to offer PVC pipes as hiding-places, as these at least partially shield the electrical fields so that the fishes don't get on one another's nerves. Moreover, of possible live food should be offered at least during the acclimatization



*Adontosternarchus nebulosus*, female above, male below.



period. Bloodworms and *Tubifex* are particularly well suited. Even if the food animals creep into the substrate (which should ideally consist of sand in knife-eel aquaria), the knife eels can detect them using their electroreceptors and capture them. Small food fishes are the best option for species with prolonged snouts. The chemical composition of the water is of rather secondary importance, even though soft and slightly acid water predominates in the habitat of the majority of species. Particular attention should be paid to the tip of the tail, a favorite target for biting during intraspecific skirmishes. In fact knife eels possess an astonishing ability to regenerate and can even recreate large parts of the tail (more than half the body

length!) in the event of loss; but fungal and bacterial infections of the tip of the tail are, however, very poorly tolerated and can lead to the death of the fish.

All in all the New-World knifefishes are highly interesting fishes. It is greatly to be wished that they should be kept more often!

Portrait *A. nebulosus*.





## Water chemistry

# That's hardness for you!

by Heiko Blessin

Water hardness is one of the most important chemical parameters in the aquarium. Because water hardness is also of great importance outside the aquarium hobby, everyone ought to be aware of how it affects us.

### Hard water - soft water

So where do these terms actually come from? After all, in the final analysis a bellyflop causes the same amount of grief regardless of whether the swimming pool is full of hard or soft water! The terms "hard" and "soft" for water were invented in conjunction with the use of soap. If a lot of soap was required to create a lather and the lather was made of small bubbles and "hard", then the water was described as hard, but if the soap lathered quickly and the lather was creamy and soft, then the water was soft. This remains of great practical importance to the present day, as

much more washing powder or soap is required in hard water than in soft in order to achieve a cleansing effect. Whether or not you have hard or soft water flowing from the tap can be readily seen in the hand basin. If, with regular hand-washing using soap, a dull deposit rapidly forms on the surface of the washbasin, then you have hard water, but if the washbasin remains smooth and shiny all day, even if you are forever washing, then you have soft water.

### The causes of hard water

The drinking water that flows from our mains is usually ground water, though it is

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sometimes also treated water from a large body of surface water such as a river or lake. Thus drinking water is constantly in contact with earth and rock; and earth and rock contain components that are soluble in water, including calcium and magnesium compounds. And they are what causes

Malawi cichlids (this is *Pseudotropheus* sp. "Daktari") do better in medium-hard to hard water.

All photos: Frank Schäfer





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hardness. Thus if water contains lots of these calcium and magnesium compounds then we have hard water, but if it has only small amounts of calcium and magnesium compounds in it then we have soft water. The correct scientific expression for this is that total hardness is the sum of all the alkaline earth metal ions dissolved in the water.

#### Alkaline earth metal ions

The alkaline earth metals are chemical elements. They are called beryllium (Be), magnesium (Mg), calcium (Ca), strontium (Sr), barium (Ba), and radium (Ra). But, in practice, only calcium and magnesium ions occur in such high concentrations in water that they need to be taken into consideration. These ions have a positive charge, and are thus cations. The negative-charged counterparts of these alkaline earth metal ions - the anions - responsible for the biological effects of the hardness in the water are carbonates, which are compound molecules composed of carbon, hydrogen, and oxygen.

#### Total hardness

Total hardness has already been defined: it

is the sum of all the alkaline earth metal ion concentrations in the water. It is termed total hardness because it is made up of two components, the carbonate hardness and the non-carbonate hardness. These two terms will be explained shortly. Calcium and magnesium are very important for the body; they are the reason we drink mineral water, which contains very many of these cations. These alkaline earth metal cations form water-insoluble compounds (soap precipitates) with the wash-active components of soap, the tensides, but the precipitates have no cleaning power of any kind. The tensides in soap are anionic. This is why so much more soap is required in hard water.

#### Carbonate hardness

The carbonate hardness is the part of the total hardness that is formed by the bicarbonate anions. (From a chemical viewpoint that is incorrect, as in fact some of the cations that in total make up the hardness are those of calcium and magnesium, but in practice this is without significance, as the two metal ions are equivalent to the bicarbonate ions present). Bicarbonate is in equilibrium with



Altum Angel, a typical softwater fish.

