

NEWS

The Magazine for Aquarists and Terrarists

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 Current
Freshwater
Imports



 Rarities for
the Marine
Aquarium



 The
Hornet
Cichlid



Aquaristic

Terraristic





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Filialen mit Zoofachabteilung





Cichlids from Lake Malawi

The dark side of the Hornet Cichlid

by Andreas Jung



its skin. Obviously the populations of *P. crabro* cannot live on this food source alone; but the large dark catfish is so attractive to *P. crabro* that the cichlid even follows divers in black neoprene wetsuits - it apparently thinks they are catfishes!

The cichlids of Lake Malawi enjoy considerable popularity among aquarists. They are extremely colorful and usually easy to keep as well as breed. Less well known, however, is the fact that some Malawi Cichlids also have amazingly interesting behavior! The Hornet Cichlid, *Pseudotropheus crabro*, is one of the most interesting species from the huge lake. Read all about it below:

First of all, some interesting background information on the Hornet Cichlid. The species was scientifically described by RIBBINK & LEWIS in 1982, under the name *Melanochromis crabro*. It was later transferred to the genus *Pseudotropheus*, where it still remains to the present day. *P. crabro* grows to around 15 cm long in the aquarium, but in the lake remains considerably smaller at 9-12 cm. The first importations took place at around the same time as the scientific description, ie at the beginning of the 1980s. The first imports for the aquarium hobby were probably all from the Mbenji Islands, but the species is significantly more widely distributed in the southern and central parts of Lake Malawi.

The Hornet Cichlid - a chameleon

The specific name *crabro* is the Latin word for a hornet and refers to the normally contrasting color pattern of brown stripes on a yellow background. But *P. crabro* is also able to change its coloration lightning-fast, becoming very dark, even almost completely black in the case of elderly specimens. It was because of the ability to change color that *P. crabro* was originally known as *Pseudotropheus* "Chameleo" in the trade. To the present day the reasons for this color change remain unstudied.

A cleaner fish

Many of the most popular Malawi Cichlids are Aufwuchs-feeders, in other words they feed on the algae coating the rocks and any small organisms this biocover contains. This has led to some aquarists being under



Normally *Pseudotropheus crabro* is bright yellow with brown bars.

Photo: F. Schäfer

the misapprehension that all mbuna - mbuna is the name for certain rock-dwelling cichlid species - are Aufwuchs-feeders. *Pseudotropheus crabro* doesn't eat Aufwuchs; it is an opportunistic omnivore with a focus on plankton. *P. crabro* is found mainly in and near caves, and by preference lives where the large catfish *Bagrus meridionalis* has its home. This commonplace and delicious-tasting catfish is called the Kampango or Kampoyo by the native peoples around Lake Malawi. It can grow up to 150 cm long but around 50 cm is a more usual size. The Hornet Cichlid acts as a cleaner fish to the Kampango, removing fish lice (*Argulus africanus*) from

The egg robber

But *Pseudotropheus crabro* doesn't just bring benefits to the catfishes, it also robs them of a fair old amount in return. Kampangos practice brood care, with both parents guarding the eggs and young, and

The ability to transform lightning-fast to dark brown or black has led to the name "Chameleo".

Photo: Frank Schäfer





The Hornet Cichlid and a Kampango. Although the roughly 40-45 cm long catfish is protecting its brood, it tolerates the cleaner fish. The photo was taken at Gome Rock. alle Photos: Andreas Spreinat



A roughly 20-25 cm long Kampango. At this size these catfishes are brownish with a number of black speckles.

fundamentally the brood care of *Bagrus meridionalis* is effective and successful. But the catfish has no defense against the audacious *P. crabro*, which steals and eats the eggs and tiny fry of the huge Kampango without being punished.

Does the color change serve as camouflage?

It has been suggested that the Hornet Cichlid changes color so that it isn't recognized by the Kampangos while stealing their eggs and fry. If *P. crabro* wishes to clean then it signals this using the yellow-brown coloration and the catfish doesn't realize that it is the same fish as the dark brown thief that eats its eggs and young. But it isn't quite that simple. Andreas SPREINAT (whom we have to thank for the splendid underwater photos that illustrate this article) has told us that *P. crabro* doesn't go to the

trouble of changing color when it goes raiding. In other words, it does that in hornet coloration as well !

So it appears to be more a case of the benefit to *Bagrus* from the cleaning behavior of *P. crabro* being so great that *Bagrus* puts up with the loss of eggs and young. Of course the catfish doesn't do so consciously, it just has an instinctive bar against eating the Hornet Cichlid. Another cichlid species, *Melanochromis baliodigma* (formerly known as *M. sp.* "Blotch"), also profits from this. This species prefers to feed on small fishes and *Bagrus* probably has difficulty telling it apart from the cleaner. However, *M. baliodigma* prefers to feed on the cichlid fry that use

The same specimen as above. The young catfishes can be clearly seen.



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A bunch of *Pseudotropheus crabro* in the natural habitat (near Panga Panga). Some individuals are yellow-brown, others very dark in color. There is a Kampango in the background.



This Kampango (*Bagrus meridionalis*) is acting as foster mother to young haplochromine cichlids. There is clearly an enormous instinctive barrier to eating fishes the same size as her own young. The young catfishes benefit from the symbiosis.

The predatory *Melanochromis baliodigma* - here at Gome Rock - looks very similar to some of the color variations in *Pseudotropheus crabro*. Does this fish use this fact as camouflage in order to hunt in Kampango nests?



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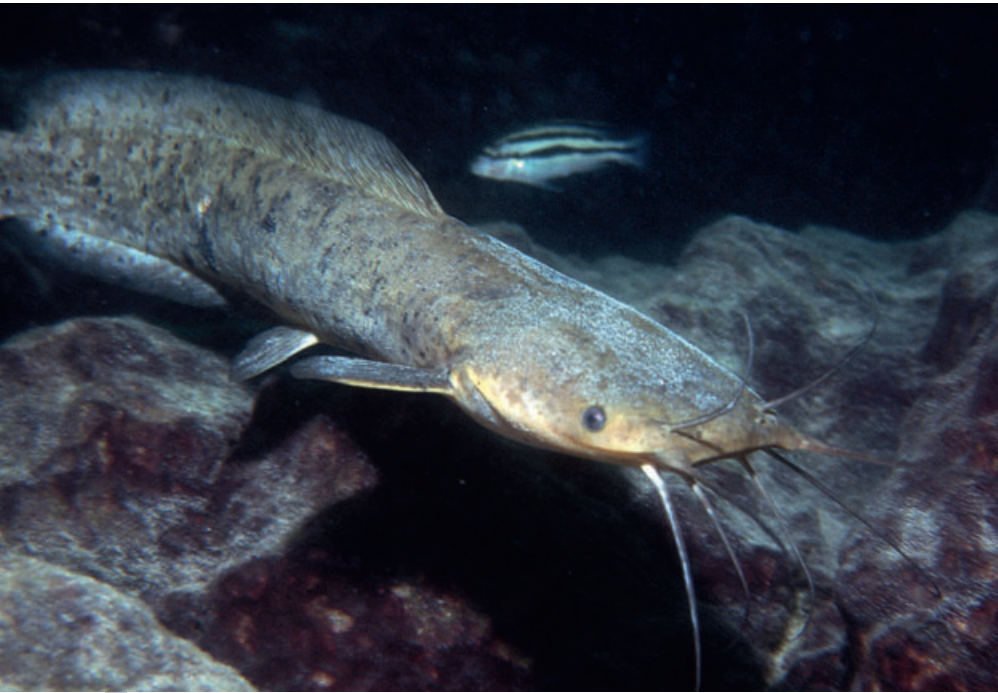
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Bathyclarias nyasensis, the Sapuwa, practices brood parasitism on *Bagrus meridionalis*, the Kampango..

Bagrus as foster parents rather than on young catfishes.

The lightning-fast color change in *Pseudotropheus crabro* thus doesn't serve to fool the Kampango. The color change may serve either for intraspecific communication or simply as camouflage against predators. As already mentioned, *P. crabro* prefers to live in caves, where a dark-colored fish will go virtually unnoticed and undoubtedly be more difficult for predators to capture. The striking hornet-like coloration is, however, assumed by *P. crabro* when it wants to be recognized as a cleaner. As even if the Hornet Cichlid exhibits dark coloration only now and then and for no apparent reason, then at such times it will be safer from predators, at least to some extent.

Fish lice can transmit serious, possibly fatal diseases to fishes attacked by them. Perhaps this is the key to understanding why a large fish like *Bagrus meridionalis* tolerates the theft of its eggs and young by *P. crabro*. The ongoing threat from *Argulus* is apparently really serious!

Foster parents

It has already been mentioned that numerous young cichlids share the *Bagrus* nest and "misuse" the parent *Bagrus* as foster parents. A study (McKAYE, 1985) has shown

that the survival rate of the young catfishes is around 80% higher when cichlids (usually *Copadichromis pleurostigmoides*, *Ctenopharynx pictus*, and *Rhamphochromis sp.*) are in the nest. How so? Well, the majority of predatory fishes in Lake Malawi prefer young cichlids to young catfishes as food. So the young catfishes benefit from having young cichlids living in their nest!

Another cuckoo fish

It has recently been discovered that another catfish in Lake Malawi, the Sapuwa, *Bathyclarias nyasensis* - known to the local people as Bombe - acts as a brood parasite on the Kampango. The young *Bathyclarias* are completely accepted by the parent Kampango. This means that they are not only protected, but also fed. Female *Bagrus meridionalis* produce unfertilized "food eggs" to feed their young, and such eggs have been found in the stomachs of all young *Bathyclarias* living in Kampango nests. Kampango males also feed the young, mounting expeditions to bring back insects, young crabs, etc, which they expel in particulate form via their gill slits and thus feed the young.

Kampango nests that are home to young *Bathyclarias* contain very few, if any, Kampango young. It is not known whether the parent *Bathyclarias* spawn over



There are eight species of the genus *Bathyclarias* in Lake Malawi. *B. nyasensis* is the most frequent.

Kampango nests and their young then hatch sooner than the Kampango eggs and eat their step-siblings, or whether the Kampango nests are invaded by older *Bathyclarias* fry. One thing is certain, however: the *Bathyclarias*/Kampango relationship is a true parasite/host relationship, that acts to the detriment of the Kampangos.

And those, Dear Reader, are just a couple of stories about a Malawi cichlid. Doesn't this demonstrate that these fishes have a lot more to offer than just attractive colors?

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Bathyclarias nyasensis can grow rather large, with lengths of up to a meter known.





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New Freshwater Imports

From all over the world: Recent imports

by Roman Neunkirchen

Given the huge number of fish species in existence - some 32,700 species are currently known to science, half of them from fresh water - the number kept in the aquarium at least now and then is very small. In fact only around 400 species of freshwater fishes are permanently available in the trade. So it isn't surprising that new species are constantly being discovered. Some recent new imports by Aquarium Glaser are briefly portrayed on the following pages.



Alestopetersius smykalai, male (front) with two females in the background. all photos: Frank Schäfer

Alestopetersius smykalai

One of the loveliest of the African tetras, *Alestopetersius smykalai*, has at last been imported again. The species comes from

Nigeria and grows to only around 5-6 cm long, which means it is ideal for owners of smaller aquaria as well. This fish has justifiably been given the name "Blue Diamond" because of the splendid

The form of the anal fin is the most reliable distinction between the sexes; this is a male.



metallic blue back in males, which further differ from females by having a much prolonged dorsal fin and a completely different shape to the white-edged anal fin. Established, courting males also have brilliant red eyes and a bright red color in the fins.

