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NEWS

The Magazine for Aquarists and Terrarists



 **Current
Freshwater
Imports**



 **Lygodactylus
williamsi**



 **News from
Oscar**



Aquaristic

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Filialen mit Zoofachabteilung





Editorial

Bio-Invaders

- are aquarists responsible?

by Frank Schäfer

Here we are at the beginning of the 21st century, and in many parts of the Earth humanity is slipping back into barbarism. Archaic, brutal forms of religious practices are coming back into fashion, like a thoughtless action against everything civilized. And in the course of this even those who keep animals are under attack from power-hungry organizations backed by enormous amounts of money. At present they are doing everything in their power to totally ban the aquarium and terrarium hobbies.

The domestication of animals and plants are practices specific to Man alone and have had a decisive influence on his evolutionary success. It is very unlikely that humans would still exist today without this ability. While an interest in the keeping of animals and the cultivation of plants is innate in many people, the ability to do so successfully is far from inborn. On the contrary, a human has first to learn everything necessary from other people. Hence just like the creative arts, i.e. painting or music, the keeping of animals and the cultivation of plants are among the most important cultural assets of mankind, and any attempt to ban them a crime against humanity. Because if the knowledge of the correct way to care for animals and plants were to be lost, then it might well be many generations before it could be acquired again.

The boy is father to the man

So what does all this have to do with the aquarium and terrarium hobbies? Well, our wonderful hobby is and will remain much more than "just" a very worthwhile spare-time activity. Without exception, everything that we know today about wild fishes, amphibians, and reptiles is ultimately thanks to aquarists and terrarium keepers. It matters not at all whether the relevant research was performed by scientists or laymen. I don't know a single biologist who didn't already have a great interest in the relevant animals as a child and ultimately found his way into his profession via the



Lionfishes - this is an adult *Pterois volitans* - originally occurred only in the Indo-Pacific. They are invasive species in the tropical Atlantic. It isn't known whether these lionfishes were released by aquarists, or whether they arrived in the Atlantic as larvae in the ballast water of cargo ships. But powerful vested interests are trying to use the arrival of this invasive species as an excuse for drastic restrictions on the trading of tropical aquarium fishes.

hobby.

And this is precisely where a major threat lies in current political doctrine: absurd ideas are being nurtured in society to the effect that the domestic maintenance of fishes, amphibians, and reptiles (and animals of all kinds), is morally reprehensible and condemns creatures "born to be free" to a wretched existence in captivity. This frequently results in parents making access to aquariums and terrariums unnecessarily difficult for children and young people. It is

already shocking how little knowledge of cold-blooded animals children and young people take with them into adulthood nowadays. Yet it is precisely in childhood that humans experience the innate urge to



Juvenile lionfishes are really gorgeous aquarium fishes.

Terrarienbörse Hannover
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The Himalayan Balsam - *Impatiens glandulifera* - was imported from India in 1839 and planted in many places as an ornamental plant and food supply for bees. It is a gorgeous but highly invasive species.



The Small-Flowered Balsam (*Impatiens parviflora*) escaped into the wild from botanic gardens in 1835. It isn't, however, an invasive species as it isn't in competition with native plants.

find out things like where frogs are to be found, where there are fishes, and the places where lizards live. You need to acquire this knowledge as a child in order to be able to develop a feeling for environmental and species conservation as an adult. And yes, there must be a few poor animals that believe this instills in children an awareness of the fragility of life and of the huge responsibility that goes with the maintenance of living things in captivity.

No false romanticism!

Nowadays even normally reasonable people often nurture the absurd idea that a wild animal feels happy in the wild. That is, of course, utter nonsense: no animal feels happy or sad in the wild, it has absolutely no concept of such things! An animal either

survives in its natural environment or it dies. It doesn't have any choice in the matter. And precisely the same applies to a fish, amphibian, or reptile in the aquarium or terrarium. If the conditions aren't right then the animal will die in short order. But if the conditions are right then from the animal's subjective viewpoint it is living in an ideal environment. Animals have no concept of freedom and liberty, at any rate not the small animals that are sometimes kept by humans in the aquarium or terrarium.

In the wild animals are exposed to a multitude of life-threatening dangers. And in the wild small animals experience the fear of death several times every day. Well over 90% of all creatures born in the wild die before attaining sexual maturity. And the types of death that they experience are so ghastly from a human viewpoint that under animal protection laws Mother Nature should be locked up for all time with immediate effect.

Man judges everything by his own standards!

Just as incorrect as the requirement for a completely natural environment for wild animals in captivity is the justification of the keeping of wild animals by the specious argument that they do a lot better in

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captivity than in freedom. Both views are nonsense.

It is totally impossible to keep animals successfully in a completely natural environment, as the owners of the animals would never be able to squander life in the same way as Mother Nature does. And it would be ethically questionable to stand by and watch captive animals undergo what is sometimes a gruesome fight for survival, at least from a human viewpoint.

But the reason for maintaining and breeding wild creatures in captivity is not to imitate Nature! The whole purpose of wild creatures in captivity is to gain knowledge! What type of knowledge varies from person to person, as everyone has their own motivation. The initial motivation is undoubtedly that the animal in question is beautiful or attractive in some other way and provokes the desire to have this attractive creature nearby in order to always be able to enjoy it. Probably the majority of aquarists and terrarium keepers remain permanently at this stage and never take the upward step of gaining knowledge. And there is nothing at all wrong with that, as even this very basic form of keeping wild creatures requires a certain amount of basic knowledge, which awakens an understanding of how the species lives in



The Pumpkinseed Sunfish - *Lepomis gibbosus* - was imported as an "angelfish" from North America to France in 1877. Nowadays this invasive species is regarded as a "weed fish" in wide parts of Europe.

the wild and hence represents an active contribution to environmental and species conservation. For such people the range of "standard" species in the pet trade is completely adequate, and 300 species of ornamental fishes and perhaps 30 species of reptiles and amphibians quite adequate.

But that isn't enough for a certain percentage of people. These are almost always the above-mentioned people who already showed an affinity for cold-blooded creatures during their childhood. They are keen to perform genuine research work, to study the life history of a species, and ultimately to understand what makes Nature tick, as the saying goes. They are attracted by the idea of getting to know new creatures and breeding them. They may develop into researchers who discover new species and are capable of performing ground-breaking studies that for the first time permit conservation of species in the wild.

Free trade in animals must continue!

In order for all this to take place a relatively unrestricted trade in wild animals must be possible. Obviously this trade must take concerns regarding species conservation and animal welfare into account, but it must also be clearly stated that to date not a single

The Eastern Crayfish, *Orconectes limosus*, is an invasive species in Central and Western Europe. It is a carrier of Crayfish Plague and has caused considerable harm. The species was imported to Germany and released into the wild in 1890 - not by aquarists!



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The Cane Toad (*Bufo marinus*) was introduced in Australia in 1935 to combat pests. Since then it has spread very quickly and become a serious threat to Australian native species. Attempts to halt the spread of the Cane Toad have come to naught. It has also proved an example of how a small animal species cannot be endangered by collecting as long as the habitat is otherwise favorable for the species.

species of animal has been wiped out by the livestock trade, while conservative estimates (Wilson, 1992) suggest that for decades around 17,500 animal and plant species have gone extinct every year due to environmental destruction by humans. This estimate was based on a total of five million species in existence, a quarter of them plants. Based on the current most probable estimate of 5-30 million species in existence, however, the number of species going extinct annually could easily be six times as great and amount to more than 100,000 species.

Obviously the trade must also concern itself with animal welfare, but it is a generally accepted precept that for purely economic reasons alone the trade treats livestock with care and must continue to do so, as nobody is going to pay good money for dead or dying animals. The greatest conflict between animal protection and the pet trade rests on the fact that the focus of animal protection is the individual. It is very difficult to achieve a consensus between two groups of interested parties that both think they are in the right: on the one side

we have animal protection organizations demanding that the trade should make absolutely sure that every single animal traded suffers no harm, and on the other side the pet trade arguing that, for example, the mortality rate among animals traded is well below that of a comparably-sized group of animals in the wild.

The recent resurgence of demands for massive restrictions on the international trade in animals and plants is based on an increase in invasive species.

Invasive species

So what are invasive species? Well, an animal or plant species is termed invasive if it is spreading massively in an area where it didn't occur originally (the cut-off date is 1492), and is in competition with the aboriginal flora and fauna of the habitat. The term "invasive" was deliberately chosen for its military flavor. It is intended to provoke an emotional response whereby the invasive species are branded as unwanted, harmful invaders.

The dangers such alien animals and plants

represent are not to be underestimated and in many cases have already led to the extinction of native species. Sometimes this appears to be a completely natural process. Thus since around 1930 the Eurasian Collared Dove (*Streptopelia decaocto*) has spread from Asia Minor to Western Europe, and, because they are resident year-round have the advantage over the aboriginal Turtle Dove (*S. turtur*), which is migratory, of occupying the best breeding sites before the Turtle Dove returns from Africa. This, combined with changed agricultural methods (the Turtle Dove is particularly fond of a fumitory species (*Fumaria sp.*, a weed of the fields, whose population is in serious decline) and the huge pressure from hunting to which the Turtle Dove is exposed during migration, has led to populations of the Turtle Dove declining by more than 60% in the last 25 years.

But it is almost always unthinking releases by humans that are the reason for animals or plants becoming invasive species. In the case of animals these releases are often deliberate. From the mid 19th century to the late 1970s all sorts of fish and crustacean species were imported and released, in the hope that economically valuable species might become established in waters that contained no useful native species. This almost always had terrible repercussions.

The Canadian Pondweed (*Elodea canadensis*) is an aquarium plant from North America. At the beginning of the 20th century it proliferated massively in Germany to the extent that travel along inland waterways came virtually to a standstill. Nowadays it is a harmless neophyte. Nobody has been able to explain why some neobionts attain plague



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The Rainbow Trout (*Oncorhynchus mykiss*) is one of the most important fishes in German aquaculture and many people think it is a native species. In reality the Rainbow Trout is a neozoon that can even threaten native species on a local basis.

Luckily the majority of species were unable to become established and disappeared again, while others (e.g. the Rainbow Trout, *Oncorhynchus mykiss*, which originates from North America), were able to breed only very locally without human assistance. But the Eastern Crayfish (*Orconectes limosus*) is an example of extremely successful colonization by an alien species with dire consequences for the native fauna. As this crayfish, which was supposed to provide a supply of edible crays in waters where the ecologically more demanding native

species could not survive, is the carrier of a deadly disease, crayfish plague, lethal to all native crayfishes. The Eastern Crayfish is immune to the disease, and merely carries it.