## Infobox

### What is an ion?

Apple users might think it was a brilliant new invention from the ideas melting-pot of Steve Jobs. However, it isn't written i-On, but ion, and is nothing more than an electrically-charged particle - atom or molecule - that has acquired additional electrons or lost some of the electrons originally present, thereby achieving a chemically stable condition. If an ion has lost electrons and thereby acquired a positive charge, then it is termed a cation, while if it has a negative charge as the result of acquiring additional electrons, then it is termed an anion. A well-known example: why does common salt (NaCl, sodium chloride) dissolve in water? Chemically speaking, common salt consists of a combination of positively-charged sodium ions and negatively-charged chlorine ions. If common salt is added to water, then water molecules combine with the positively-charged sodium ions and negatively-charged chlorine ions. Water (H<sub>2</sub>O) possesses a positive charge from its hydrogen (H), and a negative charge from its oxygen (O). Like magnets, positive and negative charges are attracted to one another. As long as there are sufficient water molecules then they will combine with the ions of the common salt, and so the salt dissolves. But sooner or later the solution becomes saturated and it is no longer possible to dissolve more salt: it trickles undissolved to the bottom of the container in which the experiment is being conducted. Energy is required to dissolve salt in water, and hence the solution cools down.

The importance of water hardness for the breeding of ornamental fishes was realized thanks to the Harlequin Rasbora.





Hard water is indispensable for the successful maintenance of corals, as they require calcium carbonate to construct their skeletons.

carbon dioxide (and/or carbonic acid), and this equilibrium is, inter alia, temperature-dependent. If the temperature rises then the solubility of carbon dioxide in the water decreases; the carbon dioxide escapes and the bicarbonate forms a white, rock-hard, virtually water-insoluble precipitate (lime scale or "fur"). Everyone knows this phenomenon from the home. The carbonate hardness is of major importance in running an aquarium, as carbon dioxide is constantly produced in the aquarium through the respiration of the fishes and plants, as well as through the activities of bacteria and fungi, but carbon dioxide is also constantly used up, as plants require it for the formation of sugars via photosynthesis. The result is a constant shift in the pH, as carbon dioxide dissolves in water to produce carbonic acid. Delicate fishes are harmed by even relatively small shifts in pH. A stable pH is one of the most important prerequisites for the successful maintenance and breeding fishes.

If the carbonate hardness is very high, then

the bicarbonate will "capture" practically all the carbon dioxide; the result is a higher pH and hungry plants. Some plants can extract carbon dioxide from bicarbonate. Insoluble "chalk" then precipitates out and is deposited as a white encrustation on the leaves. This process is known as "biogenic decalcification". The majority of the plants grown in the aquarium, however, cannot do this and quite simply starve in water with a high carbonate hardness – leaving aside the fact that white chalky deposits on the plants do not accord with the aesthetic sensibilities of the majority of aquarists and the light requirement of these chalk-coated plants is greatly increased. But if the carbonate hardness is very low, then there is a danger that too much free carbonic acid will be formed and the pH will plummet. Such an occurrence can be deadly for fishes. And the reverse-case scenario can occur in heavily planted aquaria with too low a carbonate hardness: namely if photosynthesis begins (as it should) when the light is switched on in the morning, then in some situations all the free carbon

dioxide may be used up, with the result that the pH soars.

#### **Non-carbonate hardness**

Some of the alkaline earth metal cations that cause hardness do not have bicarbonate as their counterpart anions, but instead have sulphate (eg gypsum), chloride, or nitrate. Because this part of the total hardness cannot be altered by temperature, it is termed "permanent hardness", as opposed to the "temporary hardness" caused by carbonate. Experience has shown that the non-carbonate hardness has only a relatively slight influence on life in the aquarium. However a degree of effort is required in order to identify the individual components of the non-carbonate hardness, so such analyses are rarely performed in the hobby.

How is the hardness measured and how can soft or hard water be created?

You can learn about this in the next issue of the News. Don't miss it!



## Turtles

# The African Spurred Tortoise - popular, impressive, and readily tamed

by Christoph Fritz, [www.reptilia24.de](http://www.reptilia24.de)



Baby African Spurred Tortoise

A few decades ago the relatively small European tortoises of the genus *Testudo* still dominated the pet market. They could be bought dirt cheap everywhere as "easy to keep" pets for the home and garden. Nowadays our view of reptiles in general and tortoises in particular has changed considerably. We now know that while tortoises can, essentially, be kept and bred by anyone, this also requires a lot of specialist knowledge that has to be acquired first. The incomparably higher level of education of today's tortoise-keeper has also caused species that were formerly virtually impossible to find to become the focus of the trade, including one of the most impressive tortoises of Africa, the African Spurred Tortoise *Centrochelys* (or *Geochelone*) *sulcata*\*.