The species is best maintained in a largish



Female

group of 10-15 individuals. These fishes usually swim close together and exhibit marked shoaling behavior. They are undemanding as regards water chemistry, and any normal drinking water from the mains is suitable for the maintenance of the Blue Diamond. The water temperature



should be between 22 and 28 °C.

All members of the genus enjoy small flies that have landed in the water, and *A. smykalai* are no exception. Although they don't absolutely have to be given this food, it is very enjoyable to watch how incredibly quickly these tetras shoot to the surface and snap up fruit flies, for example. All the usual types of foods for ornamental fishes are suitable as an everyday diet. *A. smykalai* are completely peaceful towards other fish species and don't touch plants either.



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Tricolor Swordtails always exhibit the colors red, black, and white.

Koi Swordtail Tricolor "Kohaku"

Tricolor swordtails have been known for around 15 years, but breeding them is regarded as exceptionally tricky, as only relatively few juveniles exhibit an even,



Males with light-colored swords, like this one, should be preferred for breeding in order to avoid cancers.

A gorgeous pair of Tricolor Swordtails with ideal color distribution.



attractive coloration. There are particular problems with the black coloration, as specimens with a large amount of black are inclined to develop melanoma, a form of cancer that, like cancer in humans, is often fatal for the affected individual. (In fact it was swordtails suffering from cancer - which originally occurred mainly in the so-called Berlin cultivated form - that were the first research animals available to scientists studying cancer.) But because this form of cancer can be inherited the breeder can avoid it by careful selection of breeding stock.

Recently some very beautiful Tricolor Swordtails have been arriving in Europe from Indonesia. Some specimens are highly reminiscent of the Berlin cross, but



The high percentage of black in the caudal fin of this male is dangerous.

a Tricolor can always be easily recognized by having a white component; this is because the Tricolor Swordtail was originally bred from White Swordtails. Usually these fishes can be recognized by having a blue ring around the iris. White



This tricolor form is very reminiscent of a Berlin Swordtail.

Swordtails are born red, and it is only as they grow that they change color. It is exceptionally difficult to maintain true-breeding strains of tricolor, bicolor, or even pure white Swordtails. They are forever throwing individuals of a different color, e.g. bicolor or even tricolor individuals in white strains, white or bicolor in tricolor, and white or tricolor in bicolor

Swordtail breeding is a highly advanced area of the aquarium hobby. It requires not only a good knowledge of genetics, but also hard work and a lot of space. Swordtail males are very territorial and often only one adult male can be kept per aquarium. The alternative - numerous males, or at any rate more than five - may make for peace, but then there is no longer any way of controlling pairings.



Two quarrelling males of the Tefé Agassizii.



This male has a very beautiful red-orange head region.

Apistogramma agassizii "Tefé"

Agassiz's Dwarf Cichlid has a vast distribution in South America, so it is hardly surprising that geographical variants have evolved. Some of these forms are so typical that they could easily be regarded as subspecies or even separate species. Probably the most divergent form of *A. agassizii* known to date has received the additional designation "Tefé", although it isn't clear whether this form is restricted to the Tefé district in Brazil (on the upper course of the Amazon, where it is still known as the Solimoes), or whether it also occurs elsewhere. A characteristic feature of the Tefé Agassizii is the four rows of zigzag

bands below the broad mid-lateral band. That apart, however, males of this Agassizii are just as polychromatic as those of numerous other *Apistogramma* species. The fishes recently imported by



Male in neutral coloration



Female.


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Aquarium Glaser sometimes have a very red-orange head region, reminiscent of the so-called Santarem form of the Agassizii, although other males of the same population are quite different, as can readily be seen from the photos. The females of all forms look the same and cannot be distinguished from one another. Hence it is very important to keep the individual local variants completely separate, as otherwise the inevitable result would be a mish-mash form with none of the special charm of the wild forms.





Corydoras tukano, male.



Male ...



... and female of *Corydoras tukano*.



The "Tukano Longnose" is probably the most popular of all the mailed catfishes at present.

Corydoras tukano und *Corydoras* sp. "Tukano Longnose"

It is virtually impossible to ignore the species diversity that exists among the mailed catfishes. *Corydoras tukano* from Brazil is one of the most attractive, still relatively new species in the aquarium hobby. This "Panda" among the mailed catfishes was named after the Tukano people, in whose territory the species is found.

Corydoras tukano is a small species (around 5

cm), in which males develop noticeably longer finnage than females.

The "longnose" equivalent of *Corydoras tukano* is an undescribed species. It is in fact also a "saddlesnout". The Tukano Longnose is currently undoubtedly one of the most prized of all the mailed catfishes, as it is extremely rare and expensive in the trade. Obviously these fishes aren't actually rare (in the literal sense of the word) in the wild, but they live solitary and are very shy, so that only one or two specimens of the Longnose are netted in the time it takes to catch thousands of *Corydoras tukano*. And even Aquarium Glaser was able to import only eight specimens in the recent consignment ...

The reason for this mimicry - that is, why completely different species imitate one another in their coloration - has only recently been clarified. Fish-eating birds avoid mailed catfishes once they have tried to swallow one of these "prickly" fishes. So it is beneficial

for other similar-looking species when a mailed catfish loses its life in order to teach a bird that mailed catfishes in general aren't good to eat.

There is a species pair in Colombia that looks very similar to *C. tukano* and the Tukano Longnose, namely *Corydoras reynoldsi* and its longnose equivalent. In this case too the saddlesnout is scientifically undescribed. *C. reynoldsi* is a close relative of *C. tukano*, while the two longnoses are thought to be most closely related to *C. ellisae* and *C. septentrionalis*.



Corydoras reynoldsi



Die "Reynoldsi-Longnose".

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Snakes

The Dice Snake

Germany's rarest snake

by Thorsten Holtmann

Do you know how many snake species are native to Germany? Correct, there are five species, four non-venomous and one venomous. Three of these species are relatively common: the Grass Snake, the Smooth Snake, and the European Adder. Another species, the Aesculapian Snake, formerly rare, has spread recently thanks to global warming. But the rarest of our native snakes, the Dice Snake (*Natrix tessellata*), is extremely rare and endangered in Germany.



Dice Snakes are generally sociable animals.

Photos: Frank Schäfer

Before we look at the actual subject matter of the article, a few brief words on the other snake species. The Grass Snake (*Natrix natrix*), which occurs in two subspecies in Germany, likes to live in damp areas and prefers to feed on frogs. It also eats newts, fishes, and sometimes large earthworms as well. The Smooth Snake (*Coronella austriaca*) is an inhabitant of dry scrub. Its favorite food is lizards, but some populations also feed on nests of young mice or Slow-Worms. The Aesculapian Snake (*Elaphe longissima* or *Zamenis longissimus*) is a mouse-eater and likes warm woodlands, orchards, vineyards, etc. You will find a detailed article on this lovely snake in Aqualog News No. 100. Finally, the European Adder (*Vipera berus*), our only venomous snake, likes damp and relatively

cool conditions. It is found further north than any other snake species. It feeds mainly on mice, but sometimes takes Common Lizards (*Zootoca vivipara*) as well.

The Dice Snake is widespread

All reptile and amphibian species are more or less endangered in Germany. The extremely dense population of our country by humans simply doesn't leave enough habitat for the majority of species. Snakes have an even harder time of it than other species, as many people are afraid of them. Even though the days when snakes were killed are fortunately long past, they still don't evoke any sympathy in the majority of people.

If, however, we look at the overall distribution

of the Dice Snake then it can be seen that this snake has an immense range! It occurs in Germany, Switzerland, Austria, Croatia (including some Adriatic islands), Slovenia, Bosnia and Herzegovina, Montenegro, Macedonia, Serbia, Italy, Czech Republic, Poland, Slovakia, Russia, Albania, Romania, Moldavia, Bulgaria, Hungary, Turkey, Greece (including Crete, Lesbos, Samos, Corfu, Kythira, Seriphos, Euboea, Tinos), Cyprus, Afghanistan, Ukraine, Armenia, Georgia, Azerbaijan, Kazakhstan, Turkmenistan, Tajikistan, Uzbekistan, Kyrgyzstan, Pakistan, Iran, Iraq, Syria, Jordan, Lebanon, Egypt, Israel, and north-west China. For this reason the species is classified only as "least concern" (no reason to worry) on the worldwide Red List of endangered species. So why is it only in Germany that it is so rare?

A successful species pushing its boundaries

The fact is, the Dice Snake is a very successful species overall and constantly expanding its range. For climatic reasons in Germany it has reached the furthest outposts where it can survive. It has never been very common here and has always occurred only in areas that are particularly favorable climatically, all of which lie in what is now the federal state of Rheinland-Pfalz. Here there are still small populations in the Lahn and Mosel regions, while the majority of individuals live in the Nahe region; the species has probably been extinct in the Rhine area for more than a hundred years. It is particularly important for the future survival of the species in Germany that the comparatively limited populations (only a few hundred individuals in Lahn and Mosel, several hundred in Nahe) should not become isolated from one another with the result that no genetic exchange and/or migration between neighboring populations is possible any more. Were a major catastrophe (chemical accident, epidemic if a snake disease, unfavorable weather for several summers) to occur in one of the localities for the species, the result could be the extinction of the



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The Dice Snake got its name from the pattern on its underside.

population concerned.

No manure + no tanning = no Dice Snakes

Historically, during the 1880s, Dice Snakes were captured and sold dead (as biological display material in alcohol) or alive (the price depending on size) in the pet trade for terrarium maintenance. That certainly won't have done much good to the wild populations, small even back then, but things didn't go really badly for the Dice Snake until "modern" times.

As long ago as 1918-1923 the terrarium keepers of old were complaining about a massive decline in Dice Snake populations due to environmental destruction and campaigning for conservation measures. The dry stone walls near warm springs, formerly a perfect home for the snakes, were rendered. The tanning trade, which used so-called tan-bark (chopped bark from oak and spruce trees, together with dead oak leaves) to tan leather, is practically non-existent nowadays. The huge piles of tan-bark served Dice Snakes as an important place to lay their eggs, and they also

hibernated there.

Heaps of horse manure were a second, very important, egg-laying site for the Dice Snake. The warm, moist dung was a perfect incubator for the eggs. But nowadays nobody uses horses for transportation, everyone travels by car, and reptile eggs won't develop in exhaust gases.

And finally, the land was cleared right to the banks of the rivers. The snakes, which leave the water to hibernate, now have to migrate across open land to their winter quarters (if the latter still exist), because the extensive areas of reeds that once bordered the rivers have been destroyed.

The good news is that thanks to painstaking conservation measures, especially the creation of piles of horse manure in suitable spaces, Dice Snake populations in Germany are currently stable.

Dice Snakes in the terrarium

Obviously, under no circumstances should

Dice Snakes be collected for the terrarium in Germany. That would be irresponsible, not to mention illegal. But because Dice Snakes are easy to breed, captive-bred specimens can be purchased cheaply. They can be recommended without hesitation as ideal aquatic snakes for the aqua-terrarium. Dice Snakes grow to only 60-90 cm (extremely rare exceptions 130 cm) long, are non-venomous and rarely aggressive, and leave the water only to lay eggs, to hibernate, and to sun themselves. Dice Snakes prefer to hunt among large pebbles in the wild, and it is possible to set up a very attractive terrarium following Nature's example, imitating a calm bay in the river bank with a bottom of large pebbles. In practice the land area can be relatively small, but an absolutely dry spot should always be available. When rearing youngsters it will suffice to have a floating island of thick cork bark as the land area. The lighting should be installed above the land area; the temperature should reach 35 °C in the warmest spot.