Another crustacean, the Chinese Mitten Crab (*Eriocheir sinensis*) arrived accidentally in Europe around 1910 in its larval form, in water used as ballast by cargo ships. To the present day it continues to expand its range with great success, robbing fishermen's nets bare and making holes in dykes and dams.

The European Bitterling (*Rhodeus amarus*) is a splendid example of how stupid emotional judgment of neobionts can be. Until a few years ago it was regarded as an endangered species, in need of conservation, in accordance with the FFH guidelines, and collecting it for aquarium maintenance was a serious criminal offence. Nowadays it is known that it is actually an invasive species that first spread through large parts of Germany as a regional neozoon at the end of the 18th century, and hence should actually be combated under current law.



Sometimes for no apparent reason invasive species transform back into harmless components of the flora and fauna. A good example of this is the Canadian Pondweed (*Elodea canadensis*), a North American plant that in the middle of the 19th century had choked inland waterways to such an extent that they were virtually unnavigable. But nowadays this plant has become a normal, naturalized aquatic plant that no longer causes any harm. Such life forms are termed neobiota (= "new life-forms"), divided into in neozoa (new animals), neophyta (new plants), and neomycetes (new fungi). Neobiota is the term that should be used instead of "invasive species" as the majority of neobiota have no perceptible harmful influence at all, and even those species that do suppress and extirpate others are not morally to blame. It is neither justifiable nor ethically acceptable to treat them with abhorrence or xenophobia. Unfortunately the current political discussion demanding a general import ban on all potentially invasive species, has its origins in the mire. There is supposedly general concern about anything foreign and unknown. And people - such as serious aquarists and terrarium keepers - who represent the opposing view, are defamed as traitors and nest-foulers - nothing new there.

We bear the responsibility!

Naturally we hobbyists also bear a heavy burden of responsibility. Never, under any circumstances whatsoever, should any cold-water fishes, crayfishes, crabs, mussels, snails, shrimps, or aquatic plants that have grown too large or troublesome be released into the wild. The same applies to reptiles and amphibians. There are already import bans on the American Bullfrog (*Rana catesbeiana* or *Lithobates catesbeianus*) and the Red-Eared Turtle (*Trachemys scripta elegans*), because these animals were released by irresponsible idiots, resulting in local feral populations.

If you have animals that you can no longer keep for valid reasons, and which you can't re-home, feed to other livestock, or eat yourself, and if no animal refuge is prepared



The Chinese Mitten Crab (*Eriocheir sinensis*) arrived accidentally in Europe around 1910, in larval form in the ballast water of cargo ships.

to take them, then unfortunately the only solution is euthanasia. Releasing them is not an acceptable alternative! The best that can be hoped for is that the animals will die off during the first winter, but the worst case scenario is that they will introduce diseases that cause wild creatures to die a painful death.

Animal welfare legislation forbids the inflicting of pain on animals or killing them for no justifiable reason. Hence you must carefully weigh up whether any such justifiable reason actually exists. Obviously a whim, a feeling of dislike, or simple convenience is no excuse for putting a healthy animal to death!

Not everyone is guilty!

Unfortunately some neobiota can be traced back to releases by irresponsible aquarists or terrarium keepers. The "dumping" of animals and plants is a punishable offence in many countries, and not just a breach of the rules. The penalty can be a fine or imprisonment. But is that any reason to tar a whole group of people with the same brush? No way! A criminal is just one offender, even if the person concerned is an aquarist or terrarium keeper. Almost all aquarists and terrarium keepers behave

conscientiously and correctly. They shouldn't be punished by import bans or restrictions on what species can be kept. So-called positive lists, i.e. lists of species that can be traded on the expert say-so of God-knows-who, should be rejected as effectively punishing the innocent. The dumping of animals and plants is reprehensible, but to use it as the basis of a decision to restrict the maintenance of animals and plants is idiotic. Nobody has ever suggested a ban on the maintenance of dogs, cats, rabbits, guinea pigs, and other mammals simply because they are dumped by a number of criminal people.

A liberal democracy that doesn't want to turn into a brutal police state must accept that there are people with no conscience who will seek to exploit an intentionally lax legal system. This applies without exception to all areas of human society. Responsible politicians won't allow themselves to be hauled onto a populist bandwagon and won't demand that keeping animals in general and the aquarium and terrarium hobbies in particular should be criminalized.

The thin end of the wedge!

The most powerful weapon of populist

movements, be they nationalist of religious in origin, is that initially nobody takes them seriously. No little old lady pensioner with a lapdog would ever dream that the animal rights organization, to which she has just donated in order to help needy animals, is plotting to take away her beloved pet; that in the eyes of that organization her dog is an enslaved, oppressed creature.

There is likewise no reason from a scientific viewpoint to expand existing conservation legislation to include any import restrictions or blanket bans on maintenance.

The irresponsible release of unwanted domestic pets needs to be countered by educational campaigns, not by laws that will undoubtedly be ignored by those to whom they are meant to apply. In Germany (and elsewhere) there is (still) a large network of clubs for aquarists and terrarium keepers, and these, armed with money and ideally support from the government, are capable of providing the necessary educational work. Unfortunately the average age of the people in these organizations is increasing at an alarming rate. So for this reason too the state should take urgent steps to ensure that cultural elements - and these certainly include aquarium and terrarium societies! - regain their popularity among the general public so as to include young people. It still isn't too late for that!

Marbled Crayfishes occur only as females. Hence a single specimen will suffice to create a new population. Unfortunately feral specimens have already been found in Germany.



Literatur:

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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.



Rhinogobius cf. rubromaculatus, displaying male.

all photos: Frank Schäfer

Rhinogobius rubromaculatus

Where the aquarium hobby is concerned we are only just beginning to discover the little freshwater gobies of the genus *Rhinogobius*. On this occasion science is somewhat ahead of us, as 116 species have been described in the genus, 105 of them currently regarded as valid. The characters used to distinguish the species are, however often impossible to determine in live specimens; that doesn't mean, of course, that the various species all look the same, but instead signifies that precise determination of the species is virtually impossible in many cases, plus as a rule the collecting locality for imported specimens is unknown.

Aquarium Glaser has recently managed to

import a gorgeous *Rhinogobius*, only a little more than 4 cm long, via Honking; it was labeled "Rhinogobius chrysanthemum", a name that doesn't actually exist in science and is pure invention by the trade. The species most closely resembles *Rhinogobius rubromaculatus*, and so we will provisionally use that name for it.

Its maintenance is similar to that of the well-known species *Rhinogobius duospilus* (also known under the synonym *R. wui*). It is a stream-dweller that requires an aquarium with a sandy bottom scattered with large pebbles. These pebbles will be partially undermined by the males and used as the centers of their territories. For this reason there should also be a number of flat, roughly hand-sized stones, which are particularly well suited to this use.



Male

The water temperature should be between 16 and 26 °C, and seasonal variation (cooler temperature in winter, warmer in summer) is very beneficial to the fishes' health. Water chemistry is of secondary importance and tap water will normally be suitable for maintenance and probably for breeding

Because they are sub-tropical these gobies also experience different periods of daylight



in their natural habitat. They breed when the days grow longer. Male and female differ mainly in the shape of the head - males have considerably plumper cheeks than female conspecifics.

Rhinogobius includes species that lay very large numbers of eggs and whose tiny larvae develop in the sea, and others that lay relatively few eggs which hatch into comparatively large young that remain permanently in fresh water. *R. rubromaculatus* belongs to the latter group.

Because these little gobies live entirely on the bottom, the aquarium should have a minimum size of around 60 x 30 x 30 cm. Such a tank, populated by 10-12 gobies, will provide numerous opportunities for interesting observations.



Female



Laemolyta taeniata

For many years only odd specimens of the Striped Headstander, which looks like the big brother of the Golden Pencilfish (*Nannostomus beckfordi*), have been imported, but recently we received a consignment of somewhat more than 30 specimens from Peru. The species is a typical headstander in its behavior, and can grow to somewhat more than 20 cm long.

Hitherto the species has only rarely been mentioned in the aquarium literature, and when it has, under the incorrect name *Anostomus taeniatus*. These fishes are Aufwuchs-feeders which have to adopt a belly-up position in order to graze the micro-algae and the small organisms it



Laemolyta taeniata is also known as *Anostomus taeniatus* in the aquarium literature.



Portrait of the Striped Headstander.

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contains, as its upward pointing mouth doesn't permit it to feed from the bottom otherwise.

These fishes can be somewhat quarrelsome among themselves. Hence it is advisable to keep them in as large an aquarium as possible, with the decor providing plenty of cover. The tender shoots of aquatic plants may be nibbled, but these fishes aren't noted for eating plants.

Endler Guppy "El Tigre"

One of Aquarium Glaser's breeders in Thailand is particularly fond of the wild forms of small livebearers, and is now supplying the "El Tigre" variant of *Poecilia wingei*, the Endler Guppy, to Germany for the first time. This is a pure-strain wild form of the Endler Guppy that was originally collected at El Tigre in Venezuela. Obviously these fishes are variable in terms of their coloration, but they all have the characteristics that make the Endler so

desirable: small size, lively behavior, and attractive coloration that intensifies even more during courtship.

The most recent taxonomic works question the validity of the species *Poecilia wingei* and see it as merely a synonym of the Guppy (*Poecilia reticulata*). It is also a well-known fact that Endler and "normal" Guppies can be freely crossed with one another, although that is no argument against them being separate species, as nobody would question that the Platy and Swordtail



Male "El Tigre"

(*Xiphophorus maculatus* and *X. hellerii*) are distinct just because the two species have been merrily interbreeding for around a



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„Mit dem innovativen Dünger-Dosierer aus hochwertigem, langlebigem Kunststoff lassen sich Aquarien von 50 bis 300 L versorgen“, erklärt Diplom-Biologe Christian Homrighausen, bei Dennerle für den Vertrieb im deutschsprachigen Raum verantwortlich.

Da der **Dosator** rein nach dem physikalischen Prinzip der Osmose funktioniert und weder bewegliche Teile besitzt, noch Batterien oder einen Stromanschluss benötigt (wie eine Dosierpumpe), „arbeitet er sehr funktionssicher, ökonomisch und ist mit einem UVP von 12,99 € sehr viel günstiger“, wie Marketingleiter Ulrich Gaida betont.

Die Entwicklung des neuen **Dosators** sei laut Dennerle ein weiterer Baustein zur effektiven Bereicherung des Hobbys und Sicherung einer naturnahen Unterwasserlandschaft in heimischen Aquarien.