**T**he African Spurred Tortoise received its name from the large, spur-like scales on the upper part of its hind legs. In the wild it inhabits a roughly 8,000 km long and some 500-700 km wide "girdle" extending right across Africa, with Mauritania as its westernmost and Eritrea its easternmost state. This girdle is also known as the "Sahel

Zone" and is one of the driest regions on Earth. The African Spurred Tortoise is the only highly specialized tortoise able to survive there. But even it requires 200 to 800 mm of precipitation per year in order to be able to exist. With a record carapace length of 84.5 cm and a record weight of 105.5 kg, it is the largest mainland tortoise species. Only the

giant tortoises of the Seychelles and the Galapagos Islands are even larger. The immense maximum size of the species is probably a defense against dehydration, a problem to which a small body is considerably more susceptible than a large one.

### Not wild-caught

Unfortunately the African Spurred Tortoise is a seriously endangered species in large parts of its range. Humans are increasingly encroaching on its habitat. And for as long as humans have existed they have hunted the

In adult males the edge plates curve upwards.

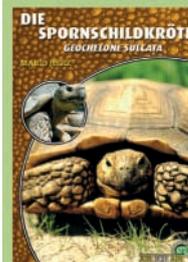
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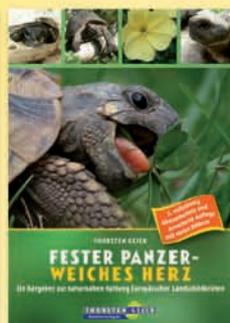
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Captive-bred African Spurred Tortoise, around 10 cm long.

African Spurred Tortoise, eating it and taking it with them as a live food supply or for barter. For this reason it is nowadays often very difficult to find out whether a local occurrence of the African Spurred Tortoise is in fact a natural occurrence (the technical term is autochthonous), or attributable to introduction by Man (= allochthonous).

Because wild populations are seriously endangered there have been no importations of wild-caught specimens in the trade for a long time. But there are large numbers of specimens in the hands of tortoise enthusiasts. They are bred so

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efficiently and regularly that the worldwide demand among enthusiasts can be easily satisfied by captive-bred specimens. Practically all the populations currently maintained in Europe and the USA are descended from specimens imported from Mali. Although at present no subspecies of the African Spurred Tortoise are recognized, there are, however, local differences in size between the individual populations. And so we know that the Mali form of the African

Spurred Tortoise doesn't grow quite as large. Females attain a length of 40-50 cm, males 50-60 cm; maximum weight is 45-60 kg. The males are fundamentally larger than the females, and record sizes and weights relate exclusively to males.

The sexes cannot be accurately determined in the African Spurred Tortoise until relatively late on, from a length of 25-30 cm upwards. Prior to that it is largely a matter of guesswork. The usual sexual differences in tortoises apply: the tail of the male is considerably longer than that of the female, and the ventral armor of the male is strongly concave. Old males also develop a generally different appearance. The carapace becomes increasingly flatter, the lateral edge plates of the armor (the marginalia) curve upwards, the head looks emaciated, sometimes just like a death's head (this is completely normal and nothing to do with captivity), prominent temporal ridges develop, and the eyes also protrude; the "beak" looks more hooked in males.

#### The basics of maintenance

It is more than understandable that such impressive creatures awaken the desire to own them; not for nothing has *Centrochelys sulcata* become one of the most popular tortoise species in Europe and the USA. A

contributory factor is the fact that these tortoises can become very tame, a characteristic mentioned a long time ago by Wilhelm Klingelhöffer, a past master of terrarium science. But it should also be mentioned that this tameness can have its downside in the case of large males of the African Spurred Tortoise, as they sometimes regard humans as rivals to be bitten and rammed, which can lead to serious injuries. So anyone wanting to keep African Spurred Tortoises needs one thing above all: lots of space.