Heavily gravid females are best placed in another terrarium to lay eggs (see below). This corresponds to the situation in the wild, where females migrate to their egg-laying sites. Any attempt to cobble together a land area offering the female optimal egg-laying

Lexion

German Snakes

Natrix: means "water snake"

tessellata: means "with a mosaic-like pattern"

Coronella: means "small crown"

austriaca: means "from Austria"

Elaphe: from the Greek word for deer, referring to speed.

Zamenis: means "great power"

longissima: means "the longest"

Vipera: means "viper"

berus: most probably means "(live-)bearing snake" (see references)



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conditions in the normal terrarium usually ends in disaster, as either the land area becomes a swamp or the water area becomes heavily polluted with earth, rotting plant material, etc. It is better to construct a land area in the form of a dry stone wall, as then nothing will go wrong and such a wall also looks nice.

Not just fish on Friday

Dice Snakes feed almost exclusively on fish, so obviously the ideal is to feed them on live food fishes of suitable size. This will keep their hunting instinct alive and simultaneously provide them with all the essential nutrients, vitamins, etc, they require. Obtaining live food fishes can be problematical, but luckily Dice Snakes will also take deep-frozen fish. Smelt (*Osmerus eperlanus*) are ideal, and are sold as animal food in the form of whole fishes, innards and all. Fish fillet should be used only in extremis. Snakes fed long-term on this food become ill. Dice Snakes should be fed 2-3

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Breeding

In the terrarium Dice Snakes usually mate a few weeks after coming out of hibernation. Because this snake species is completely peaceful, it can readily be kept in groups or pairs year-round. Once the females are heavily gravid and ready to lay, they should be transferred to a separate egg-laying terrarium.

Generally speaking, neither horse manure nor garden compost is sold for use as egg-laying substrate in the home terrarium, as both smell a bit. But houseplant potting compost will be fine (also available in Bio), with a depth of 15-20 cm being about right. The terrarium should be placed on a heating mat with the temperature set to 30 °C. The incubation period for the 5-25 eggs is around 40-45 days at 25-27 °C, and the newly-hatched young are some 23 cm long.

Hibernation

In Germany, where the climatic boundary of

the species' distribution is reached, Dice Snakes are often active only from the end of May to the end of September. The rest of the year is too cold for them. In other parts of their vast range, however, Dice Snakes are active year-round. Because the exact provenance of most terrarium strains is unknown, it is sufficient to conduct just a mild period of hibernation. The first step is simply to turn off the lighting, which, of course, simultaneously represents the main source of warmth in the terrarium. It is important that the snakes now undergo a short day length (less than 12 hours of daylight). After about a week they can be put into hibernation. A hibernation temperature between 10 and 15 °C will suffice, and anyone who doesn't have a cellar or other room that cold can put the snakes in the refrigerator to hibernate.

If you are now filled with the desire to keep and breed Dice Snakes, your pet dealer can undoubtedly order them for you from a trustworthy wholesaler, for example Tropenparadies in Oberhausen, Fax +49 0208-665997



Endangered Species

The Red-Tailed Black Shark

Epalzeorhynchus bicolor

by Sarah Nieten



Its contrasting coloration - velvet black body and bright red caudal fin - makes the Red-Tailed Black Shark look more like a coral fish than a freshwater species. These splendid colors have also made the Red-Tailed Black Shark an extremely popular aquarium fish, always available at a low price in the aquarium trade. But only a very few aquarists know that the Red-Tailed Black Shark has been as good as extinct for decades in its natural range.



Epalzeorhynchus bicolor, the Red-Tailed Black Shark.

Photo: Frank Schäfer

The Red-Tailed Black Shark was discovered in 1921 by Malcolm SMITH, and described under the name *Labeo bicolor* by Hugh M. SMITH in 1931. The type locality is a small affluent of the Menam Chao Phya (nowadays the Chao Phraya) near Paknampo in Central Thailand, where the fish was caught in a fish trap. H. M. SMITH wrote of his new species:

"This fish is not uncommon in Borapet Swamp, Central Siam, and in the streams leading therefrom. It is reported to be very common at times at Hangkraben, above Ayuthia, and occurs also in the Menam Chao Phya as far south as Bangkok. The maximum length appears to be about 12 cm. In the Paknampo region the fish is called pla song kruang (full-dress fish). The nearly uniform rich velvety black of the body and most of the fins is strikingly relieved by the bright orange color of the caudal and pectoral fins, making this one of the most

beautiful of the many attractively colored cyprinoid fishes of Siam."

It wasn't until the 1950s that this unusually attractive fish found its way into the aquarium. The initial euphoria over the new import soon disappeared, however, as the Red-Tailed Black Shark proved to be antisocial in its behavior. Red-Tailed Black Sharks can be real tyrants in the aquarium, but are sometimes also exceptionally peaceful. Even though the Red-Tailed Black Shark has thus traditionally been viewed ambivalently by enthusiastic aquarists, it has always been an exceptional best because of its attractive coloration.

By 1927 a dam had been constructed at the Bung Boraphet, (i.e. the Borapet Swamp), in order to hold back the water to form a lake and be able to catch more fishes (CHAICHANA & CHOOAWEW, 2013). A further dam was con-

structed in 1970, and in 1993 the height of this was increased to 24 m (SRIWONGSITANON et al., 2007). Precisely when the Red-Tailed Black Shark disappeared from the region hasn't been documented, but the trade is still based exclusively on captive-bred fishes for many decades. Not until recently was a specimen caught again in the lower Mae Klong (KULABTONG et al., 2014), but it remains unclear whether there are still any wild populations of the Red-Tailed Black Sharks in existence, and it is regarded as a critically endangered species. At present the unrestricted trade in Red-Tailed Black Sharks is the most effective and at the same time the only instrument available to prevent the species from extinction.

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Marine Fishes

Rarities for the marine aquarium

by Levin Locke

Many fish enthusiasts regard coral reefs as the epitome of species diversity among the fishes. That is not quite correct. In reality there are "only" around 2,000 species of true coral fishes, while to date around 32,000 fish species are known in total, about half of which live in the sea. Of the 2,000 coral-fish species only some 200 are regular in the trade, and the rest are regarded as rarities. We would like to introduce you to some of these rarities here.



Chaetodontoplus conspicillatus

Alle Photos: Frank Schäfer

The majority of these rarities are not, however, rare in the wild in the sense that there aren't many of them. Fundamentally that sort of thing doesn't occur in the case of small fish species that live in the sea, as some are eaten every day and the population must ultimately compensate. For this reason collecting for the aquarium poses no serious threat to wild populations.

Chaetodontoplus conspicillatus

This angelfish comes from way outside the regions where ornamental fish collectors are normally active: it was described from the Lord Howe Islands, and its distribution extends from there to New Caledonia and the Great Barrier Reef off Australia. Collecting ornamental fishes is strictly regulated there, and so invariably only a few specimens make their way into the trade, and, naturally, they are correspondingly expensive. The common name Conspicuous Angelfish appears to be based on the misinter-

pretation of *conspicillatus*, which does not mean conspicuous but is actually a made-up Latin word meaning "spectacled" (spectacles



Chaetodontoplus conspicillatus - doesn't "Spectacled Angelfish" suit this fish?

hadn't been invented in Roman times). It is used as the specific epithet for a variety of creatures with a ring around the eye, and as Spectacled Angelfish is far more appropriate, we will use the name here.

The Spectacled Angelfish grows only to around 10 cm long and hence is one of the medium-sized angelfishes. It usually presents few problems as regards accepting food, and one must always reckon it attacking invertebrates in the reef aquarium.

Holacanthus clarionensis

Much of what has been said about the

Holacanthus clarionensis, a specimen measuring around 12 cm long and in the process of changing to adult coloration.





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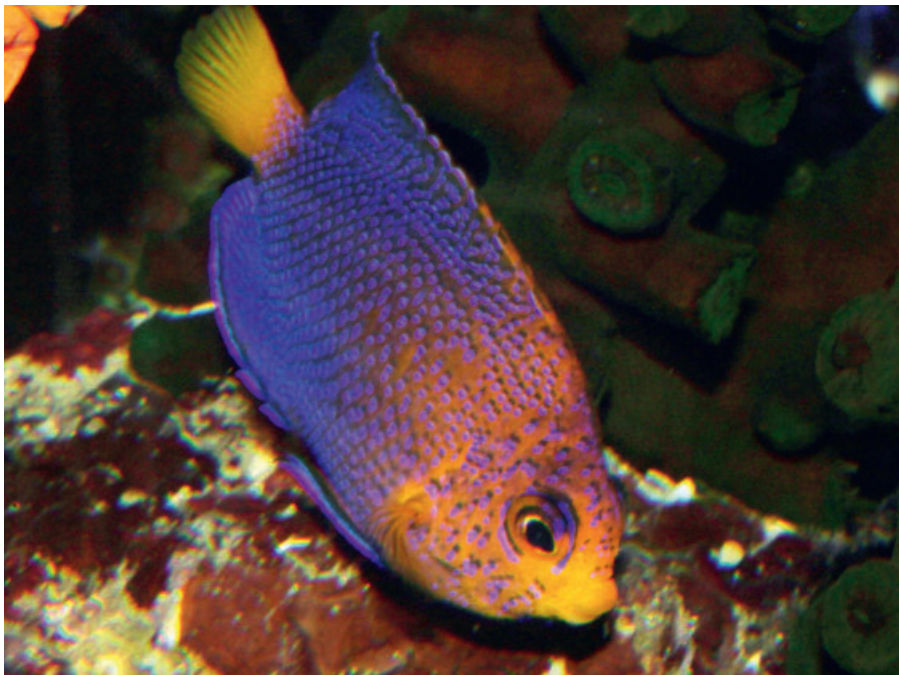
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Centropyge interrupta



Centropyge-Hybrids

Spectacled Angelfish applies equally to the Clarion Angelfish, *Holacanthus clarionensis*: it has a restricted, out-of-the-way distribution (eastern Central Pacific: southern tip of Baja California, Mexico; plus Clarion and the Revilla-gigedo group on the west coast of Mexico, and Clipperton Island) and hence reaches us only

very rarely and in small numbers. It is important that if possible the temperature in the aquarium shouldn't exceed 22 °C in the long term, as this species comes from the subtropics! Maximum length is around 20 cm.

Centropyge interrupta and *Centropyge hybrids*

Pygmy angelfishes are ideal aquarium fishes that often spawn in the aquarium. Unlike the large angelfishes they generally leave corals alone, as they are adapted to feed on plankton. The Japanese Pygmy Angelfish, *Centropyge interrupta*, comes from Japan and the north-western Hawaiian Islands. The species grows rather large for a "pygmy" angelfish, specifically 15 cm. Large individuals are always males. This

species likes cooler conditions too.