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During courtship the black elements of the color pattern are intensified.



Female "El Tigre"



Guppies exhibit the attractive characteristics in full. Hence it is important to keep them separate from other guppies when breeding.

hundred years. From an aquarium-hobby viewpoint, however, the question of the

validity of the taxon *Poecilia wingei* is of no importance, as only pure-blooded Endler

Corydoras concolor

Gorgeous mailed catfishes of the species *Corydoras concolor* have recently been imported from Colombia. Courting males of the imported form develop beautiful, much elongated fins.

This raises the question of whether the taxon *Corydoras concolor* may perhaps represent several similar species.

There is in fact a synonym of *Corydoras concolor*, namely *C. esperanzae*. The latter species was described from the Rio Meta in Colombia by Castro in 1987, and in all probability that is precisely where the recently imported mailed catfishes came from. Isbrücker (2001) synonymized *C. esperanzae* with *C. concolor*, which was described in 1961 by Weitzman, from a tributary of the Río Parguaza in Venezuela.

Weitzman explicitly states in the original description that *Corydoras concolor* possesses no striking black markings, and this can also be clearly seen in the figure accompanying the original description. But the recently imported specimens of *Corydoras concolor* have a clearly visible eye mask, which can also be seen in the



Male

holotype of *C. esperanzae*; the specimen can be seen on the Internet at <http://acsi.acnatsci.org/base/getthumbnail.php?mode=full&target=134356>

So it cannot be completely ruled out that *Corydoras esperanzae* may after all be a good species, but at present it is too soon to jump to conclusions of that sort.

Leaving aside the question of their identity, the recently imported *Corydoras* are very attractive fishes. Their maintenance is totally uncomplicated. Like all round-snouts, these fishes should



Female

be kept in a group on a soft sandy substrate. Fishes from Colombia and Venezuela prefer rather warm conditions, so the temperature should be 26-28 °C.



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Leporacanthicus triactis, wild-caught color variant, imported by Aquarium Glaser in June 2014.



The same specimen as above, viewed from above. The fish is about 8 cm long.



Aquarium Glaser imported three specimens simultaneously in August 2014; this is specimen 1.



Specimen 2...



...and specimen 3.

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Rare color variants of *Leporacanthicus triactis* (L91)

The Three-Beacon Pleco, *Leporacanthicus triactis*, was first imported for the aquarium hobby in 1992. At that time the species still undescribed scientifically and hence was given the L-number 91, but only a year later the scientific description of the species as *Leporacanthicus triactis* was published. The genus name *Leporacanthicus* means "Hare Acanthicus" and refers to the long Hare-like teeth in the upper jaw. *Leporacanthicus* are not algae-eaters but feed in large part on foods of animal origin. It is thought that in the wild the long teeth are used to extract snails from their shells, but these fishes don't do

that in the aquarium.

Leporacanthicus triactis comes from the upper course of the Orinoco in Venezuela, and grows to a good 25 cm long, and is thus one of the larger loricariid catfishes. The export season for loricariids from the upper Orinoco starts in January, and during the most recent season Aquarium Glaser imported a total of four very striking color variants of L91. Remember, they are all wild-caught!

Striking color variants of L91 have been known for some time. They are, however, always just odd specimens, hence very rare and correspondingly sought-after. But because *Leporacanthicus triactis* has

frequently been bred successfully in the aquarium, it would appear to be just a matter of time before attractive fishes like these turn up in larger numbers in the trade as tank-breds. Though the question remains whether that is desirable or not, as in the final analysis completely "normal" colored *L. triactis* are also attractive fishes, but it is highly questionable whether they will be able to hold their own against colorful competition.

The sexes can be readily told apart in L91 from a length of about 12 cm upwards. The males develop a longer head. Although the species as a whole is regarded as peaceful, some sexually ripe males can be very badly behaved.



Tetraodon miurus

The Congo Puffer is one of the most remarkable of all the freshwater puffers. It is strictly solitary and a predator. It prefers to spend the whole day completely buried in the sand, with only its mouth and eyes (which are positioned high on the head) protruding. If a potential prey fish comes into the vicinity of the Congo Puffer, the latter shoots from its hiding-place and rips the belly out of the unfortunate victim. The entire fish is then devoured.

The ability of these fishes to change color is also noteworthy. They can be brick red in color (as in the photos), as well as black, gray with speckles, or marbled olive and green. They use this ability when burying themselves is impossible. The puffer then simply blends in with the substrate, where it lies in wait disguised as a stone.

The maximum length of the species is 15 cm. Although it needs to be kept strictly solitary, the aquarium can be fairly small, as this puffer doesn't normally swim much at all.

Because of the behavior of the species, and because it is imported from the Congo only very rarely and in small numbers, the Congo Puffer has not been bred to date and external sexual differences are likewise unknown. Breeding reports for the Congo Puffer occasionally seen in the aquarium literature relate to an almost identical-looking species, *Pao suvattii*, from the

The Congo Puffer only rarely swims in the open water like this. It prefers to lie on the bottom of the aquarium, buried in the finest sand possible.



The tuning fork-like nostril lobes are typical of the genus *Tetraodon*.

Mekong in South-East Asia. The Arrowhead or Mekong Puffer not only looks like the Congo Puffer, but also feeds in the same way. It is, however, more tolerant of its own kind. *Pao suvattii* (until recently the species was likewise assigned to the genus *Tetraodon*) is a cave-brooder.

By contrast it is to be expected that *Tetraodon miurus* breeds like the other freshwater puffers of Africa. In these it is typical for the male to grip the female tightly with his teeth during mating.

This mouth is a death trap for smaller fishes.



The eggs are released into the open water and usually remain hanging among plants. Unlike their South-East-Asian cousins of the genus *Pao*, the African puffers do not perform any brood care.

Congo Puffers are very interesting representatives of the freshwater puffers, although their predatory way of life and intraspecific intolerance mean they are suitable only for specialists.



Portrait of *Hemiloricaria melini*.

Hemiloricaria melini

The whiptail catfishes of the genera *Rineloricaria* and *Hemiloricaria* have long been very popular aquarium fishes, as their appearance is very interesting, and they are also very peaceful, feed on algae, and are relatively easy to breed.

One of the most rarely imported and simultaneously most attractive species is *Hemiloricaria melini*. This blackwater fish has proved rather a hard nut to crack when it

comes to breeding. The fishes generally spawn, but the fry are very delicate and grow only slowly. Hence it is particularly



Hemiloricaria melini

Dwarf Shrimp "Red Tiger"

The Tiger Dwarf Shrimp is one of the dwarf shrimp species that has been known for a long time in the aquarium hobby. Unfortunately, however, its correct name is a matter of immense confusion, although people are increasingly becoming aware that the species is more closely related to *Caridina cantonensis* than to any other shrimp species. For this reason it is best termed *Caridina cf. cantoris* for the time being.

The same scientific designation also applies to the Crystal Red and the Bee Shrimp, and in fact all these shrimps can be crossed with one another to produce fully fertile offspring. You need to be aware of this if you want to breed dwarf

shrimps, as in that case it is important always to have just one variant in the aquarium to avoid producing a mish-mash.

The Red Tiger Shrimp is an attractive



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pleasing that it has been possible to organize further imports of these lovely fishes from Brazil.

H. melini attains a length of around 15 cm. The sexes are best distinguished by viewing the fishes from above, when it will be seen that the males have broader heads and larger pectoral and pelvic fins. Like all species of the genus this is a cave-brooder.



color form of the normal Tiger Dwarf Shrimp, and differs from that familiar form only in its coloration.



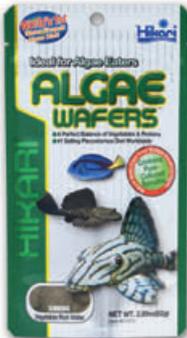


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Labels

Characins

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 "Characins".



The Cardinal Tetra (*Paracheirodon axelrodi*), family Characidae, is not only a characin but also one of the most important of all ornamental fishes.

General

Characins is the term used for a whole set of fish families from Africa and South America that have certain anatomical features in common, but can be very different in appearance. The characins include, for example, not only the tiny Neon Tetra and its close relatives (*Paracheirodon*), but also the piranhas (*Pygocentrus*) and the African tigerfishes (*Hydrocynus*), which can grow to more than a meter long.

Because of the vast variety of species only the small colorful characins - those that don't normally exceed an eventual size of 10 cm - will be discussed here. The piranhas will be covered in a Profile of their own, and the other large species are so rare and so expensive in the trade that they are maintained only by experienced specialists, zoological gardens, and the like, who have access to relevant specialist literature.

From a zoological viewpoint the following test deals with members of the Characidae, Crenuchidae, Gasteropelecidae, and Lebiasinidae from South America, as well as the Alestidae and Distichodontidae from Africa.

Important requirements

Characins are popularly termed "shoaling fishes", which is, strictly speaking, only very marginally correct. They are in fact social fishes that sometimes join together to form larger groups, but often also occupy very small territories that are even defended against conspecifics on a short-term basis. In practice this means that characins should be kept in groups of six or more individuals, the upper limit being determined only by the size of the aquarium.

A large number of the species of interest to the aquarium hobby have adapted to waters



Marbled Hatchetfish, *Carnegiella strigata*, from the family Gasteropelecidae.

that are inhospitable to other, larger fishes, specifically small bodies of water with soft acid water. The chemical composition of the water is, however, of no physiological significance to characins; a Cardinal Tetra can live just as long in medium-hard, slightly alkaline water as a conspecific kept under near-natural water conditions. Very good water quality, in particular as demonstrated by the density of the bacterial population in the water, is of far more importance. The majority of characins maintained in the aquarium require well-maintained water with a low germ count. This can be achieved via efficient biological filtration, the addition of humic substances using peat, Alder cones, or dead leaves (there are also suitable liquid preparations available), the best plant growth possible (many aquatic plants produce antibiotic substances that have a limiting effect on bacterial growth), and regular partial water changes, which should be as extensive as possible (see below).

The appropriate water temperature for long-term maintenance is generally between 22 and 26 °C, but almost all characins can also survive temperatures of up to 30 °C for short periods (a few days to weeks) and almost all species will tolerate a short-term drop (a few



The Congo Tetra, *Phenacogrammus interruptus*, is the best-known member of the African characin family Alestidae.



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days to weeks) to 18 °C. In the case of species of southern provenance (Uruguay, Paraguay) the temperature can periodically drop as low as 14 °C.