This can include outdoors, where these tortoises can be kept from spring to autumn in central Europe, though they should have the option of warming themselves up to around 40 °C under a localized heat lamp. In extreme cases the temperature can drop to below zero at night in the natural habitat, but under normal circumstances you should ensure that the night-time temperature doesn't drop significantly below 15 °C. All this can best be achieved by allowing the tortoises access to a greenhouse from their outdoor run via a kind of "cat flap." This must be very robustly constructed at the bottom as otherwise some of these large, powerful tortoises will soon reduce it to matchwood.

"Dryness" is far more important a factor than temperature. Too much moisture is bad for these tortoises, bearing in mind that they originate from a very dry landscape. So the floor of their open-air terrarium (and also of their winter quarters, which obviously should be indoors) must be very well drained, so that moisture never accumulates at all.

In the wild African Spurred Tortoises dig several large, deep burrows for themselves. These are essential for their survival, as here they can escape from the worst of the daytime heat, but they also spend their

Adult African Spurred Tortoise.





African Spurred Tortoise, around 30 cm long.

aestivation period there, the time when they "sleep away" the driest part of the year. Experience has shown that burrowing behavior is greatly reduced in captive-bred specimens. But there are marked individual differences in this respect, and it is essential to be prepared for all eventualities. Hence both the indoor and outdoor quarters should include a 2-3 meters thick bottom filling to allow for the digging of burrows. Indoors there should be a high light intensity and adequate UV light. When keeping somewhat larger specimens it is essential to simulate the aestivation period these tortoises undergo in the wild, which should take place during our cold time of year. This will do the African Spurred Tortoises an extraordinary amount of

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good, and they will reward it with robust good health.

### Feeding

It should always be borne in mind that in the natural habitat the African Spurred Tortoise enjoys short commons. These animals have no feeding inhibitors and will carry on eating as long as food is available. But at the same time they also have to undergo days, weeks, or even months of fasting in the wild. Naturally this doesn't occur under conditions in captivity. Hence they should be fed sparingly, and the diet should be characterized by a high fiber content. Suitable foods include grasses of all types, hay, carrots and all possible salad greens (endive, Romaine, radicchio), plus soaked hay pellets

(rabbit food) can be offered. Wild African Spurred Tortoises can often be found eating carrion and actively hunt any "tenants" (grasshoppers, small lizards, etc.) in their living burrows. But this type of supplementary feeding is best avoided in captivity or should represent a very rare exception. It is important to provide for the high calcium requirement of these tortoises with a food supplement, a large selection of which are available in the pet trade. The majority of health problems in African Spurred Tortoises are the result of over-generous feeding, which promotes too rapid growth. So always be aware of this and – as already stated – feed sparingly. Given a well-designed outdoor terrarium it is often possible to dispense completely with feeding in summer, as the tortoises will simply graze the natural food growing in their run.

### Easy-going giants

Astonishingly African Spurred Tortoises can readily be kept in groups. Even the males behave comparatively well towards one another. But every male should have the option of mating periodically. Because the habitat of these tortoises lies in the tropics, they do not have any particularly strict breeding season and mating can be seen year-round. But it is beyond the scope of this article to go into breeding the African Spurred Tortoise here as well. Maybe another time...

African Spurred Tortoises are real lawnmowers.



## Infobox

### African Spurred Tortoise

The experts are in dispute regarding the genus to which the African Spurred Tortoise belongs. Some regard it as the only species of the genus *Centrochelys*, while others believe it is so closely related to the Asian species *Geochelone elegans* and *G. platynota* that a separate genus isn't justified. This is an academic argument of little interest here and is also without any practical significance. One needs only to be aware that additional information on this tortoise can be found in the literature under the names *Testudo sulcata*, *Centrochelys sulcata*, and *Geochelone sulcata*.

## Lexicon

### African Spurred Tortoise

*Centrochelys* means "spiny turtle".  
*sulcata* means "furrowed".  
*Geochelone*: means "land turtle".  
*Testudo* means "tortoise".

If you are now filled with the desire to keep African Spurred Tortoises, then your pet dealer can undoubtedly order them for you from a wholesaler of his acquaintance, for example reptilia24, Fax +49 6430 – 9250100.



## Evergreens

# Focus on Guppies

by John Dawes

Everyone on the planet knows about the guppy...even non-fishkeepers. Indeed, it's true to say that the guppy is one of the most famous of all freshwater fishes in the world, with only a few exceptions, such as the goldfish or the piranha. It also has one of the longest histories within the aquarium hobby and trade.