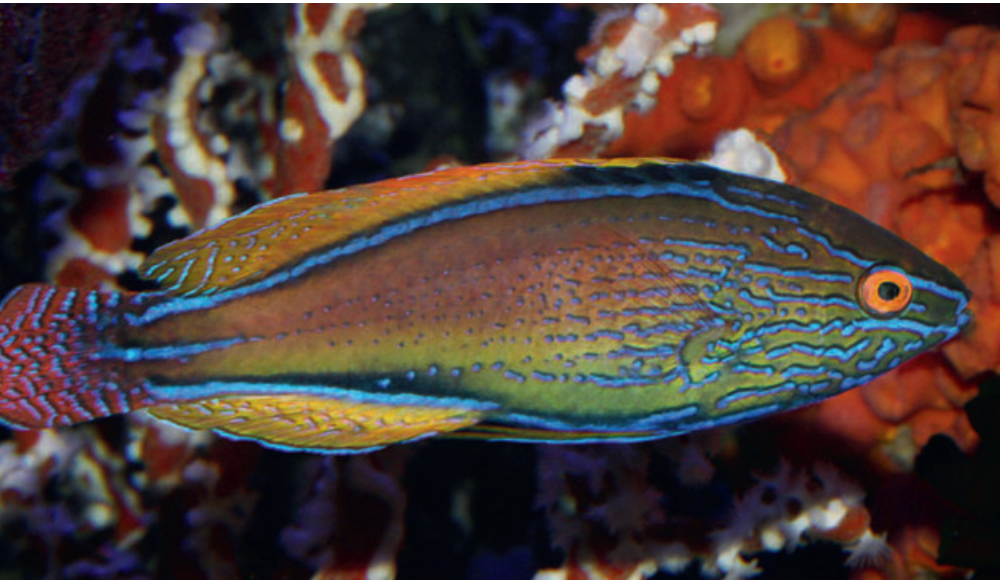
Just as sensational are the various hybrids shown here. All these fishes originate from de Jong Marinelife in Holland. The chances of a young pygmy angelfish surviving in the wild are infinitely small. In addition hybrid matings take place only very rarely. So it is quite astonishing that any of these fishes reach adulthood at all. Anyone maintaining such a fish can be pretty sure that they have something unique in their aquarium.

Anampses femininus

This gorgeous wrasse, which can grow to around 25 cm long, occurs from Australia and New Caledonia to Easter Island. Here too the

Anampses femininus





Cirrhilabrus lineatus



Pseudanthias calloura, female

calloura grows to around 10 cm long and occurs only at Palau.

Pseudanthias aurulentus comes from Australia and grows to only 5-6 cm long. A gorgeous little creature, but very timid, at least initially, and a real challenge for the photographer.

All basslets should be fed 5-6 times daily and the diet should be as varied as possible.



Macropharyngodon choati

larger individuals are always males, and, like the pygmy angelfishes, wrasses almost always undergo a sex change from female to male.

Cirrhilabrus lineatus

This splendid dwarf wrasse grows to approximately 12 cm long. Its distribution is almost identical to that of the Spectacled Angelfish.

Macropharyngodon choati

This Australian wrasse remains even smaller: these little fishes grow to only around 8 cm long. It is important for all wrasses that there should be at least a small area of sandy bottom available for them to bury themselves in at night.

Pseudanthias calloura and *Pseudanthias aurulentus*

The basslets are close relatives of the much larger groupers, and like the latter they begin their lives as females. Once they reach a certain age they transform into males, which in the case of the basslets are very attractive in appearance. One of the loveliest of all the species is the rare *P. calloura*. Unfortunately the

male in the photo isn't in courtship dress, as then they are quite breathtakingly beautiful. *P.*



Pseudanthias calloura, male

Pseudanthias aurulentus.

All photos taken at the De Jong Marinelife stand at the Interzoo.





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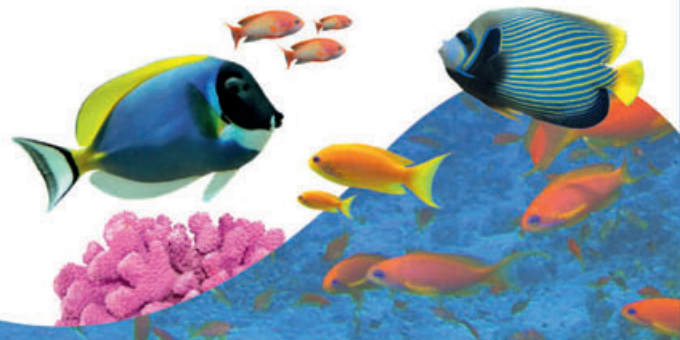


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Turtles

The West African Mud Turtle

by Christoph Fritz, www.reptilia24.com

It is often the commonest animal species that are the least reported. *Pelusios castaneus* is THE aquatic turtle of West Africa, and along with *Pelomedusa subrufa* (see News no. 85) the most frequently imported.

Widely distributed

Pelusios castaneus is one of the most widely distributed turtle species in Africa. It is found along practically the entire Atlantic coast of the Black Continent: from southern Mauretania across Senegal via The Gambia, Guinea-Bissau, Guinea, Sierra Leone, Liberia, Ivory Coast, Ghana, Togo, Benin, Nigeria, Cameroon, and the north-western part of the Central African Republic. In addition, heading south from Cameroon the species inhabits an area in Equatorial Guinea, Gabon, Congo, and the DR Congo, reaching the northern part of Angola. The species also occurs on Sao Tomé, an island offshore of Gabon. There is also an introduced population in the Caribbean, specifically on the island of Guadeloupe, where in all probability the species arrived with slaves who had brought live turtles with them as a food supply (these turtles are eaten to the present day, more of which anon). There is supposedly another feral population in Florida, purportedly derived from specimens released by a pet dealer.

Nomenclatural confusion

One reason for the rather rare articles in hobby magazines is undoubtedly the fact that *Pelusios castaneus* is frequently confused with *P. subniger*, which, however, shares only a relatively small part of the distribution of *P. castaneus* and in general occurs lives much further south and east. The two species are most easily distinguished by the nuchal scutes, which together are about as broad as the first vertebral scute in *P. castaneus*, but total only 55-85% of the width of the first

vertebral scute in *P. subniger*. Additional differences are shown very clearly at <http://pelomedusoides.org>, a site that can be most heartily recommended to anyone interested in *Pelusios castaneus*.

Pelusios seychellensis, not extinct...

... because it never existed. At present 17-18 *Pelusios* species are distinguished, but DNA analysis has shown that there are probably more species than previously thought. And that makes *Pelusios* the most species-rich of all turtle genera! But a word of warning about one species that has been regarded as extinct. Three specimens of *P. castaneus* have been deposited in the Zoological Museum in Hamburg with the collecting locality erroneously given as "Mahé, Seychelles". But because of the vast distance between the Seychelles and the West African distribution of *P. castaneus*, these specimens were described as a new species, *Pelusios seychellensis*, by Friedrich SIEBENROCK (1853-1925), in his day a leading

world expert on turtles who worked in Vienna. Since then no further specimens of this species have ever been found on Mahé and it was eventually declared extinct. However, not long ago it proved possible to extract DNA from the dried type specimen, and this showed unequivocally that *Pelusios seychellensis* was *P. castaneus*!

Habitat

The West African Mud Turtle is extremely adaptable and occurs in waters of all kinds: pools, ponds, lakes, rivers - it is at home everywhere. In large parts of its distribution the waters in which it lives dry up for 6-7 months of the year, and *P. castaneus* spends this time buried in the substrate. But there are also rainforest forms (such as the specimens illustrating this article) that have water available year-round. *P. castaneus* is also undemanding as regards feeding. It eats insects, snails, carrion, small fishes, and amphibians, and sometimes also fruits and seeds. In addition the species is very fertile. Large females can easily produce two clutches of up to 18 eggs per year.

Endangered or not?

Unfortunately nowadays it is almost impossible to discuss turtles without mentioning the endangered status of the species. Because of its vast distribution region and great adaptability *Pelusios*

Habitus of an approximately 15 cm long *Pelusios castaneus*. Note the two little barbels on the chin.

All photos: Frank Schäfer





A *Pelusios castaneus* looking at the camera with interest. The species becomes very tame.

castaneus shouldn't in fact be endangered, but there have been no scientific studies of the wild populations in the major part of its distribution. Little money is available for fieldwork, and hence virtually nothing is known about population trends. Scientists in Nigeria utilize a very interesting procedure: they visit markets that regularly offer "bush meat" (i.e. wild animals sold as food) for sale. Which also includes turtles, of course. Unfortunately these visits have established that among the tortoises, populations of the genus *Kinixys* (there will be an article on *K. erosa* in the next issue) are declining significantly. But *Pelusios castaneus* is still regarded as not endangered and not subject to any international trade restrictions.

Pelusios castaneus in the terrarium

The West African Mud Turtle is very easy to maintain in the terrarium. It is undemanding and peaceful. Because it is a tropical animal it requires a year-round water temperature of 24-26 °C, and the air should be 2-4 °C warmer. The aqua-terrarium should not be too small (tank length 5x shell length), as the species is fairly lively and likes to swim. A piece of cork bark will be adequate as an everyday land area, but females require a large and above all deep land area for egg-laying.

Ideally the females should be weighed regularly during the breeding season - their weight increases noticeably when

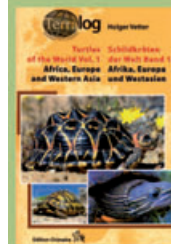
they are gravid. They can then be transferred into suitably arranged accommodation, with about 30 cm depth of substrate, for egg-laying. The eggs are only slightly temperature tolerant, so the incubation temperature should not drop below 27°C or rise above 30 °C. A temperature of around 29 °C has proved ideal. The young hatch after 55-60 days.

Note that the individuals in the photos were imported from Nigeria in 2006. The two specimens - a pair - have grown from a shell length of around 6 cm to 18 and 19 cm during their 8 years in captivity.

If you are now filled with the desire to keep and breed *Pelusios castaneus*, your pet dealer can undoubtedly order them for

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Literatur:

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In terms of color, the upper side of the head of *Pelusios castaneus* is the most attractive part of the turtle.





Evergreens

South American dwarf cichlids

by Frank Schäfer

Since 1st August 2014 new animal protection legislation has been in force in Germany, under which the vendor is obliged to provide every new customer with extensive written information on the newly purchased animal. In the case of fishes that is totally impracticable for every individual species. For this reason AQUALOG has developed "Profile" sheets to complement its "Labels" system, in order to comply with the legal requirements and cover each individual fish group. Labels and Profiles are an unbeatable "dream team". Here is the Profile for "South American Dwarf Cichlids".

General

Dwarf cichlids is the term used for all members of the cichlid family (Cichlidae) whose maximum eventual size does not exceed 10 cm.

In South America this means the species

The South American dwarf cichlids comprise a total of some 150 species, all of which are readily maintained and bred in the aquarium. In addition there are cultivated forms of some species that exist only in captivity. These cultivated forms differ from the natural or wild forms



Apistogramma borellii comes from Paraguay and likes a cooler temperature (16-20°C) from time to time.

of the genera *Apistogramma*, *Apistogrammoides*, *Nannacara*, *Ivanacara*, *Laetacara*, *Dicrossus*, *Crenicara*, *Biotocetus*, and *Mikrogeophagus*. Very few of them have common names and they are known simply "dwarf cichlids". Exceptions are butterfly dwarf cichlids for *Mikrogeophagus* and chequerboard cichlids for *Dicrossus/Crenicara*, while *Apistogramma* are often called Apistos for short.

mainly in their coloration, although there are also long-finned cultivated forms of the Butterfly Dwarf Cichlid (*Mikrogeophagus ramirezi*).

All South American dwarf cichlids practise brood care, i.e. they guard and look after their eggs and fry and defend them against enemies, but the details of that brood care vary depending on the genus.



South American Butterfly Dwarf Cichlid, *Mikrogeophagus ramirezi*, wild form.

Important requirements

In the wild South American dwarf cichlids live mainly in the shallow water of the bank zones of slow-flowing or standing waters. Typical features of the natural habitat include a substrate of fine sand and large quantities of dead leaves from the trees. True aquatic plants are normally absent from the habitat, but grasses and other bank vegetation often extend into the water. As well as the leaf litter, twigs and other pieces of wood serve as hiding-places.