Appropriate feeding

The characins normally maintained in the aquarium can be characterized as omnivores with a preference for carnivore foods. They can be fed entirely without problem on all the usual types of food for ornamental fishes available in the trade (i.e. dry, frozen, and live foods). Only a few larger species feed predominantly on vegetable food. If the fishes are observed



Distichodus sexfasciatus, family Distichodidae. This species grows very large (25 - 40 cm).

to consume aquatic plants then additional vegetable food (special flake foods, scalded lettuce or dandelion leaves, etc) should be provided.

Correct maintenance

Characins 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



Poecilocharax weitzmani, family Crenuchidae, size: 3-4 cm.

should always have access to secondary plant material. Dead leaves (of Sea Almond, Beech, Oak, or Walnut), Alder cones, or peat can be utilized, or special liquid preparations added at every water change.

Aquarium and tankmates

Characins are active fishes that need a certain amount of swimming space for their well-being. Tank length should be around 10-15 times the length of the species in question, with a width to match (i.e. 5-7.5 times fish length), to permit the fishes enough room to exhibit their species-typical swimming behavior.

Many species (e.g. Neons and Cardinals (*Paracheirodon*) live near the bottom, while others (e.g. the majority of *Hemigrammus* and *Hyphessobrycon* species) favor the middle layers of the water, and yet others (e.g. hatchetfishes (*Carnegiella*, *Gasteropelecus* and *Thoracocharax*) and tetras of the family Lebiasinidae (*Pyrrhulina*, *Copeina*, *Copella*)) live near the water's surface. There are also bottom-dwelling characins with a reduced swim bladder (*Characidium* and others in South America plus *Nannocharax* and related genera in Africa).

An aquarium for characins should provide plenty of cover and at the same time offer open swimming space. Floating plants will provide an increased sense of security and hence well-being. A dark substrate will encourage intensified coloration.

Characins are usually peaceful among themselves and towards other species. The occasional individual may exhibit aberrant behavior, and replacements for losses from any groups present should be obtained as quickly as possible.

Life expectancy

In the wild the majority of the small characins rarely enjoy a second year of life, but in captivity they can be astonishingly long-lived. Small species usually start to show the first signs of age at about three years old, medium-sized at 5-8 years, and large species can even live for decades.

Size

Small characins with an eventual size of less than 5 cm are sexually mature at 12-15 weeks old, and at this point will be half to three quarters (depending on environmental conditions) of their eventual size. Larger species (up to 10 cm) grow somewhat more slowly and are often not full-grown until the age of 12 months. Species that grow larger than 10 cm usually don't reach breeding size until their second or third year of life. Because of the large variety of species, please check the label on the sales aquarium for the potential maximum size of any species that interests you.

Special details

Because of their bright coloration and lively behavior, barbs, rasboras, and danios are ideal fishes for community aquaria. They do not practice any brood care and hence do not hold territory - in other words they are peaceful.



Nannostomus marginatus, family Lebiasinidae, size 3 - 3,5 cm.



Hyphessobrycon eques, cultivated form "Minor", family Characidae, size 3 - 4 cm.




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Turtles

Successful breeding of the Red-Footed Tortoise

by Christoph Fritz, www.reptilia24.com

The Red-Footed Tortoise (*Geochelone carbonaria*) is one of the most beautiful species of tortoise. It is widespread in South America and, reflecting its wide distribution, there are numerous different local variants. These differ in details of their coloration and their potential eventual size.

The latter is especially important when keeping the species in temperate zones where climatic conditions make year-round outdoor maintenance impossible. And large specimens require a lot of space. The largest Red-Footed Tortoise known to date had a carapace length of 59 cm! However, the individuals imported from the Guianas by reptilia24 don't grow anything like as large and are full-grown at on average just 30-35 cm long, with a single exception attaining 40 cm. Males grow larger than females. Red-Footed Tortoises have been artificially introduced to several Caribbean islands by humans, and although different climatic conditions prevail there, Red-Footed Tortoises have proved to be very adaptable; they are very resistant to stress, and very readily get used to humans, becoming extremely tame! This makes them ideal and very attractive pets. Despite their enormous distribution, populations of the Red-Footed Tortoise are declining, at least locally. As ever environmental destruction is the number one threat, but the use of these tortoises as food - not only in South America, but also in China! - is also causing their populations to contract. By contrast, the international trade in live specimens for captive maintenance is well-regulated by the Washington Convention (CITES) and appears to be having no noteworthy effect on population levels. It is nevertheless important that we develop techniques for successful breeding, as on the one hand it is possible that an export ban may be imposed and then we will be reliant on captive bred stocks, and on the other hand exports are taking place from just a tiny area relative to the overall

distribution region. It may well come to pass very rapidly that a conservation breeding program proves necessary as the only way to save specific populations from extinction. By then it will be too late to experiment, we must already have tried and tested techniques in place for breeding these lovely tortoises. In their general criticism of the pet trade and pet owners, so-called "animal protectionists" repeatedly overlook the fact that practically all our knowledge regarding the details of the biology of small animals derives from private animal owners! I will detail below the essential prerequisites for the successful breeding of the Red-Footed Tortoise in captivity in temperate climates.

Accommodation

Lexicon

Red-Footed Tortoises

Geochelone: means "land turtle".
carbonaria: means "charcoal burner", ie the "oven" used for the manufacture of charcoal.

The official advice on the minimum requirements for the maintenance of reptiles recommends a bottom area of 8 x 4 times the length of the plastron (lower shell) of the Red-Footed Tortoise as the minimum size for optimal long-term maintenance. This recommendation may not be law, but is almost always cited in court cases regarding animal maintenance. On this basis a 40 cm long Red-Footed Tortoise requires a terrarium with a bottom area of 320 x 160 cm in the long term; the height is immaterial. I initially kept my tortoises in a terrarium, then in a room specially converted for them, but I would recommend first trying the method I use now, namely maintenance in a heated greenhouse, as being the most satisfactory for all concerned. My greenhouse has a floor area of 21 m² (7 x 3 m) with an adjoining outdoor area measuring around 60 m². The greenhouse has 16-mm triple-glazing. The front is 15 mm insulated glass for better

Adult pair of the Cherry-Head variant of the Red-Footed Tortoise. The left-hand individual (a female) is marbled (marbled variant).
 Photos: Christoph Fritz, www.reptilia24.com





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Two youngsters from Surinam, imported in 2008 by reptilia24.

Photo: Frank Schäfer

observation of the tortoises. The heating consists of two radiators and underfloor heating, connected to the oil-fired central heating in my house. The special heating pipe from the house is insulated by being buried 80 cm deep in the ground. This system permits the permanent high temperatures required to be achieved. An automatic shower system serves to simulate showers of rain. Some individuals enjoy a shower on hot days while others come out only after the rain. Several plant tubs and a large wooden box provide the tortoises with somewhere to rest and hide. The floor consists of bark mulch and sand. A large heap of a peat-sand-humus mixture was created to serve as a place to lay eggs. The outside enclosure is planted with grass, meadow weeds, and a few bushes. The temperature at night is around 25 °C and up to 45 °C during the day. Automatic ventilators and the door allow the high temperature to drop to around 35 °C in the middle. This comes very close to natural conditions (Vinke & Vinke, 2000). The tortoises are inactive when it is hotter in the greenhouse. Their main period of activity is in the morning and afternoon, when they like to go looking for food or proceed to mate.

Red-Footed Tortoises in the Guianas

In the Guianas the Red-Footed Tortoise lives on dry tropical savannahs bordering rainforest areas. According to Thomas and Sabine Vinke (2000), the vegetation in these biotopes consists mainly of sedges (*Cyperus*

and related genera); in elevated areas there are creepers and low scrub which the tortoises like to use as cover during the night and/or the noon-day heat. There are only temporary bodies of water (e.g. rain puddles) where the tortoises can regulate their water budget. Only a few specimens of *Geochelone carbonaria* are to be found in the adjacent rainforest. There are no marked seasonal fluctuations in the climate. The temperature during the day lies between 26 and 36 °C and at night between 25 and 29 °C. The humidity is permanently high, measuring between 80 and 100%. In the

wild these tortoises rest when it is very hot. They are active early in the morning and in the evening, which accords with my observations during greenhouse maintenance.

Always important: the correct food!

The accommodation for these tortoises is certainly an important factor, but many different roads lead to Rome in this respect. Ingenious terrarium keepers will undoubtedly be able to create optimal

Portrait of an adult Red-Footed Tortoise from Surinam.

Photo: Frank Schäfer





The sexes are easily distinguished in the Red-footed Tortoise. Here we see the two Cherry-Heads from page 22 again; the male (right) has a noticeably concave plastron.

conditions for these tortoises without using a greenhouse, and a well-designed terrarium is also suitable for the maintenance and breeding of Red-footed Tortoises. The really decisive element in successful breeding is the correct feeding of the tortoises!

During the months of April to October I feed mainly wild plants such as dandelions, narrow- and broad-leaved plantains, clover, thistles, stinging nettles, lesser bindweed, and grasses. Depending on the season my tortoises also receive assorted home-grown salad greens, cabbage, leaves from bushes, zucchini and paprika. In summer and autumn they get a certain amount of windfall fruit as treats, but too much fruit is very bad for the gut flora of the tortoises and often results in diarrhea. Grass plays a special role in the feeding of Red-footed Tortoises. It contains a lot of fiber and is greatly enjoyed by my tortoises. Many owners report, however, that their Red-footed Tortoises won't eat grass. In my opinion this reflects a problem with the diet overall, as if the animals become accustomed to too much fruit (there are no fruit trees on the savannahs!) then they will turn their noses up at the grass that more closely simulates their natural diet. In summer my tortoises also get a weekly feed of soaked hay pellets

manufactured by Agrobs. In winter they receive this type of food three to four times per week. Interestingly, tortoises that I have taken over from other people will accept hay pellets only after a long settling-in period, while "new" wild-caught specimens eat them immediately. This reflects the natural food supply, which undoubtedly includes a high percentage of grass. Endive

leaves, Romaine lettuce, cabbage, finely-grated carrots, and dandelion leaves complete the balanced diet for the cold part of the year. Paprika, mushrooms, or citrus fruits are also fed every three to four times per month during the winter months.

Every four weeks year-round my tortoises receive freshwater fish (Roach or Smelt) or turtle pellets, to provide them with animal protein. This is necessary in the case of Red-footed Tortoises, unlike in many other tortoise species. They swallow the fishes rapidly, heads, bones, and all.

I completely refrain from the use of synthetic vitamin preparations as I am worried about hypervitaminosis. Cuttlefish bone and crushed hens-egg shells are permanently available so that the tortoises can regulate their own calcium requirement. Females of *Geochelone carbonaria* have a particular preference for eggshells instead of the cuttlefish bone so beloved of other tortoises.