Credit for its discovery is usually given to Robert John Lechmere Guppy, a Londoner, who found some small colourful fish in Trinidad in 1866 and sent them to the British Museum of Natural History, where the ichthyologist, Albert Günther, described the species and named it *Girardinus guppii* in honour of its 'discoverer'. However, it later transpired that Lechmere Guppy was not the original discoverer. In fact, the fish had already been described seven years earlier (1859) by German ichthyologist, Wilhelm Karl

Hartwig Peters, who named the Venezuelan specimens he had examined as *Poecilia reticulata*.

Other descriptions, and other names, are also encountered in the early literature regarding guppies. This is not surprising at all, bearing in mind the wide geographical distribution of the species (Venezuela, Barbados, Trinidad, northern Brazil, the Guyanas, East Timor). Fish with such distribution almost invariably exhibit colour and other variations throughout



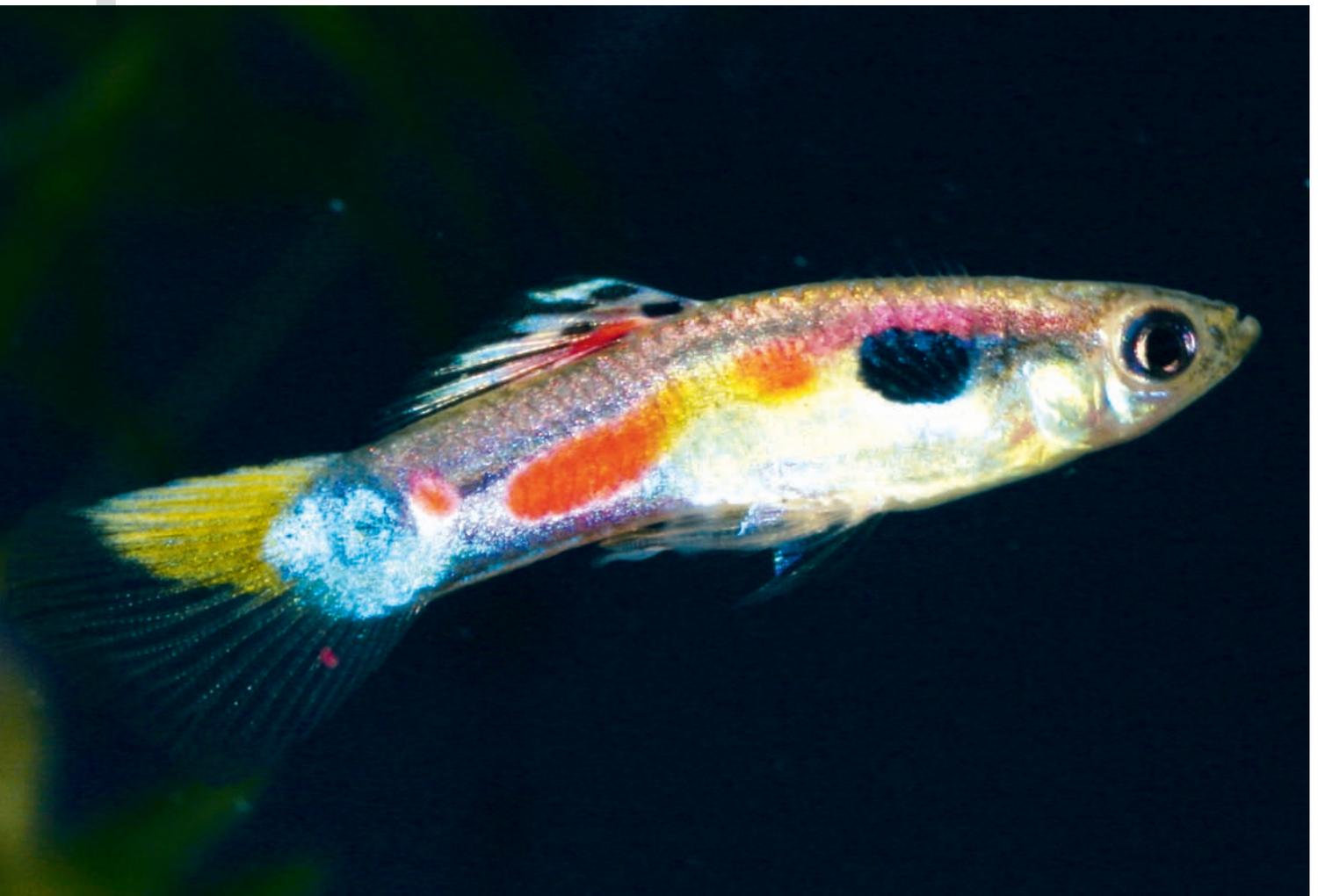
Triangle Guppies from South-East Asia.