Because dwarf cichlids are found almost everywhere in South America the temperature requirements of the individual species may vary quite considerably. Species from the south (Argentina, Paraguay, Uruguay), from higher altitudes (Bolivia), and from shady jungle streams in Peru should not be kept too warm in the long term, with 20-24° C being a good average, 2-3° C higher for breeding, and periodically 2° C lower as well. Species from the open areas of Colombia and Venezuela (the llanos) require 26-28° C and up to 30° C at breeding time. Amazonian species should be kept at 24-28° C, with the temperature increased by about 2° C for breeding.

In the wild many species live in very soft water (0-4° dGH) with an acid pH (pH 4.5 - 5.5), but in the aquarium these values are required only for breeding. Soft to medium-hard water (5-15° dGH) with a slightly acid to neutral pH (pH 6.3 - 7.5) is




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Die Aqualog-Datenbank umfasst hierfür aktuell knapp 2800 Arten aus den Bereichen Süß- und Meerwasseraquaristik sowie Terraristik, die dem Zoofachhändler zur Weitergabe an seine Kunden zur Verfügung stehen.

Zudem sind die meisten Etiketten mit einem QR-Code versehen; diesen können Sie bereits vor dem Kauf vom Aquarium abschnappen und Sie werden auf unser Lexikon auf Aqualog.de weitergeleitet und so vorab über die wichtigsten Anforderungen zur Haltung des gewünschten Tieres informiert!





Cultivated red form of *Apistogramma hoignei*.

suitable for the long-term maintenance of most species. Some species will also tolerate hard water (< 20° dGH) and a pH up to around 8.5 without any noticeable effect on their health.

Appropriate feeding

South American dwarf cichlids are "pickers" and sand-sifters. In otherwise they target individual larger morsels of food or sift the surface of the expanses of sand, picking up a mouthful of sand, "chewing" it, and then spitting it out. Any edible particles of food are retained and swallowed. South American dwarf cichlids are not specialised feeders and can be fed on all the usual sinking foods (flake, granules, frozen and live foods). It is, however, important to ensure that part of the aquarium substrate consists of fine sand (if necessary place a shallow dish of sand in the aquarium). If the fishes are unable to chew sand then they may develop infections of the mouth cavity and the gill area.

Correct maintenance

South American dwarf cichlids are sensitive to a high germ count in the water and to high levels of nitrogenous compounds. For this reason regular large partial water changes are the most important element of maintenance. Ideally 1/3 - 2/3 of the water should be changed every week, refilling with conditioned, fresh water of the same chemistry; at the same time the difference in temperature between the new water and the aquarium water should be as small as possible and never more than 2-3 °C. In aquaria with a low fish density, minimal germ population, and good biological filtration, water changes can be reduced to 1/5 of the total volume every 14 days.

Longer intervals should not be employed in the long term.

In line with the natural habitat, these fishes should always have access to secondary plant material. Dead leaves (of Sea Almond, Beech, Oak, or Walnut), Alder cones, or peat can be utilised, or special liquid preparations added at every water change.

Aquarium and tankmates

South American dwarf cichlids are not particularly active swimmers and the aquarium size required is governed mainly by their social behaviour. *Apistogramma*, *Apistogrammoides*, *Dicrossus* and *Crenicara*

are polygamous, i.e. in the wild a male maintains a harem of several females. The females guard the spawning sites and the brood, the males the territory. *Apistogramma* and *Apistogrammoides* spawn in caves, *Dicrossus* and *Crenicara* on leaves, wood, etc. In the aquarium these species can be kept in pairs or with an excess of females. A suitable spawning site must be available for each female. In standard-size aquaria only one male of a species should be kept, but in a suitably decorated aquarium it is possible to keep males of different species together as long as their requirements (temperature!) are similar.



A male *Apistogramma baenschi* (= Inca) in his territory.



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Male of the Golden Dwarf Cichlid, *Nannacara anomala*.



Male of *Apistogramma atahualpa*

Nannacara, *Ivanacara*, *Laetacara* and *Mikrogeophagus* are open brooders (i.e. they spawn on rocks, wood, etc) with a pair bond; both parents tend and guard the offspring together and share in their defence. Hence these species are kept in pairs. *Biotocetus* males construct large conical sand-castles and spawn in a pit on the top. *Biotocetus* are also best kept in pairs or with a surplus of females.

All South American dwarf cichlids are bottom-oriented fishes. Hence if tankmates are desired then these will ideally be fishes

that live in the open water column or close to the surface. South American dwarf cichlids are usually tolerant towards other types of fishes and can also look after themselves against larger (but unaggressive!) species.

Life expectancy

Butterfly dwarf cichlids (*Mikrogeophagus*) are short-lived fishes that usually live no longer than a year. The other species start to show their age after about three years of life. It is probable that none of the species lives longer than a year in the wild.



Crenicara punctularia

Size

Initially South American dwarf cichlids grow quickly and are usually sexually mature after six months at the latest. At this point they will be 1/3 to 1/2 (depending on environmental conditions) of their potential eventual size. Like all fishes, South American dwarf cichlids may continue growing throughout their lives. In all species males grow larger than females. No species grows longer than 10 cm, and the vast majority remain considerably smaller all their lives.

Special details

Because of the large number of species and the lack of recognised common names, it is important to make a note of the scientific name(s) of the species you buy, so that you don't make mistakes regarding their temperature requirements. Please note the scientific name, the optimal temperature range, the ideal pH value, and the recommended tank size given on the relevant label on the sales aquarium.

Pair of the golden cultivated form of the South American Butterfly Dwarf Cichlid, male above.





► Natürlich! - Lebendfutter für Fische

Lebendfutter ist ohne jeden Zweifel die natürlichste Art der Fischfütterung überhaupt. Die erfolgreiche Haltung vieler Arten wäre ohne Lebendfutter gar nicht möglich, als Leckerbissen einmal wöchentlich sollte es auf dem Speiseplan nicht fehlen! Und das nicht nur wegen seiner Inhaltsstoffe. Lebendfutter bedeutet nämlich gesunde Abwechslung und fördert den Jagdinstinkt. In der Fachsprache der Wildtierhalter nennt man das „Environmental Enrichment“ das man etwa mit „Bereicherung des Lebensumfelds“ übersetzen könnte.

Im Gegensatz zu früher ist die Beschaffung von Lebendfutter heute einfach. Von amtra gibt es, neben einem ausgewogenen Sortiment an Frost- und Trockenfutter auch Lebendfutter wöchentlich frisch im Fachhandel.

Die wichtigsten Sorten im Überblick:

Weißer Mückenlarven eignen sich z. B. für Barben, Salmmler, Labyrinthfische und Buntbarsche über zwei Zentimeter Länge. Daraus schlüpfende Mücken können übrigens nicht stechen.

Rote Mückenlarven stammen von der Zuckmücke, die ebenfalls kein Blut saugt. Während Weiße Mückenlarven frei schwimmen, lebt diese Art am Boden, wo sie von Welsen begeistert gefressen wird.

Daphnien (Wasserflöhe) sind Krieblerchen, die sich von Mikroalgen ernähren. Sie sind daher prall gefüllte, gesunde Leckerbissen, die sich hüpfend und zuckend durchs Wasser bewegen.

Tubifex besteht aus Würmern (Naididae) und ist so etwas wie die Schokolade für Ihre Fische. Es enthält viel Fett und sollte nur in kleinen Mengen verabreicht werden.

Artemia sind sehr nahrhaft und reich an mehrfach ungesättigten Fettsäuren. Sie sind die beliebteste Lebendfuttersorte. Bei amtra gibt es sie auch als **Nauplien** (frisch geschlüpft), als ideales Aufzuchtfutter.

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► Malawiseecichliden

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Die Heimat dieser Cichliden ist der Malawisee, einer der großen Grabenseen Afrikas. Verglichen mit dem Bodensee ist der Malawisee fast ein kleines Meer, mit 600 km Länge ist er neunmal so lang. Beeindruckend ist außerdem die Tatsache, dass der See an einigen Stellen bis zu 700 m tief ist. Vermutlich wurde ein erheblicher Teil der dort lebenden Cichliden noch gar nicht entdeckt. Der Malawisee ist einer der klarsten Süßwasserseen der Welt, er besitzt viele felsige Regionen, in denen die entsprechend benannten Felscichliden leben. Weiterhin gibt es riesige Sandregionen, auch hier haben sich Cichliden an die Umgebung angepasst. „Aquarienfische“ leben vor allem in den Felsregionen, in den Flachwasserzonen von etwa 8 bis 10 m. Hier leben viele Arten dicht beieinander, es ist also durchaus möglich, mehrere Malawicichliden in einem Aquarium gemeinsam zu halten. Aber: Wählen Sie ein passendes Aquarium: Die Mindestgröße sollte bei 120 cm, 50 cm Höhe und 50 cm Tiefe liegen. Wichtig ist auch der pH-Wert: 7,8 bis 8,5 sollten Sie erreichen. Eine großzügige Einrichtung mit vielen Steinen macht die Sache perfekt. Besuchen Sie Ihren Zoohändler - er hat alles, was Sie brauchen und darüber hinaus sicher auch den einen oder anderen guten Tipp!

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Lizards

Lizards from the Peloponnese

by Volker Ennenbach

The Peloponnese is a large peninsula that forms part of Greece. It was the site of kingdoms of the classical age that are reflected in our culture to the present day: the ascetic Sparta; Corinth, where Alexander the Great was first chosen as leader of the Greeks against the Persians; and the ancient Olympia, the original home of the Olympic Games and site of one of the seven wonders of the world, the statue of Zeus sculpted by Phidias. Isn't it fascinating to think that the lizards that are found there today are the same species as ran around the feet of the heroes of old?

Two of the lizard species endemic to (found only on) the Peloponnese are at present available captive-bred in the trade. Essentially, wild-caught specimens of native European terrestrial vertebrates haven't been traded for decades. The arrival of the two species, the *Peloponnese Wall Lizard*, *Podarcis peloponnesiacus* (BIBRON & BORY, 1833), and the Greek Rock Lizard, *Hellenolacerta graeca* (BEDRIAGA, 1886), is thus very pleasing and deserving of a brief mention here.

106 years ago....

.... may not be Ancient History, but seems like an eternity in our fast-living day and age. But it was that long ago that Lorenz MÜLLER, a terrarium enthusiast and herpetologist from Mainz, set out to visit the Peloponnese and study the reptiles and amphibians found there. His particular target was the two lizard species

mentioned here. In 1908 he reported on his experiences during the trip in a whole series of articles published in the hobby magazine *Blätter für Aquarien- und Terrarienkunde*. A PDF of the series is available free of charge to members of the Aqualog Club in the Member Area.



Peloponnese Wall Lizard, drawing by Lorenz Müller, 1908.

The Peloponnese Wall Lizard

MÜLLER described this lizard as ubiquitous, fabulously beautiful, and lightning fast. And always ready to squabble with conspecifics. Here is his lively portrayal of the species (translated): "*Lacerta peloponnesiaca* is one of the fastest of all lizards. It runs extremely quickly and can leap astonishingly long distances. (...)



Podarcis peloponnesiacus young male below, female above.

all photos: Frank Schäfer



Distances measured in meters are child's play for it. I estimate that it can jump up to 1.5 meters in a horizontal direction, and a lot further diagonally upwards. On smooth terrain it runs in energetic spurts with its tail bent slightly upwards, and it is interesting to see how while dashing along it now and then performs one or more long leaps for no obvious reason. (...) In general *Lacerta peloponnesiaca* can be termed a ground lizard. It is most at home on hillsides covered in open scrub and scattered with rocks, large and small; at the same time it isn't completely absent from flat ground."