Mating and egg-laying

Mating takes place year-round in Red-footed Tortoises, but is particularly frequent during the months from May to August

Mating Red-footed Tortoises from Surinam in the terrarium. These specimens are around 30 cm long (the bricks in the background measure 25 cm). Only very rarely do these tortoises attain a carapace length of 40 cm.





A further variety of the Red-Footed Tortoise (provenance unknown).

Photo: Frank Schäfer

when they are living outside. The male approaches the female, moving his head from side to side (head-wagging). The male then mounts, and if the female is ready to mate, she raises her hind legs: the prerequisite for successful copulation. If the female isn't interested she walks away, feeds, or looks for a place to rest. There is none of the ramming and biting that occurs in European tortoises, for example. Red-Footed Tortoises, even full-grown males, are completely peaceful among themselves.

In the natural habitat the main egg-laying season lies roughly between October and March, but this natural rhythm generally undergoes a shift in captivity. My tortoises lay eggs year-round, but until 2001 with the main focus being during the winter months, as in the wild. As a result of the greenhouse maintenance the incubation period started around eight weeks earlier, and I attribute this to the changed climatic conditions. In the cellar room, where I had previously kept my Red-Footed Tortoises, the roughly 20 cm high heap of bark-mulch/peat/sand mix was well accepted for egg-laying, but ever since the beginning of greenhouse maintenance they have laid eggs either in the heap or outside.

Egg-laying is sometimes preceded by test excavations. A few days beforehand the female becomes fidgety and looks for a

suitable spot. Nevertheless it can also happen that a female tortoise proceeds straight from the food dish to egg-laying. As a rule the female excavates a shallow, 5-15 cm deep, pit for egg-laying. Clutch size varies between 3 and 10 eggs, but there are usually 5-6 eggs per clutch. The nest is usually created in the late afternoon or the evening. The procedure takes several hours. The female drinks greedily before and after egg-laying. Once the egg-laying is finished I dig up the eggs and transfer them to an incubator.

Incubation and hatching

I initially incubated the eggs in vermiculite at a constant 29 °C and almost 100% humidity, but not a single egg developed under these conditions! Subsequently all eggs have been buried in a plastic bowl filled with a slightly damp humus/peat/sand mixture, which is then covered with moss. The earth-filled plastic bowl is then placed in a larger plastic bowl full of water, which is heated to 28-33 °C using a heater-stat. The plastic bowl is up to 3/4 covered and stands in the tortoises' living quarters. From around the 115th day on the substrate is kept somewhat damper.

Hatching is announced by splits in the eggs, with the young Red-Footed Tortoises emerging after 120-145 days. Some of them still have quite a large yolk sac and remain in

the egg for a few more days until it is completely consumed. Some youngsters die for no obvious reason shortly after hatching. This phenomenon is known to other breeders as well and is widespread, with the majority of owners attributing it to incorrect incubation methods.

In my case the hatch-rate didn't improve until I changed the feeding and added hay pellets. In my opinion the hatchability of the eggs depends very heavily on the health of the parent tortoises, which in turn is greatly influenced by the feeding regime and maintenance conditions. In my case the number of dead young decreased drastically after I changed the feeding regime. In addition periodic separation of the sexes during the egg-laying season also appears to have a positive effect, but further study of this is required.

Red-Footed Tortoises are generally productive. In the space of somewhat more than three years I have had 71 young hatch from four females. Both males and females hatched at the chosen temperature.

In conclusion I would like to say that the Red-Footed Tortoise is not only a splendid pet but also readily breedable. The decisive factor, and one that is often completely underestimated, is the correct feeding of the mother tortoise.

If you are now filled with the desire to keep Red-Footed Tortoises, your pet dealer can undoubtedly order some for you from a reliable wholesaler such as www.reptilia24.com.

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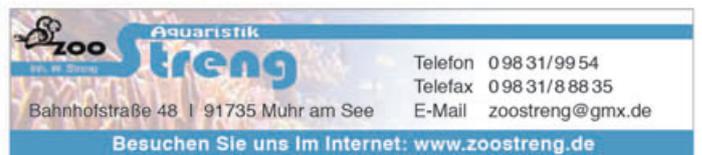


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Endangered Species

The Flame Tetra

- survival thanks to the aquarium hobby

by Frank Schäfer

The Flame Tetra (*Hyphessobrycon flammeus*) is one of the commonest fishes in the aquarium trade. It has been bred in the aquarium for a good 100 years. But only a very few people know that the species is seriously threatened with extinction in the wild.



Hyphessobrycon flammeus, the Flame Tetra, female.

The first Flame Tetras were exported to the USA in 1920. Initially these fishes were identified as *Hyphessobrycon bifasciatus*, the Yellow Tetra, but in 1924 the American ichthyologist George S. Myers established that they were a species previously unknown to science and described them as *Hyphessobrycon flammeus*. The specimens used for the original description were in fact tank-bred fishes. It wasn't until 20 years later that Myers tracked down this species in the field and found that it occurs only in the vicinity of Rio de Janeiro. Myers found it in streams in small areas of woodland, with the water in these streams being either deep brown or clear.

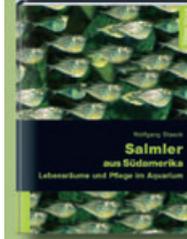
Rare in museums

Strange though it may seem, this little fish - the species is one of the smallest tetras and grows to only 2.5-3 cm long - is found in hardly any of the museums of the world, at least not in the form of wild-caught material. And yet it is one of the commonest ornamental fishes worldwide, with countless millions of these colorful, problem-free tetras having been bred. Nowadays most are bred in South-East Asia, but there are also commercial breeders producing the species in Europe and the USA. It appears highly doubtful that any additional wild-caught *Hyphessobrycon flammeus* have found their way into the international aquarium trade

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since those first exports in 1920.

Is the Flame Tetra already extinct?

The last scientific records from the region around Rio de Janeiro date from 1972. Since then the species has not been reported from the area again. But that doesn't mean it is already extinct. Hans-Georg Evers, a seasoned traveler in Brazil, experienced aquarist, and fellow editor (he is Chief Editor of Amazonas) wrote to me as follows: "In the course of some 10 trips during the 1990s I searched for Flame Tetras in every possible biotope in the federal state of Rio de Janeiro. They are inhabitants of blackwater pools. But I found them just one time; I must check if I still have any details. I think it was round about 2000. The species has definitely become very rare because of habitat destruction. That applies equally to other endemics in that neck of the woods. Further south the species has already been replaced by *H. reticulatus* and *H. griemi*, which are colonizing such habitats. Unfortunately *Nannostomus beckfordi* was introduced a few decades ago, and that too may have made life difficult for the Flame Tetra. Further north, towards Espírito Santo, there are no swamps, it is much drier there. So to answer your question: yes, extremely endangered.

Helmut Stallknecht has maintained his strain for more than 40 years. Other older aquarists have had these fishes just as long. I don't



think there was ever any injection of fresh blood. I didn't collect any specimens back then as it was at the start of the trip and I only wanted to know if they were still there. Nowadays the fishes in the hobby bear little resemblance to wild specimens where intensity of coloration is concerned. I really must see if I can find a slide anywhere. I only remember that it was a foul-smelling mire and I was the only one pig-headed enough to go into it."

New locality discovered

Since 2004 the Flame Tetra has been regarded as an endangered species in Brazil and protected, although its protected status is worthless without effective biotope conservation. In 1977 a location for the Flame Tetra was suddenly discovered in the

fairly well studied upper Rio Tiete region, where these fishes are apparently very numerous and regularly included in scientific collections. The most recent of these was not long ago - 2011 - and there is no indication that the populations of the Flame Tetras in the upper drainage of the Tiete are in decline. Unfortunately, however, these populations probably derive from introduced aquarium specimens - a very great shame.

Preservation essential!

The example of the Flame Tetra demonstrates very clearly how important it can be for us to maintain our aquarium strains. Even though this type of conservation breeding is not without its problems due to gene-pool impoverishment, it is always



Male Flame Tetra

better to preserve a species in captivity than to let it disappear forever and irrevocably from our planet.

Literatur:

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Marine Fishes

Tiny gobies for tiny aquaria

by Levin Locke

The equation suggested in the title - small fish = small aquarium - doesn't always apply. Sometimes small fishes require larger aquaria than big fishes. But in the case of the dwarf or coral gobies the equation is absolutely correct!



Gobiodon citrinus

It is generally recommended that beginners in the wonderful marine aquarium hobby should start with an

aquarium with a volume of 100 liters of more, larger will do no harm; on the contrary, the bigger the better. This is based on the

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greater stability of the water in larger aquaria. From a purely chemical viewpoint that is, of course, nonsense. A liter of water is just as stable or unstable as 100 liters of water. But there are three typical beginners errors. Firstly, too much food because the fishes keep on begging and so are probably hungry. Secondly, the aquarium becomes overpopulated. And thirdly, no regular partial water changes are performed because the water still looks clean. In the case of all three errors a large amount of water has a beneficial effect, as a bit of dirt in



Gobiodon okinawae, male.

a lot of water has a lot less effect than the same amount of dirt in a small amount of water. But once you are past the novice stage and have gained experience in the tricks of the trade, then there is no longer any reason not to set up one or more small aquaria containing 10 - 30 liters of water. After all, large aquaria have one huge drawback: small creatures tend to disappear in them, never to be seen again!



Gobiodon histrio

Coral gobies

This danger doesn't necessarily apply in the case of the coral gobies of the genus *Gobiodon*. But they have a number of features that make it more interesting to keep them in special aquaria rather than in a large reef aquarium. There are a lot of species: 27 are currently accepted as valid, and a number of others are still awaiting scientific description. Virtually none of them grows significantly larger than 6 cm, and the

majority usually attain just 2-3 cm in length. Despite their small size they are rather confident fishes, sometimes little short of bold. This is because they possess a poisonous skin mucus that apparently tastes really horrible. As a result these little gobies have virtually no predators. In addition they live with stony corals of the genus *Acropora*, among whose branches they find shelter. This is broadly comparable to the symbiosis between clownfishes and their anemones. In the wild some *Gobiodon* species even have a species-specific link with particular *Acropora* species.

Identifying the species is difficult!

Telling the *Gobiodon* species apart is exceptionally tricky, as fundamentally the species differ only in their coloration and that changes in the course of their lives. Hence it is best to acquire a pair right from the start, if possible, as it may prove very difficult to buy another individual of the same species or population at a later date. And that would be a pity, as *Gobiodon* species will even breed in the aquarium.