their range, and this often results in the same species being given different names by different ichthyologists...or even by the same ichthyologist. As a result, the guppy was given many names during the early days following its discovery, among which, the best-known is *Lebistes reticulatus*. Interestingly, this name was coined by Peters himself, i.e. the original describer of the guppy, who had already named it *Poecilia reticulata*!

It is also little surprising that, when

Wild-caught male of the Guppy from Venezuela. These fishes can be very colorful.

All photos: Frank Schäfer





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## Lexicon

### Guppies

*Poecilia*: means "variegated, multicolored".  
*reticulata* means "reticulated"  
*wingei*: named in honor of the geneticist Øyvind Winge (1886 - 1964)

*Girardinus*: named in honor of the scientist Charles Frédéric Girard (1822-1895).

*Lebistes*: meaning unknown, perhaps derived from the Ancient Greek "*Lebias*" meaning "small fish".

Endler's livebearer was re-discovered (by JOHN ENDLER in 1975 in Venezuela), it, too,

but is, rather, the result of predators being able to detect brighter individuals more easily and, thus, pick them off. As a consequence, those males which are genetically programmed in such a way that they can only produce subdued coloration, are better protected and therefore have a greater chance of survival and breeding.

This trend is counterbalanced, at least to an extent, by the fact that female guppies prefer brightly-colored males with an orange body spot. So, in the end, the colour characteristics of a particular wild population of guppies are determined by the relative intensity of the interplay

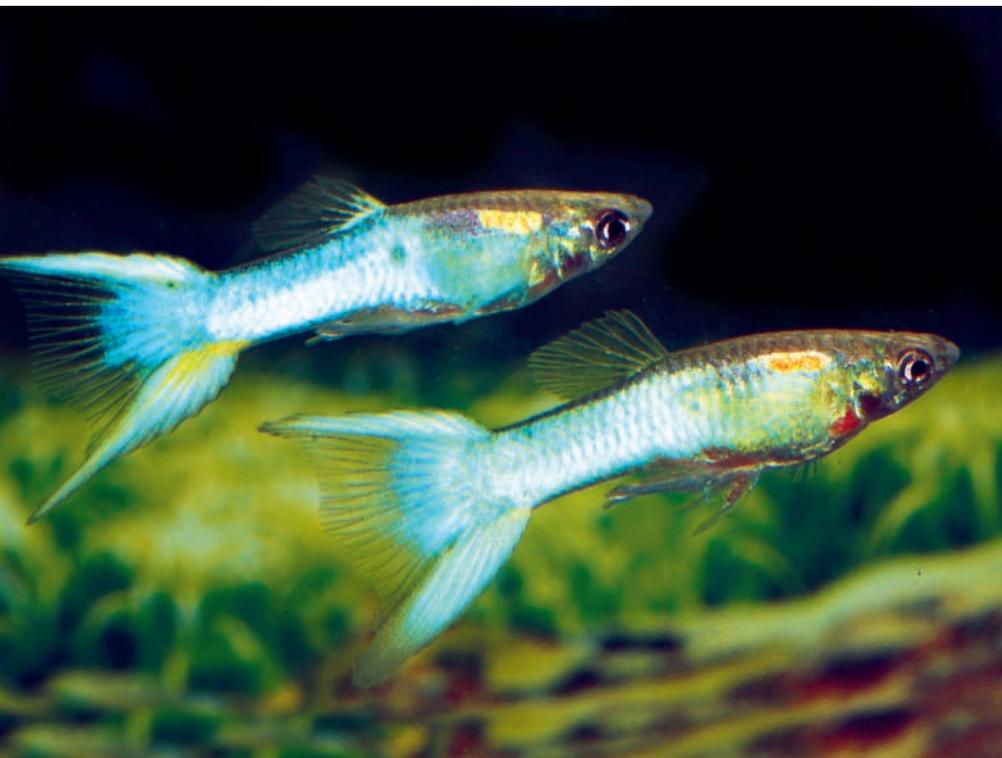


The "Endler Scarlet" is a cross between the Guppy and Endler's Guppy.

occurred in 1908). The result is a mind-boggling array of body colours and an even wider variety of fin sizes, shapes and patterns.