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Female Greek Rock Lizard, *Hellenolacerta graeca*.

In the terrarium the Peloponnese Wall Lizard is a very pleasing pet, that soon gets to know its keeper. It can be kept in pairs, or maybe with an excess of females. Males are absolutely intolerant of one another.

The Greek Rock Lizard

Formerly likewise assigned to the catch-all genus *Lacerta*, this species is now placed in the monotypic genus *Hellenolacerta*. Our knowledge of these lizards has increased considerably in recent years. Until not that long ago it was thought that the species was restricted exclusively to the Taygetos Mountains in the south of the Peloponnese. But recently it has also been found in other parts of the peninsula.

Hellenolacerta graeca is apparently a relict species that has been restricted to less favorable biotopes by the "modern," robust and aggressive wall lizards. Until the 1980s it was known only as a inhabitant of relatively moist stream gorges, never straying far from water, but it is now known that it also inhabits dry biotopes as long as there is no other species in competition there.

Let us see what Lorenz MÜLLER has to say about this species as well:

"*Lacerta graeca* is of a much quieter nature than *Lacerta peloponnesiaca*. To start with,

its mode of locomotion is quite different. It doesn't shoot along jerkily in energetic spurts like the Peloponnese Wall Lizard, but moves slowly and deliberately over rocky surfaces and boulders with an exceptionally snake-like gait. It sometimes appears that this mode of locomotion is dictated by the abnormally long tail, which is never curved upwards while walking but trailed along behind, contributing to the snake-like movements of the body. Of all the lizards that I know, *L. graeca* is the most phlegmatic. (...) It is forever tripping around with its snake-like movements, creeping up rock-faces in a leisurely fashion, or slipping between the boulders of the stream bed. Even when pursued it never runs away rapidly, but disappears into some hole or crevice or

other after a short flight, while *L. peloponnesiaca* often shoots past the ideal cranny into which to slip, relying solely on its speed. I have never seen *Lacerta graeca* chasing one another around, and have never seen the sort of battles between males that are the order of the day in *L. peloponnesiaca*."

This delicate lizard is demanding when it comes to maintenance, but its laid-back temperament makes up for that!

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Hellenolacerta graeca, Männchen





Ichthyology

A quarter century of the IEF

by Frank Schäfer

The journal Ichthyological Exploration of Freshwaters (IEF) is now in its 25th year of publication by Verlag Dr. Friedrich Pfeil in Munich, and it goes without saying that we have a complete set, from the first issue on, in the editorial office. Although it is a purely scientific journal - scientific papers on freshwater fishes - it stands out from all other comparable periodicals currently available as being particularly interesting for enthusiastic freshwater aquarists. Four issues appear every year. Over the past quarter century a large number of important aquarium fishes have been scientifically described in the IEF, including such fabulous fishes as *Hypancistrus zebra* (L46), *Apistogramma norberti*, *Betta brownorum*, *Hypsolebias magnificus*, *Indostomus crocodilus*, *Dario hysginon*, etc, etc, etc. In recognition of the IEF we will briefly summarize here the works published in the 1/2014 issue. The original abstracts can be found at <http://www.pfeil-verlag.de/04biol/e9902d25.php>.

The first paper in Issue 1 described a new *Acanthobrama* species from the rivers Ceyhan and Orontes in Turkey and clarified the status of a second species of the genus in the same distributional region. *Acanthobrama* species remain relatively small (maximum around 20 cm), but are typical breams and hence not yet introduced into the aquarium hobby. - Freyhof, Jörg & Müfit Özulug: *Acanthobrama thisbae*, a new species of bream from southern Anatolia, Turkey (Teleostei:



Acanthobrama thisbae FREYHOF & ÖZULUG, 2014

Cyprinidae). pp. 1-10

In the second paper the crested loaches of the genus *Paracobitis* from Iran and Iraq are revised and four new species described. No member of the genus has so far appeared in the aquarium hobby; they are typical stone loaches so their maintenance and perhaps also breeding should present no insoluble problems. At least one of the newly described species (*P. persa*) must be



Paracobitis persa
FREYHOF, ESMAEILI, SAYYADZADEH & GEIGER, 2014

regarded as threatened with extinction, as large parts of its habitat have been left dry by the construction of a hydro-electric dam. It is particularly interesting that the genus includes a completely blind cave form. The majority of species grow to 6-10 cm and exhibit a spotted pattern. - Freyhof, Jörg, Hamid Reza Esmaeili, Golnaz Sayyadzadeh & Matthias Geiger: Review of the crested loaches of the genus *Paracobitis* from Iran



and Iraq with the description of four new species (Teleostei: Nemacheilidae). pp. 11-38



Knodus figueiredoi ESCUICERO & CASTRO, 2014

The third paper describes a new species of the characin genus *Knodus* from the state of Mato Grosso (tributaries of the Rio Araguaia) in Brazil. Only one member of this species-rich genus (including the newly described species there are 24 species accepted as valid), the Blue Tetra (*Knodus borki*), is present in the hobby, and then usually under the incorrect name *Boehlkea fredcochui*. Following the description of the species, the authors also discuss the validity of the generic distinction between *Knodus* and *Bryconamericus*. Unfortunately the only illustration of the new species *Knodus figueiredoi* is of a preserved specimen, although, based on the text, photographs of living fishes must exist. According to the description these fishes are rather attractive and have a greenish back and yellow



Tanakia latimarginata KIM, JEON & SUK, 2014



coloration on the flanks. The species grows to 3-3.5 cm long. - Esguícero, André L. H. & Ricardo M. C. Castro: *Knodus figueiredoi*, a new characid from the Rio das Garças, upper Rio Araguaia basin, Brazil, with comments on the taxonomic limits of the genera *Knodus* and *Bryconamericus* (Teleostei: Characidae). pp. 39-48

In the fourth paper Anton Lamboj formally describes two *Parananochromis* species previously discussed in his book *The Cichlids of Western Africa* (Birgit Schmettkamp Verlag, 2004) under the working names *P.sp. Ntem* and *P.sp. Sanaga*. They are now called *P. elobatus* (= *sp. Sanaga*) and *P. orsororum* (= *sp. Ntem*). Both species have already been imported but West African dwarf cichlids are currently not much in demand, so these fishes with their rather muted colors will probably be reserved for the tanks of real specialists. They grow to 5-9 cm long and are biparental cave brooders. - Lamboj, Anton: Two new species of *Parananochromis* from Cameroon, Central Africa (Teleostei: Cichlidae). pp. 49-57

The next paper deals with a fabulously beautiful bitterling, *Tanakia latimarginata* from South Korea. All *Tanakia* species are gorgeous and it is totally incomprehensible that they enjoy only a shadowy existence in the aquarium hobby. There are around 60 bitterling species divided among the genera *Acheilognathus*, *Rhodeus* and *Tanakia* with *Tanakia* containing the least species (currently eight). *Tanakia* is distinguished from other bitterling genera mainly by the shape of the pharyngeal teeth, plus barbels are always present and females look similar to males in coloration. *T. latimarginata* grows to 6-8 cm long and is, like the majority of bitterlings, a brood parasite on mussels. - Kim, Daemin, Hyung-Bae Jeon & Ho Young Suk: *Tanakia latimarginata*, a new species of bitterling from the Nakdong River, South Korea (Teleostei: Cyprinidae). pp. 59-68

From my viewpoint as a labyrinthfish fan, the sixth paper is a sensation: a new gourami discovered in Borneo! Unfortunately the species, whose name is



Top left to bottom right: *Parananochromis elobatus* LAMBOJ, 2014, male, *P. elobatus*, female, *P. orsororum* LAMBOJ, 2014, male, and *P. orsororum*, female.

Trichopodus poptae (*Trichopodus* is a genus name for the gouramis generally known in the hobby as *Trichogaster*, i.e. the eastern gourami with the short dorsal fin), is so far known only from preserved specimens



Trichopodus poptae LOW, TAN & BRITZ, 2014

collected by local fishermen in 1995 in the drainage of the Barito River, and stored in collecting jars provided by scientists and filled with preservative fluid. Preserved specimens are relatively uniform in coloration and often the only noteworthy marking is a black spot on the caudal peduncle. The illustrations remind me most of *T. leerii*, the Pearl Gourami, with which the new species also shares a number of anatomical features. Hopefully live specimens will be imported in the foreseeable future! - Low, Bi Wei, Heok Hui Tan & Ralf Britz: *Trichopodus poptae*, a new anabantoid fish from Borneo (Teleostei: Osphronemidae). pp. 69-77

The seventh and last paper in issue 1 is by Wilson J. E. M. Costa, who describes no less



than six new *Cynolebias* species from the caatinga (savannah) along the central Rio Sao Francisco in Brazil. Some of the new species have been known for some time and erroneously identified as other *Cynolebias* species, but four are completely new and have not been mentioned in earlier works. Costa also redefines the "old" species *C. porosus* and synonymizes *C. albipunctatus*, described in 1991, with *C. porosus*. Unfortunately at least some of these *Cynolebias* species are classified as endangered due to widespread destruction of the caatinga. - Costa, Wilson J. E. M.: Six new species of seasonal killifishes of the genus *Cynolebias* from the São Francisco river basin, Brazilian Caatinga, with notes on *C. porosus* (Cyprinodontiformes: Rivulidae). pp. 79-96

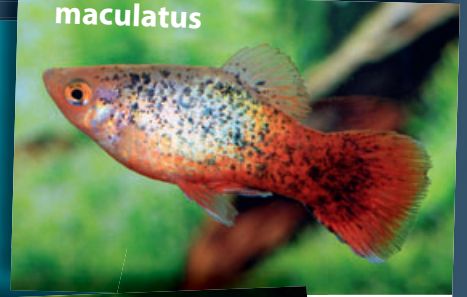


Cynolebias ochraceus COSTA, 2014



Many many colorful Platys

Platies can be found in literally every aquarium store, and they are available in many different colors. Platies originally came from Mexico, but have been bred in the aquarium for a hundred years. The platies in aquarium stores belong to two different species. One is sometimes called the Maculatus Platy (*Xiphophorus maculatus*) and the other the Variatus Platy (*X. variatus*) but nowadays hardly anyone actually uses these names. Plus the majority of people can't tell the two species apart at all. There are eight additional platy species in the wild, but they are only very, very rarely kept in the aquarium.

maculatus

variatus


The arrow indicates the "penis" of the Platy male. The correct term for this is gonopodium.

Live young

Platies produce live young that look just like their parents except for their tiny size. Platy parents don't look after their offspring and will even eat them if they are hungry. The vast majority of fishes lay eggs, but there are also fishes that produce live young. These include lots of sharks and marine rays, for example, and the platies and their relatives in the aquarium. The family to which platies belong is called the livebearing toothcarps, and aquarists often call them just livebearers. As well as the platies they also include the guppies, the mollies, the swordtails, and lots of other less commonplace species. In platies and their relatives the eggs develop in the belly of the mother. When she lays the eggs they burst immediately and the fry hatch. From our viewpoint it looks as if fully-formed fishes are being born.