The sexes aren't very difficult to tell apart in individuals of the same age, as males grow larger and have a bulkier head. Males of *G. okinawae* also have white cheeks. Because coral gobies, like so many reef fishes, can



Pair of *G. okinawae*, male in front.

change their sex, any two individuals will almost always develop into a pair.

Cleaning causes damage

Such a pair will, of course, also be a real sight to see in a large reef tank. But unfortunately *Gobiodon* can't be recommended unreservedly, at least not for stony-coral



A color variant of *G. histrio* or a different species?

aquaria, as there is the associated small problem that they like to snack on the occasional polyp. That isn't too serious as *Gobiodon* enjoy dry and frozen foods, and are thus easy to satisfy. But coral gobies breed very readily in the paradise-like conditions of the aquarium. And because they are substrate-spawners, to do so they clean a spawning substrate to which to attach their eggs. This spawning substrate is, however, invariably the foot of an *Acropora*, or, if no *Acropora* is available, that of another stony coral. The coral in question may be so badly damaged in the process that it doesn't open any more and may even die. But removing the tiny gobies is then a total impossibility, as in a large aquarium they can be guaranteed to elude every attempt by the stressed-out coral enthusiast to catch them. So for this reason coral gobies are best kept and bred in special small aquaria, where their bad habits won't be noticeable and their good ones will be seen to best advantage!



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Lizards

The Turquoise Dwarf Gecko - terrarium enthusiasts can save it!

by Thorsten Holtmann

No other reptile has created such a stir in the past six years as the Turquoise Dwarf Gecko, *Lygodactylus williamsi*, also known as the "Electric Blue". Although the species was scientifically described as long ago as 1952, it wasn't until 2004 that a number of specimens appeared in the international pet trade, and it first became known to the general public in 2008, at the Interzoo in Nuremberg.

This dainty little animal - it attains a maximum total length of around 6 cm - is known only from a very small distribution region in Tanzania. Its range - as known to science - is restricted to an area of only around 20 km² in the east of the country, specifically the remnant of formerly more extensive coastal woodlands. Within this area the Turquoise Dwarf Gecko is found only on a single species of tree, the screwpine *Pandanus rabaiensis*. Every screwpine is home to a single male, along with females and juveniles. The screwpines comprise less than 20% of the woodland area, but because screwpines are easy to count it is possible to calculate the population of Turquoise Dwarf Geckos in the area fairly accurately.

Protected - only on paper

The reason for the dramatic decline of the East African coastal woodlands lies in the unregulated felling being practiced in the forest. On the one hand valuable hardwoods are being felled, while on the other the human population is constantly increasing and with it the hunger for land. In addition wood is the most important fuel for the local people. Illegal clear-felling is the result. Although the entire known distribution of the Turquoise Dwarf Geckos is nominally protected, this protection exists largely only on paper. The forest continues to shrink, and even though the screwpines have no commercial value, they aren't spared during the felling. After clear-felling, for example for the purpose of agriculture, the forest cannot regenerate naturally even if the illegal

deforestation is halted; invasive tree species colonize the area and prevent the original community of species from establishing a foothold again.

Independent of wild collections

The terrarium hobby can readily make do without wild-caught specimens, as Turquoise Dwarf Geckos are exceptionally easy to breed. One German breeder, for example, currently has 24 breeding groups, with it being readily possible to maintain one male with three females. Each female produces a clutch of two eggs every four to six weeks year-round, which means at least 16-18, but usually 20, juveniles can be expected per female per year. The eggs are incubated at 23-28 °C and a relative humidity of 70-90%, and the hatch rate is approaching

Only males (above) of *Lygodactylus williamsi* are spectacularly blue; females are brown or greenish.



► Leopardgeckos

Geckos sind fast so alt wie die Welt – rund 50 Millionen Jahre. Sie haben viele Lebensräume erobert. Einige Arten leben in Gegenden, die kaum je ein Mensch betritt, andere dagegen an Hauswänden, huschen durch die Tür oder flitzen an der Decke entlang.

Wer kennt das nicht: Urlaub in südlichen Ländern bedeutet oft auch Bekanntschaft mit Geckos, mancher hat schon unfreiwillig einen im Koffer mit nach Hause gebracht. Natürlich sind viele Geckoarten nicht fürs Terrarium geeignet – zu den Ausnahmen zählen Leopardgeckos. Seit den Anfängen der Terraristik gehören sie zu den bekanntesten Terrarientieren. Zunächst mal sind sie – im Gegensatz zu den „Urlaubsbekanntschaften“ – hübsch anzusehen.

Heute existieren neben der normalen Leopardzeichnung viele bisweilen sehr bunte, intensiv gelborange und gelbe Exemplare, die nicht selten bizarr gemustert sind. Darüber hinaus sind sie „pflegeleicht“ und auch recht robust. Voraussetzung hierfür ist natürlich, ein Terrarium einzurichten, das den Lebensgewohnheiten dieser Geckos entspricht: Eine Miniwüste, mit Sandboden, dunklen Höhlen, Wasser speichernden Pflanzen (z.B. lebende Steine) und trockenen Hölzern zum Klettern. Klar muss aber sein: Man kann sie nicht streicheln oder gar mit ihnen kuscheln. Auch handelt es sich um dämmerungs- oder nachtaktive Reptilien – was sie wiederum attraktiv macht für berufstätige Menschen. Besuchen Sie Ihren Zoothändler – er hat alles, was sie brauchen und darüber hinaus sicher auch den einen oder anderen guten Tip!



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100%. In the terrarium these reptiles attain sexual maturity at an age of around four months, so if necessary it is possible to produce three generations per year.

At the rate of a clutch per female every six weeks that equates to around 620 youngsters, and a clutch every four weeks to around 860. In practice, however, it isn't possible to sell such large numbers. Moreover in theory, given sufficient space, with no females being sold, and with around half of the young being female, then such a starter group could produce between 1,400 (six-weekly clutches) and 5,500 (four-weekly clutches) juveniles per year. In other words, every reproductively-capable female, along with her offspring and their offspring, could achieve a 25-times to 48-times increase in the original population in a single year.

This enormously high reproductive rate is necessary for such small creatures, which occupy a position a long way down the food chain, to compensate for high losses in the wild. And that means that under normal circumstances the collection of wild specimens of these small reptiles for the terrarium hobby has no noteworthy effect on the overall population, as long as the habitat remains otherwise undisturbed.

Even though the wild population of *Lygodactylus williamsi* can tolerate a certain amount of collection pressure without harm, such collecting is undesirable. In the first place the collectors often aren't exactly careful about how they obtain the geckos and destroy the home tree in the process, and secondly the designation of the protected zones would be rendered meaningless. They represent a very species-rich habitat, extremely deserving of protection and conservation, and every effort to retain this habitat requires our unreserved support! The Turquoise Dwarf Gecko is, after all, just one of numerous species that occur there.

Can the Washington Convention help?

The Washington Convention on International Trade in Endangered Species (CITES) regulates the international trade in



In terms of its scalation *Lygodactylus williamsi* resembles the species *L. picturatus* and hence was originally described as a subspecies of *L. picturatus*.

specially protected animal species. These species are not necessarily rare or endangered, but in the view of some experts they could be if collected and traded in excessive numbers. As a rule the concern isn't so much the trade in live animals but mainly that in animal products (leather, pelts, ivory, even complete corpses as in the case of seahorses, tigers, etc). Even so live terrarium animals are also affected.

There are two important categories, detailed in lists of species, the so-called appendices to the Washington Convention. Appendix 1 contains species that are deemed to be so endangered that the trade in wild-caught specimens is banned, without exception. Only captive-bred specimens from the second generation on may be traded freely, as long as they are accompanied by the legally-required paperwork to prove they are captive-bred from the second or subsequent generations. The majority of species, however, are included in Appendix 2. In principle they can be traded, but this requires an export permit from the country of origin and an import permit from the recipient

country. Scientists are now campaigning for the Turquoise Dwarf Gecko to be included in the Washington Convention in order to put a stop to the illegal trade in these creatures.

The Washington Convention has proved effective in some cases. There are, however, many critics of the Washington Convention

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The Turquoise Dwarf Gecko is looking at an uncertain future in the wild.

All photos: Frank Schäfer

among scientists, who say that inclusion of a species in the appendices serves only to create a demand that previously didn't exist at all. Price rises, and a concomitant rise in smuggling, can result from ill-considered and excessive listing. There is every indication that inclusion of the Turquoise Dwarf Gecko in Appendix 1 of the Washington Convention would have negative consequences. It would seriously hinder the trade in captive-bred specimens and encourage the smuggling of wild-caught individuals. The most serious threat to the Turquoise Dwarf Gecko is one that the Washington Convention cannot influence: biotope destruction.

New methods of conservation are required

It has long been recognized that the only effective way to protect species is biotope protection. In a few special cases, such as certain large animals, the traditional protection of individuals, i.e. a ban on capture and killing, can be effective, but in 99% of cases it isn't. Many years ago Bernhard Grzimek was already aware that effective nature conservation was impossible without

involving the people affected by it. It is pointless and highly questionable ethically to use the criminalization of the local population to divert attention from the real problems, namely the widespread destruction of biotopes out of economic necessity.

We have seen that it is relatively easy for the terrarium hobby to dispense with the trade in wild animals. But the question remains, what can be done on the spot in Tanzania? How can we help the native people who, out of sheer economic necessity, cut down the forest home of the Turquoise Dwarf Geckos and capture these attractive little lizards even though they know it is forbidden? Is it ethically acceptable for us to have nice little *Lygodactylus williamsi* living in our terrariums as ambassadors of their beautiful homeland, while washing our hands of blame (after all, ours are captive-bred) for the unceasing destruction of species in the natural habitat (other people are responsible for that)?

No! It would not be a major problem to use development aid money to promote re-

planting of the East African coastal forest and hence increase screw pine populations in Tanzania. Local people could make a modest but sustainable income from the capture of these attractive little geckos. In that way the Pandanus woodlands could expand once again, and with them the populations of the Turquoise Dwarf Gecko. Which is, after all, just one of many, many species that inhabit the forest and which will disappear from the Earth as a result of its destruction.

Lexicon

The Turquoise Dwarf Gecko

Lygodactylus: lygos means "flexible twig", "willow twig" or simply "willow" (a tree noted for its flexibility), dactylus means "finger" or "toe"; the name refers to the form of the toes.
williamsi: in honor of the discoverer of the species, Mr J. G. Williams.