These cultivated varieties are very different to the original wild type guppy, although they still retain some original characteristics in overall body shape (though not necessarily in size). Some modern-day guppies are, in fact, so large and over-developed, that they no longer swim in the normal horizontal orientation of their ancestors, but at varying head-up angles.

Interestingly, though – perhaps partly as a consequence of the introduction of Endler's livebearer – we are now seeing the re-appearance of some of the older, more basic, varieties of guppy, such as the top sword, bottom sword and double sword. Since guppies and Endler's livebearers can interbreed to produce



Two males of the "Japan Blue Lyretail" cross.

was regarded as a guppy. In fact, one of the common names for this beautiful species (*Poecilia wingei*) is Endler's guppy.

While extensive geographical distribution undoubtedly contributes to the overall colour and other characteristics of the guppy, so do more local parameters. For instance, in habitats where guppy predators are common, the colours of the males tend to be subdued. This is not because the individual fish consciously decrease the intensity of their coloration,

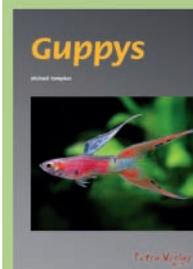
between anti-predator protection and female sexual preferences. This is Natural Selection in action.

Away from the wild, Natural Selection is largely replaced by Artificial Selection, where the genetic plasticity of the guppy makes it possible for preferred traits to be selected by guppy breeders and fanciers and developed into new varieties. This has been going on since the guppy was first introduced into the hobby in the early 1900's (first imports into Germany

## Buchtipps !

### Guppies

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First generation from wild, pure-blood Endler Guppy strain.

fertile offspring, this is also opening the door to infinite possibilities, with new, small varieties of both guppies and Endler's livebearers already making an appearance.

As things stand at the moment, there are – as always(!) - two schools of thought regarding this issue. There are those who believe that it's a good thing as it leads to the creation of new varieties. In the other camp, there are those who feel that we are on the verge of a similar situation to that which exists between platies and swordtails, where few pure specimens of either now remain within the hobby.

It would be a great loss if either species were to become so diluted as to be unrecognisable, but the human mind's inexhaustible and relentless search and desire for 'new' fish means that this trend is likely to continue. Hopefully, there will still be those who will continue striving to maintain the magnificent guppy (and Endler's livebearer) in as an 'unpolluted' a form as possible for generations to come.

Guppy "KIng Cobra Sunrise"



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Finally...

# A new Snowking Pleco

by Frank Schäfer

With four species currently described, the genus *Liposarcus* is fairly easy to summarize. *L. multiradiatus* and *L. pardalis* are sometimes available in the hobby under the catch-all name "Plecostomus". They are relatively unremarkably colored, grow very large (around 50 cm), and are cultivated in ponds as food fishes: *Liposarcus* means "fat flesh". By contrast the species *L. anisitsi* is renowned as the "Snowking Pleco" because of its splendid coloration. This species too attains a length of 50-60 cm. Aquarium Glaser has now imported a new species from Peru.

There does exist a fourth species, namely *Liposarcus disjunctivus*. The specific name "disjunctivus" means "with a different distribution". While *L. multiradiatus* and *L. pardalis* are spread over wide areas in South America, there are only very few confirmed places in Peru where *L. disjunctivus* has been found so far. The main difference between *L. disjunctivus* and its congeners is the coloration of the belly. All other species have a spotted belly, only *L. disjunctivus* has a worm-like pattern. This could mean that the recently imported "Snowking" actually belongs to that species. It has been collected in the Madre de Dios river near by Puerto Maldonado. So the new „Snowking Pleco“ represents



This ventral pattern is regarded as species-typical for *Liposarcus disjunctivus*. The photo shows one of the specimens imported from Puerto Maldonado.

either a new population of *Liposarcus disjunctivus* or a new species. In any case it is a breathtaking beautiful fish...



The photo below shows an adult specimen, photographed at the collecting site; above a juvenile from the first importation.

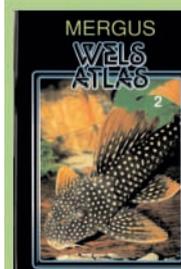
All photos: Frank Schäfer



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