Males and females

Male platies have a kind of penis with which they fertilize the females. You can always easily recognize the males by this. If you want to breed platies then it is best to buy 10 specimens. It isn't all that important how many males and how many females you have, but naturally both males and females need to be present. Well maintained platy females produce young every 6-7 weeks. Usually there are 15-20, but with large, old females there can be as many as 80 or more young. The females produce their young at night, usually after a water change. Platies like water changes a lot. In the wild they live in swamps where the water is often dirty. When it rains the fishes feel better. In the aquarium they think it is raining when you do a water change.

Surprise!



Breeding platies is lots of fun. But it is also perfectly normal for most of the fry to be eaten. This is a good thing, as otherwise there would eventually be just platies and no other fishes in the world. You can breed platies of just one color or a mixture. In the case of a mixture, i.e. you have males and females of assorted colors in the aquarium, you never know quite what color the young will be. This can be very exciting! Sometimes you can tell from the fry which male a female likes best. There is no real pair bond in platies, and any male may mate with any female, but the ultimate choice is always with the female. And they find some males cooler than others...



i

Infobox für Eltern

Dear Parents,

please start by reading a good handbook on maintaining an aquarium with your child, before actually acquiring any fishes. The pet trade, book shops, and public libraries all have a wide range of books for beginners. It isn't possible to keep fishes successfully without first finding out the basic requirements of these finned creatures and the correct way to maintain an aquarium (setting up, water changes, etc).

General hints

Platies are fundamentally very easy to keep. They have no special requirements regarding water chemistry. They will tolerate any mains water and water temperatures between 16 and 30 °C, with 20-26 °C being ideal. Because of the tough living conditions in their natural habitat both of these platy species are very resistant to beginner's mistakes and polluted water. But even so you should take the trouble to teach your child to look after the aquarium on a regular basis (the most important thing is a weekly partial water change, if possible).

Holidays

Fishes are poikilothermic ("cold-blooded") and require much less energy than us humans. A fast of two to three weeks won't affect them much at all and won't do them any harm. If you are going to be away for two or three weeks then it is always best to let the fishes go hungry, as a neighbor or friend will usually be too generous towards them. Under normal circumstances no fish has ever died of starvation in the aquarium, but millions of them have died because they were given too much food and the water went bad.

Hazards

Maintaining an aquarium is fundamentally not dangerous. But make sure your child is aware that the combination of water and electric current requires great care. Generally speaking there is only one disease that can be communicated from fishes to humans, a tuberculosis of the skin that manifests as difficult-to-heal wounds. But such infections are extremely rare and more often contracted via visits to swimming baths than from aquarium fishes.



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Lurking on the wall: Geckos



The Tokay (Gecko gecko) is the largest and most colorful of all the house gecko species. It has a loud, clear call "Tock-Ayyyyy".

You must have heard of geckos, right? OK, they are rather amusing lizards that run up and down vertical walls, spend their spare time clinging to the ceiling, and can even climb up window-panes.

Geckos like people. There are probably more geckos nowadays than ever before, as they can find somewhere suitable to live even in the middle of a city. Geckos need warmth (so they can't survive outside in central and northern Europe as it is too cold) and insects on which to feed. If we switch on the light at night then it attracts moths, mosquitos, and other insects. The geckos eat these insects and we are pleased about that. Living together where everybody benefits is termed symbiosis. And we humans live in symbiosis with house geckos everywhere that it is warm enough.

Poisonous? Rubbish!

It is laughable but true that many people think geckos are poisonous! But that is utter superstitious rubbish. The belief probably came about because house geckos, when captured, fight bravely for their lives and bite as hard as they can. In the case of large species like the Tokay, which sometimes measures almost half a meter long, that can really hurt and also bleed a lot. But it isn't poisonous.



Tschiktschaks are fairly small and inconspicuously colored.

A choir on the ceiling

The majority of lizards are dumb or at most hiss occasionally when they feel annoyed. But wall geckos are very vocal and often call really loudly. Not to loudly that you can't sleep at night, but you really can hear them all over the house. For this reason small wall geckos in Asia are called "Tschiktschak", because their calls sound a bit like that. And the largest of all the house geckos, the Tokay, also got its name from its territorial call.



A gecko will always let you know when it is in a bad mood. The bite of a large individual really hurts and bleeds!

Geckos in the terrarium

You should be aware that there are very many completely different gecko species. Only a very few live in and on houses. But all house geckos (i.e. the wall geckos of southern Europe and Africa, the Tschiktschaks from Asia and Africa, and the big Tokays) can be very easily kept and bred in the terrarium. All of them lay eggs that they stick to the back of a piece of bark or similar. They are always twins, i.e. two eggs. It is best to keep a pair as males don't get along. Have fun!





i Infobox für Eltern

Dear Parents,

the maintenance of reptiles is not for small children. Your child should be at least 12 years old so that he or she can look after them properly. It is essential to read a good handbook on terrarium care with your child before acquiring a terrarium. Reptiles cannot be kept correctly by guesswork alone, you must learn how to treat them correctly as anything else would be cruelty to animals.

Setting up the terrarium

A relatively small terrarium measuring 40 x 40 x 40 cm will be adequate for a pair of Tschiktschaks (house gecko species of the genera Hemidactylus and Cosymbotus). These geckos are not at all worried about the arrangement of their surroundings. They need somewhere to hide, somewhere to lay eggs, food and water - that's all. The rest can be left to the imagination of their keeper. Cork bark is very good as a hiding-place and somewhere to lay eggs, as are old fruit boxes or roofing tiles.

The substrate is the most important part of the decor even though geckos hardly ever descend to floor level. But their droppings land there, and because geckos need a relatively high humidity (60-80%), this too is best regulated via the choice of bottom substrate. House-plant composts with a clay content (e.g. Seramis) are ideal. The substrate should always be kept moist, but not wet. Place a number of pieces of wood or bark on the bottom and put a few woodlice from the garden in the terrarium. The woodlice will eat the gecko droppings and convert them into humus.

House geckos are nocturnal, but even so the terrarium should be illuminated by day. Sometimes geckos like to sun themselves, and apart from that the light serves as heating. The daytime temperature in the terrarium should be between 24 and 30 °C, and can drop to 20-22 °C at night. A small dish of water should always be available.

Regular maintenance

A gecko terrarium of this type doesn't require much maintenance. It should be sprayed every evening with lukewarm water from a plant spray. The water dish should be cleaned daily and refilled. Feed 3-4 times per week (every other day).

Special notes

Because they are so extra-ordinarily common, it isn't worth breeding house geckos for the trade. Wild-caught individuals always have parasites, but these can be easily treated when necessary (emaciation).



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Basics

The correct substrate for the freshwater aquarium

by Birgit Bautz-Schäfer

The debate as to the correct substrate for the aquarium is as old as the aquarium hobby itself, and no end to the debate anywhere near in sight. One thing is abundantly clear, however, and that is that there is no substrate that fits all possible requirements in the aquarium, because that would be quite impossible.

So right from the start you need to ask yourself several questions. What do I want to keep in my aquarium? Am I attracted to any particular aquatic plants? Or particular fishes? Or do I simply want an attractive aquarium?"

material that has undesirable effects in the aquarium, for example excessive bacterial growth, and the resulting cloudy water and lack of oxygen. A high nutrient content also leads to vigorous algal growth. All very undesirable.



An universal substrate: lime-free gravel, grain size 3-5 mm.



Sand or gravel?

Fundamentally only lime-free sand or gravel can be considered as a basic substrate. Soil from the garden, peat, potting compost, hydroponic substrates, and lime-rich coral sand are essentially unsuitable for use in a freshwater aquarium. Soil, potting and other composts, contain a whole lot of organic

Clay substrates for hydroponic culture of terrestrial plants can have unpredictable consequences in the aquarium. Sometimes using such substrates in the aquarium works, but it much more frequently leads to explosive algal growth, especially the dreaded blue-green algae. The use of such substrates is like playing Russian Roulette.

Substrates containing lime, such as coral sand or marble chippings, are toxic to plants. Only a very few species can grow in such substrates. Normally only algae

thrive in an aquarium with such substrate.

Grain size is important

The difference between lime-free sand or gravel lies primarily in the grain size. Sand is the term used when the individual grains have a diameter between 0.063 and 2 mm, while anything larger is gravel. Very fine sand, such as desert sand, is unsuitable for a normal aquarium, as it compacts into a stone-hard mass when it becomes wet. And no plants can grow in that. In addition anaerobic areas may form, in which sulfur compounds smelling

Dear Reader,

this article was written for the German market and the suggestions for use relate to products available in the German aquarium trade. If you are buying substrate materials for the aquarium in other countries then please make sure you find out if the recommendations given in the following article remain applicable.

like bad eggs may develop and poison the fishes.

Sand

From a purely chemical viewpoint lime-free sand in Germany is almost always quartz sand. There are other types of sand but they are so rare as not to be worth mentioning here. It is important that the sand for use in the aquarium is naturally-created river sand, in which the individual grains are rounded. There is also sand manufactured by crushing rock, but the grains have sharp edges. Bear in mind that quartz sand is the raw material for manufacturing glass! Bottom-dwelling fishes suffer in aquaria with such sand. The barbels of catfishes and loaches may be abraded; rays, flounders, eels, and other species that like to bury themselves, suffer skin injuries; species that like to sift the sand for food, such as many barbs or cichlids, suffer damage in the mouth area. For these reasons manufactured builder's sand should never be used.

Sand is of great importance in the lives of



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► Dosieren ohne Strom und mit Tankanzeige

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many fishes and proper maintenance of some species isn't possible at all unless at least part of the bottom is covered in sand.

A major disadvantage of sand is that a very large number of plants won't grow properly in a sand substrate. This is because sand becomes relatively close-packed and allows comparatively little water circulation. Plus not very much organic material (mulm, i.e. the excreta of the fishes and dead plant debris) penetrates into sand. The result is a shortage of nutrients in the substrate and that in turn leads to poor plant growth. Of course that can be countered by using a layer of substrate containing nutrients beneath the layer of sand. But in that case you must always make sure that digging fishes cannot reach this lower layer, as otherwise the result will be serious clouding of the water.

Sand (and the same applies to gravel, below) naturally contains "dirt", in practice a mixture of very fine sand and clay. This is the last thing you want in the aquarium, and so it shouldn't be left in the sand, as otherwise if you have digging fishes in the aquarium the water will always be cloudy. In addition unwashed sand containing a lot of dirt is inclined to become compacted (see above). Hence before sand is used in the aquarium it should be washed until the water in the bucket remains clear even when the sand is stirred vigorously. This is a rather tiresome business!

Gravel - the universal substrate

Gravel is the term used for a grain size of 2 mm to 6 cm. In the aquarium gravel with a grain size of 3-5 mm is generally regarded as the universal substrate. It is loose enough for mulm to sink into it and the water can circulate adequately, but it is also close-packed enough for the roots of the plants to find a good hold. Gravel of this grain size again usually contains dirt. Nevertheless it doesn't normally need to be washed thoroughly. The dirt may cloud the water somewhat initially, but the



cloudiness soon disappears as the particles sink back into the gravel. This dirt is exceptionally good for promoting plant growth. It acts as a catalyst for numerous nutrients that plants take up via their roots. However, anyone who wants to keep fishes that dig a lot will have to dispense with the beneficial effect of the dirt and wash the gravel thoroughly before using it in the aquarium. It should be mentioned that the cloudiness has one major drawback: the particles also settle on the leaves of plants, which doesn't do them any good at all. For this reason particularly delicate, fine-leaved plants (*Myriophyllum*, *Cabomba*, *Limnophila*, etc) shouldn't be planted until a week or two after a new aquarium is filled, when the water is completely crystal clear.