Health

Medicinal herbs for fishes

by Birgit Bautz-Schäfer

People have always used plants for healing. They are primarily used in human medicine, but domesticated animals have also been treated with them since time immemorial. It is only in the case of ornamental fishes that the use of medicinal plants has hitherto been extremely unusual.

Why this is so is far from clear. As long ago as 1905 chamomile tea baths were used successfully to treat fighting-fishes suffering from cloudiness of the cornea of the eye; this was reported in the "Blättern für Aquarien- und Terrarien-freunde".

Sea Almond leaves and Alder cones

Nowadays the use of plant medicines in the aquarium hobby is largely limited to the tropical Sea Almond tree (*Cattapa terminalis*), whose leaves are said by some users to have an almost miraculous effect. Less commonly, but still regularly used, are the cones of the European Alder (*Alnus glutinosa*) and "sticks" of the bark of the tropical Cinnamon tree (*Cinnamomum verum*).

Medicinal plants can do more!

Our native European plants include a large number of species with very powerful pharmaceutical effects. Some of them are so potent that they are best not touched because of the risk of poisoning. Others are harmless, however, but very effective nonetheless. Just a few of the most important of these plants are listed below:

Chamomile (*Matricaria chamomilla*)

This ubiquitous herbal plant has a slightly antibiotic effect and is also anti-inflammatory. In addition it has a calming effect.

Plantain (*Plantago major*, *P. lanceolata*)

These plants too are anti-inflammatory and even have antiviral properties, i.e. they are effective against viruses. In human medicine, plantains are popularly used against inflammation of the stomach and the mucus lining of the gut.

Perforate St John's Wort (*Hypericum perforatum*)

Perforate St John's Wort is very effective for encouraging wounds to heal.

Birch (*Betula spp.*)

The green leaves of the Birch contain substances that encourage the healing process in hard-to-heal wounds and alleviate skin conditions.

Yarrow or Milfoil (*Achillea millefolium*)

The scientific name *Achillea* relates to the hero Achilles of ancient times, who purportedly treated his wounds with this plant. Yarrow stops bleeding and has a healing effect on wounds.

Prevention is better than cure

The use of medicinal plants in the aquarium is indicated when fishes have been exposed to a particular physical stressor, especially when it has been necessary to net them. Generally speaking fishes are not all that delicate, but even when they are handled carefully there remains the possibility of minor injuries to their bodies - injuries that aren't visible to the naked eye. Nevertheless these microscopic injuries can (it isn't inevitable) be entry points for potential pathogens e.g. fungal spores or bacteria. If the immune system of the fish in question is weakened because the fish has been experiencing negative stress, then the result may be that it falls ill. Medicinal plants help the wounds to close rapidly and heal quickly, and also restrict the proliferation of potential pathogens and alleviate the physical consequences of negative stress. The latter is demonstrable in humans at least; we know hardly

anything about the psyche of fishes.

The use of medicinal plants has proved particularly beneficial in newly-purchased fishes, as the new arrivals are bound to be debilitated by all sorts of factors and hence - as we are all too well aware - more susceptible to disease than established fishes. Because the same applies to fishes as to us humans: anyone exposed to negative stress gets sick more easily. If, despite the use of plants, an illness develops, then that must be treated with conventional fish medication(s). The use of herbs is no guarantee that fishes won't become ill, but it does make it very likely that no medication will be required.

How are herbs applied to the fish?

Naturally herbs can simply be placed in the aquarium. The water-soluble substances they contain will then be released and reach the fish and its skin via the water. But this method isn't generally recommended as all the plants used in herbal mixtures are harvested when green and as a result contain lots of sugars and other material liable to putrefaction. The result will be a mass proliferation of bacteria, shortage of oxygen, and bad smells. The bad water will harm the fishes rather than doing them good.

The answer to the problem: tea! Simply

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pour vigorously boiling water over the herb mixture and leave it to brew for 10 minutes, then remove the herbs and what will be left is an easy-to-use solution containing all the useful, desirable ingredients. Once the tea has cooled then simply add the desired dose to the aquarium. There is no need to worry about overdosing, nothing will happen to the fishes even when the neat tea is used as a bath for several hours, as long as there is a constant oxygen supply. The tea can be kept for several days in a clean, sealed bottle in the refrigerator.

Risks and side-effects?

In theory the only danger in using this tea is that if a very high dose is used then the sugars from the plants may lead to increased bacterial proliferation. Should this actually happen then the mishap can be rectified by quickly performing a large partial water change.

Effects on the aquarium



We have studied the effects on water chemistry of a herbal mix from Aquariana, which contains all the plants listed above and a number of others, and which is formulated specially for the acclimatization of newly-purchased fishes. The most important parameters for fishes were measured: pH, total hardness, carbonate hardness, ammonia, nitrite, and nitrate levels, plus phosphate, chlorine, silicon, and copper. The testing equipment used was the Aqua-Check from Söll, which measures all the parameters very easily and precisely using an electrode with photometric function; only the hardness was measured with a drop test, again from the Aqua-Check range from Söll.

Tests were performed on:

1. The mains water used to brew the tea, prior to boiling;
2. The mains water used to brew the tea



Discus from the Rio Moju. The skin of discus is very delicate.

- after boiling;
3. The freshly brewed tea when cooled to room temperature (although this had to be diluted considerably with distilled water for the hardness test because the color change was otherwise virtually invisible due to the yellow color of the tea);
4. The aquarium water prior to use;
5. The aquarium water after setting up and before the addition of tea;
6. The aquarium water after setting up and with the addition of tea (1 tablespoonful of tea / 10 liters of aquarium water)
7. The untreated aquarium water after two weeks without water change;
8. The tea-treated aquarium water after two weeks without water change;

The small test aquaria were each filled with 10 liters of aquarium water and populated with five Neon Tetras (*Paracheirodon innesi*) apiece. The test aquaria contained a liter of washed river sand as substrate and were filtered using simple air-powered internal filters filled

with Perlon wool. The fishes received quarter of a food tablet every day. It was found during these experiments that the tea had no noticeable effect whatsoever on the water chemistry.

Collect herbs or buy them ?

As far as we know, at present only Aquariana (www.aquariana-onlineshop.de) offers a ready-to-use tea mixture for the acclimatization of newly-purchased fishes. It comes packed in ready-to-brew organza sachets. Anyone wanting to collect their own should have a good knowledge of plant species in order to avoid accidentally collecting poisonous plants, and find out which plants should be collected at what time of the year and/or day. The plants should be carefully dried and stored in a dark, dry place.

All in all, medicinal plants offer the aquarium hobby a wonderful opportunity to acclimatize delicate fishes optimally. Try it for yourself! It is very easy...



In Memoriam

In Memoriam Alex Ploeg

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Crenicichla compressiceps Ploeg, 1986



Crenicichla edithae Ploeg, 1991

little time. Edith always supported her husband in all his activities, and this wasn't just a case of moral support but, as Alex wrote in his 1991 work on *Crenicichla*, financial support as well when times were hard. Alex dedicated a *Crenicichla* species, *C. edithae*, to her.

But Alex's greatest service to the aquarium hobby remains virtually unknown to the general public. Because of his diplomatic and obliging nature Alex was a respected participant at all the important conferences and congresses relating to the hobby, and someone that people listened to. His expert knowledge, his negotiating skills, and his numerous personal contacts enabled him to divert some of the proposed EU-wide legislative measures affecting the entire aquarium hobby or moderate them to a realistic level that all those affected could live with.

Alex Ploeg, citizen of the world and international diplomat in matters relating to the aquarium hobby, will be greatly missed in the major future challenges that our hobby faces.

Our heartfelt sympathy goes to Alex and Edith's two daughters, Mirjam and Sandra.

Frank Schäfer

I was hardly able to believe it when, on the morning of Friday 18th July, I received the news that Alex Ploeg, together with his wife Edith, their son Robert, and the latter's friend Robin, was among the victims of Malaysia Airlines Flight MH17 which had crashed in the Ukraine. Such a sudden death among one's circle of friends would probably leave anyone in shock. We had only recently had a laugh with Alex and Edith at the Interzoo. And now they were dead? The politics of the world at large had intruded into our little hobby world and Alex and his family had become victims in the process.

But leaving aside these personal considerations: in Alex Ploeg the weird and wonderful world of fishes has lost one of its personalities. His entire professional career was involved with fishes. He studied biology at the University of Utrecht, where he completed his doctorate in 1983. From 1982 on he worked intensively with the pike cichlids of the genus *Crenicichla*, and in 1991 successfully submitted a dissertation on them at the University of Amsterdam. From 1989 to 1990 Alex worked as Curator at a public aquarium in Aruba (Dutch Antilles), from 1991 to 1992 as a fish breeder in

Bonaire (likewise Dutch Antilles), from 1993 to 2000 he was Manager at two ornamental fish wholesalers in the Netherlands, from 2001 to 2004 he was Sales Manager at Aqualog, and from 2004 on Secretary General of the international ornamental fish trade organization Ornamental Fish International (OFI). In addition to this position Alex also took on the role of Secretary General of the European Pet Organization (from 2006) and that of an advisor to the Dutch pet trade association Dibevo (from 2009).

Aquarists will remember Alex as the *Crenicichla* man. He described 24 new species in this, the most species-rich of all cichlid genera, and in particular the gorgeous dwarf species *C. compressiceps* and *C. regani* will always remain linked to Alex's name. Alex devoted 10 years of his life to the pike cichlids and even when, as he himself put it, he was long done with the subject, he still remained very interested in these characterful cichlids. During our last encounter at the end of May 2014 he absolutely had to see the very rare *Crenicichla zebrina* then in stock at Aquarium Glaser, even though he had very



Evergreens

Oscars

by Wolfgang Löll

Large cichlids from South America are not always the most popular of aquarium fishes. Leaving aside their physical size, they like to dig, regard smaller tankmates and aquatic plants as part of their diet, and at breeding time make it abundantly clear to every other occupant of the aquarium who is cock of the roost. For this reason the majority of aquarists prefer to look at these impressive fellows at the zoo rather than at home. With one exception: *Astronotus ocellatus*, the Velvet Cichlid or Oscar.

The unusual name "Oscar" for this cichlid has become established internationally, but is also known in English as the Velvet Cichlid or Marbled Cichlid.

Why the Oscar is called Oscar

To be honest, nobody really knows the precise answer, though it is certain that the name originated in the USA. In 1936 an article by E. W. Clarke on *Astronotus*

Tupi word *acara* for all sorts of large cichlids. Tupi is the language of the aboriginal people that lived in Brazil before Europeans arrived in the Americas.