Structure of the substrate

The following structuring of the substrate is recommended for the vast majority of aquaria: a relatively small area in the foreground of the aquarium - at most a quarter of the entire bottom area - is covered with a 2-3 cm thick layer of well-washed sand. This sandy area is separated from the background using suitable

stones to create a terrace, which is infilled to a depth of 4-5 cm with unwashed gravel with a grain size of 3-5 mm topped with a 2-3 cm thick layer of washed gravel of the same grain size. The sandy area is left unplanted and serves as a "play-ground" for sand-loving fishes. If this sandy area subsequently looks too barren, pieces of bark or stones, with aquatic mosses, Java Fern, or Anubias attached, can be placed there. The background area can be planted with the complete range of available aquatic plants that will thrive under the lighting and water conditions prevailing in the aquarium in question.

Substrate additives

The fertilization of aquarium plants usually takes place via the water, and experience has shown that this method works very well. There are, however, sensible additions to the substrate that encourage optimal plant growth.

Pre-fertilized substrate

Several manufacturers offer substrate materials with a long-term fertilizing effect. The plant nutrients in this type of substrate are designed to be released slowly into the water. They are advisable for use where the primary intention is to have the most luxuriant planted aquarium possible, with swordplants (*Echinodorus*), crypts (*Cryptocoryne*), dwarf waterlilies



Biotope photo from French Guiana, with an "earth-eater" of the species *Satanoperca rhynchitis* in the center of the picture. Even in the wild the sandy bottom - as here - is usually plant-free.



Satanoperca rhynchitisa in the aquarium. In this instance the red lips are not the result of inflammation caused by the wrong type of sand, but a characteristic of the species. The sifting of sand is a necessity for all *Satanoperca* species. The sifted sand is expelled via the gill-slits and trickles to the bottom, as can clearly be seen in the photo.

(Nymphaea), and Aponogeton as the main components of the planting. This type of substrate is used as a bottom layer in the planted zone of the aquarium, i.e. beneath the gravel in the example described above.

Clay

Clay is composed of very fine-grained minerals with a grain size of between 1 and 4 μm (1 μm = 0.001 mm). The effect as a plant fertilizer isn't properly understood. It is thought, as mentioned earlier, that it acts as a catalyst and enables the plants to take up certain substances, while simultaneously binding poisonous substances. For this reason clay is also used in human medicine. It is thought that on the one hand the huge surface area has a high binding capacity and on the other the substances thus bound up are also subsequently released again. Various manufacturers offer clay pellets containing slow-release fertilizer. These pellets are simply pressed into the substrate close to the plant to be fertilized.

The effect of this root fertilization is usually quite astonishing. Many previously sickly plants literally explode into growth. Further fertilization isn't required until the effect diminishes. Precisely when that will be can't be prophesied, as every aquarium

functions in its own individual way, but usually this type of fertilization remains effective for several months.

Peat

Fundamentally the use of peat, especially granulated peat, in the substrate isn't advised. It usually only leads to a dreadfully stinking substrate with dying plants. However peat can, when targeted at the root region of a plant, have a very positive effect. This is because almost all aquatic plants require a very narrow pH range for optimal growth, specifically between pH 6.2 and 7.0. Peat - or at least some types of peat - has the effect of lowering the pH. So peat can be used to help in cases where the pH is too high. The most suitable type is pellets of compressed peat as offered by various manufacturers - e.g. Aquariana - as a filter medium for pH stabilization. The pellets are simply pressed into the substrate near to the plant, as described earlier for clay pellets.

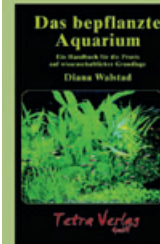
Compost

The effect of compost on plant growth is phenomenal. Unfortunately, as already mentioned, normal compost cannot be used in the aquarium because the resulting bacterial proliferation will lead to cloudy water and a plague of algae. But you can and should use "light compost" in

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the form of dead autumn leaves. Dead leaves are an indispensable supplementary food for almost all aquaria and will also supply the fishes and other aquarium occupants with important secondary plant substances. Add one leaf per 10 liters of tank volume to the aquarium, and repeat when it has "disappeared". As then it will have been composted and vanished into the gravel, where it will serve the living plants as a perfect, natural nutrient supply.



The roots of the aquatic Banana Plant, *Nymphaoides aquatica*, are used to store nutrients and shouldn't be buried in the substrate.



Invertebrates

A small jellyfish conquers the world

by Tobias Körbel

Most people know jellyfishes only from the sea, where they are generally unpopular as they can deliver serious, even fatal, stings with the sting cells situated on their tentacles. But hardly anyone knows that there are also jellyfishes that live in fresh water, and which are completely harmless to humans.

The freshwater jellyfish was first seen in Europe in 1880, at Regent's Park in London, where this delicate creature, which attains a diameter of only some 2 cm, turned up in a tank housing tropical water lilies. At that time there was far more interest in animals than there is today, and the freshwater jellyfish hit the headlines worldwide. This, the first and only freshwater jellyfish then known, was scientifically described in the same year as it was discovered - twice! - as *Craspedacusta sowerbii* LANKESTER, 1880 and *Limnocodium victoria* ALLMANN, 1880. The first name was published somewhat earlier and hence is valid. So the scientific name of the freshwater jellyfish is *Craspedacusta sowerbii*.

Detective work

But where did this creature appear from so suddenly? It was already known that jellyfishes are no more than the sexually

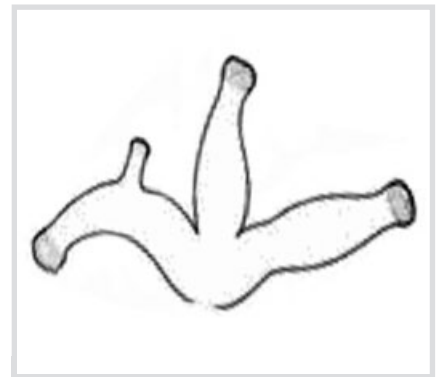
reproductive stage of a polyp. Jellyfishes belong to the phylum Cnidaria and their closest relatives are the sea anemones and corals. Hence the normal habitus of a jellyfish looks like a small sea anemone. This can perhaps best be compared with toadstools and mushrooms. The normal state of these fungi is a network of filaments that live underground. The parts that appear above ground and can be made into tasty dishes (as long as they aren't poisonous fungi) are only the fruiting bodies, not the fungus itself.

It was thus supposed right from the start that the jellyfish arrived in the greenhouse in polyp form, attached to waterlilies. Because the greenhouse in Regent's Park was dedicated to the queen of all the waterlilies, the *Victoria regia* from South America (hence the name *Limnocodium victoria*), it was supposed that the original home of the freshwater jellyfish was in South America.

The polyp is discovered

Accordingly a successful search was made for an unknown polyp in the waterlily tank in Regent's Park. A tiny polyp, only 2 mm across, was discovered. It looked a bit like a Cluedo playing piece with a bristly hair-do. Sometimes 2 to 4 polyps unite into a small colony 5-8 mm across. The jellyfish comes into being when the head of the polyp transforms into a little ball, which, when it detaches from the polyp, is open on the underside, in other words bell-shaped. In the course of its growth the "bell" becomes an ever-flatter disc. The fully-formed, adult jellyfish - another word for this stage is medusa - is eventually around 2 cm across.

In 1885 the polyp was also found in Philadelphia, but it wasn't recognized as the polyp of *Craspedacusta sowerbii* and hence was described as a new species, *Microhydra ryderi*. The first jellyfishes weren't found in Philadelphia until 12 years later, in August 1897.



A small colony of *Craspedacusta* polyps. After Jankowski et al., 2008, modified

Freshwater medusa, *Craspedacusta sowerbii*. The "umbrella" of the jellyfish is around 2 cm across. Photos: F. Schäfer



Worldwide distribution

Nowadays this freshwater medusa is found on all the continents of the world except Antarctica, though it remains a mystery how it has managed to spread so extensively. However, the puzzle of where it came from originally appears to have been solved. This jellyfish almost certainly originated from the Yangtze drainage in China, which is also home to 2-3 further species of the genus *Craspedacusta*. The actual number of freshwater medusae in existence remains unclear. More than 20 species of freshwater jellyfishes have been scientifically described,



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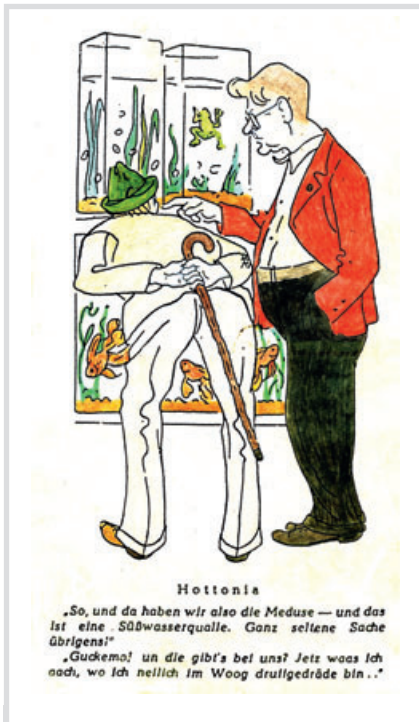
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freshwater jellyfishes specially for the aquarium! But they aren't exported, as the medusa stage is too delicate for that.

Literatur:

Didžiulis, V. and Zurek, R. (2013): NOBANIS – Invasive Alien Species Fact Sheet – *Craspedacusta sowerbii*. – From: Online Database of the European Network on Invasive Alien Species – NOBANIS www.nobanis.org, Date of access 7/10/2014
Jankowski T., Collins A.G. & R. Campbell (2008): Global diversity of inland water cnidarians. *Hydrobiologia* 598: 35–40



This neat caricature by the artist Hartmuth Pfeil (1893-1962) shows a section of an exhibition put on by the Hottonia, the Darmstadt aquarium society. The text (translated) reads: "And here we have the medusa - which is a freshwater jellyfish. Quite rare too." To which the visitor is replying: "Just look at that, and we have them here? And now I know what I just trod on in the swimming pool.."

but of these only 3-5 species of *Craspedacusta* and 2-6 species of *Limnocnida* are regarded as valid. The latter genus is commonplace in Lake Tanganyika.

But back to *Craspedacusta sowerbii*. In 1905 it turned up in Germany (in Munich), in 1969 in Sweden, and in 2002 in Lithuania. But only the medusae are conspicuous, the tiny polyps are probably almost always overlooked.

Medusae only when hot

By now the biology of the freshwater jellyfish has been so intensively studied that we know why the medusa stage occurs so rarely and then usually comes as a surprise. Medusae develop only at water temperatures of 25 °C upwards, which at our latitudes aren't guaranteed every year by a long chalk. The polyp stage may thus have lived for many years in a body of water before it suddenly springs into medusa production in a warm summer. This also explains why freshwater jellyfishes sometimes "appear out of nowhere" in warm-water aquaria.

Only females

The medusa stage actually serves for sexual reproduction. Male and female jellyfishes release their sperm and eggs into the open water. Fertilized eggs settle on a substrate and develop into polyps. The polyps reproduce by division.

For some strange reason there are only female medusae, at least in Europe, so sexual reproduction is precluded. This means that all the freshwater jellyfishes outside China are apparently clones of the individuals that first turned up in Regent's Park in 1880!



In the aquarium

Freshwater jellyfishes can easily be maintained in the aquarium. They will eat *Artemia nauplii* and live for around 2-3 weeks, though here in Europe they can only be bred via the polyps. In China, on the other hand, there is a patented process for breeding

The freshwater medusa in the photo was discovered by our assistant Michelle Gerner in a pond near Darmstadt.



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