Widespread

Astronotus originate from South America, where they live in the major rivers of the Paraguay, Amazon, and Orinoco drainages, as well as those of the Guiana Shield. They



Adult Oscar of the Red Tiger cultivated form.

synonyms of *A. ocellatus*, but in the view of some people at least this is undoubtedly incorrect.

Oscars in the aquarium

The first Oscars were exported to Europe in 1929. Because they are relatively undemanding and attractively colored they were among the favorite large cichlids that people brought back from South America. We mustn't forget that in the past importations were made by ship and animals were usually brought back by seamen to supplement their income. This meant that the fishes were in transit from Brazil for 3-4 weeks, often longer, in so-called fish cans. Although we shouldn't



Adult wild-colored Oscar, *Astronotus ocellatus*. The spots in the dorsal-fin region are typical of the species.
All photos: Frank Schäfer

appeared in the hobby magazine *The Aquarium*. Clark owned a pair called Lena and Oscar. In 1949 Gene Wolfsheimer reported in *The Aquarium Journal* that aquarists in California were referring to *Astronotus* cichlids as Oscars (Wayne Leibel, *Aquarium USA Annual* 2001). But it is also possible that the word Oscar is a corruption of the scientific name or of the

are prized and popular as food fishes throughout their range. Nobody knows how many species of *Astronotus* actually exist. The genus is, to put it politely, in need of revision. Generally speaking, only two species are recognized by science, *A. ocellatus* and *A. crassipinnis*, but a total of seven species have been described in the past. The majority are now regarded as

Lexicon

Oscars

Astronotus: means "star-back"
crassipinnis: means "with fat fins"
ocellatus: means "with eye-spot(s)"
zebra: bedeutet "(striped like a) zebra"



Young Oscars have completely different coloration. This one is wild-caught, from Para, Brazil.

underestimate the know-how of the fish transporters of those days, the fishes needed a certain amount of resilience to survive. Then again, the first successful exports of discus took place back then...

Large and spectacular

Oscars are among the largest aquarium fishes normally seen in the trade, and can attain a length of up to 40 cm. That size is in fact exceptional, but can be achieved by long-lived specimens in huge aquaria. Almost all the individuals seen in the trade are captive-bred in South-East Asia. Wild-caught specimens are only very rarely offered for sale and are then always labeled as such.

Anyone with an aquarium 150 to 200 cm in length should definitely try their hand at keeping Oscars in it. These fishes can become exceptionally tame and provide their owner with a lot of enjoyment, plus they become more attractive with every

Aquarium Glaser recently imported these spectacular Oscars from Brazil (Rio Tapajós). They are probably *Astronotus zebra* PELLEGRIN, 1904.



Wild-caught adult Oscar from Colombia. This species has not been scientifically described.

centimeter they grow. Oscars can, however, often cause a lot of trouble in smaller aquaria, as after all they are cichlids and defend their personal territory fairly energetically. Because *Astronotus* rapidly grow to 15-20 cm long even in smaller aquaria, a meter-long tank is not too small for a single Oscar, with no other fish(es) sharing the tank. For this reason it is better not to buy Oscars unless a really large aquarium is available.

Productive open-brooders

Oscars breed in pairs, with both male and female sharing equally in the care of eggs and fry - often more than 1000 per brood!

The sexes can be told apart only with difficulty (females remain smaller and have a more pointed head profile), so the best way to obtain a pair is by growing on a group of youngsters and letting them choose their own mates.

There are good reasons why Oscars are not usually bred commercially in Europe. Rearing the ever-voracious brood to saleable size costs more in time, electricity, and water (not to mention food) than they fetch when sold. But matters are completely different on the rare occasions when wild-caught specimens - such as the spectacular Zebra Oscar - are imported!

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Mailed catfishes - underwater tractors

A tractor is a very robust piece of equipment used by farmers to work their fields. By the same token mailed catfishes are also very robust and virtually indestructible. And they too work the "ground" in the aquarium, as they are bottom-dwellers. Mailed catfishes do not have any scales, but instead their bodies are encased in bony plates, like a knight in armor. There are a large number of species, more than 300, but there are two species that are particularly suitable for beginners: the Peppered Cory (*Corydoras paleatus*) and the Bronze Cory (*C. aeneus*).

Peppered Cory



Bronze Cory



In this photo you can clearly see the six barbels, four long and two short. Barbels are very sensitive sensory organs.

Soft substrate

Like the dragon in the fairytale mailed catfishes also have a weak point where they can be injured: the snout. Here they have six fleshy worm-like appendages, known as barbels. And these barbels are super-sensitive. The barbels are more necessary to a mailed catfish than its eyes, as they can be used to find food even in very murky water or complete darkness. In the wild mailed catfishes usually live on mud, but mud isn't much good as substrate in the aquarium as it makes the water cloudy. That may not bother the fishes, but you won't be able to see anything in the tank and that won't be much fun. So you should use very soft sand instead. Normal gravel often damages the mailed catfish's barbels, sometimes they are even rubbed away and that isn't a good thing at all!

Small and peaceful

Mailed catfishes don't grow large, only around 6-8 cm long. They are absolutely peaceful and never do other fishes any harm. Mailed catfishes also live to be very old, sometimes they can live for 10 or even 15 years. That is very old for a small fish! Mailed catfishes eat pretty much any fish food that you can buy in the pet store, as long as it will fit into their little mouths. But most of all they like to eat small live worms such as Tubifex and whiteworms. But you shouldn't give the fishes as much as they would like; it's like sweets, they will eat more than is good for them and then they will get fat and fall ill. Mailed catfishes aren't shoaling fishes, but they do like company. It is best to keep them in groups of 6-12 individuals.

Survival specialists



The reason why the Peppered and Bronze Corys are so easy to keep in the aquarium is that they have to survive under very difficult conditions in the wild. In summer it is often very hot in South America, where they come from, and the water evaporates. And then the poor little mailed catfishes have to swim in a warm, liquid sludge. Other fishes suffocate, but not the mailed catfishes. They are able to gulp in air at the water's surface and thus survive. When winter comes it rains a lot. The rain water is rather cold and large areas of land are now flooded. Mailed catfishes breed in the rainy season; they lay eggs but don't guard them.

i

Info box for parents

Dear Parents,

these two mailed catfish species - the Peppered Cory and the Bronze Cory - are the ideal beginner's fishes for your child. There really isn't much that can go wrong with them. But 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

There are a very large number of mailed catfishes (more than 300 species!) and naturally these include delicate species. The Peppered Cory and the Bronze Cory (*Corydoras paleatus* and *C. aeneus*) come from southern South America (Uruguay, Paraguay, Argentina) but have been bred in the aquarium for more than 100 years. They will tolerate any mains water and water temperatures between 14 and 30 °C, with 20-26 °C being ideal. Because of the tough living conditions in their natural habitat both of these mailed catfish 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.

Mailed catfishes have very hard, pointed fin spines that can cause a painful injury. The two species discussed here aren't poisonous though (others are, but not life-threateningly, it just hurts a lot). Injuries can be avoided by using as fine-meshed a net as possible for catching these fishes; they can easily become entangled in coarse meshes.



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Oriental Fire-Bellied Toads



Oriental Fire-Bellied Toads are often green on their backs, but there are also brown or two-colored individuals.

There are also toads in Germany, two species of them. The first is known as the Yellow-Bellied Toad as it usually has a yellow-black spotted belly. The Yellow-Bellied Toad lives in small pools that often dry up, so they then have to move elsewhere.. The other species is called the Red-Bellied Toad. It usually has a red-black spotted belly. It lives only in waters that never dry up, i.e. lakes and similar habitats. Toads are very easy to keep and breed in the terrarium, and hence native toads have been very popular pets in the past. But nowadays they are often protected and can no longer be captured, because they have become rare due to destruction of their environment. Instead the Oriental Fire-Bellied Toad is often offered for sale in pet stores. It comes from China but is often bred in America for the pet trade. It has a red-black spotted belly and lives in small pools in the wild.

Beware, poison!

Toads aren't all that shy. This because they have hardly any enemies. They taste quite horribly nasty thanks to a poison that coats their skin. Any bird that has once tried to eat a toad never does so again, they taste so disgusting. If a toad feels threatened then it shows its belly to the enemy. Anyone that see these colors thinks, "OK, I get the message, this colorful fellow is poisonous!" The scientific term for this is warning coloration. Toads rely on their poison and so rarely beat a retreat like other members of the frog family have to. And this makes it look to us as if they are tame.



The color of the belly can be seen very clearly in this specimen.

Little hooters

These toads don't grow large, only around 5 cm long, and don't need much room either, because they don't move around a lot. So they are very good for keeping in the terrarium. Because Oriental Fire-Bellied Toads could survive in the wild here in Europe, they should be kept only in the house. As if they escaped they could represent a serious danger to native toads. Unlike many other members of the frog family they aren't very noisy when kept indoors. They don't actually croak at all, but instead the male's call sounds a bit like a finger flicking against an empty glass or a gentle hooting.



Baby toads are not yet very poisonous and are easily eaten by the big ones.

Other things you need to know.....

Male and female toads aren't very easy to tell apart. So it is best to buy 6 or 7 specimens all at once, especially as toads are rather sociable. There are sure to be both males and females in such a group. The eggs are laid in little clumps among aquatic plants. The tadpoles can remain with the parents, as even though a few will undoubtedly be eaten, enough will survive. But you should catch out the newly metamorphosed young toads as they will stand no chance against the big ones.





i Infobox for Parents

Dear Parents,

the maintenance of frogs and toads 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. Amphibians 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

In theory a relatively small terrarium with a bottom area of 60 x 30 cm will be adequate for a group of Oriental Fire-Bellied Toads; but to get maximum enjoyment from observing the highly varied behavior of these batrachians the terrarium should be as large as possible. Because these toads are exclusively bottom-oriented, the height of the terrarium is less important. Toads live almost entirely in water, more specifically at the water's surface. A large piece of cork bark will be completely adequate as a land area. The water area should be 10-15 cm deep and maintained just like a normal aquarium, i.e. with a filter, etc. Good lighting will increase the well-being of the toads and encourage healthy growth in the aquatic plants. Toads don't require additional heating, room temperature will be perfectly adequate for them. In winter you can allow them to hibernate for 6-10 weeks.

Regular maintenance

Toads require little effort. They should be fed every two days; this will require live insects and worms. Toads learn very quickly to take food from forceps. A regular partial water change is important, as when maintaining fishes. This involves siphoning off half of the water and replacing it with fresh mains water, which can be a few degrees cooler than the terrarium water, but never warmer.

Hazards

Because of their powerful skin poison toads shouldn't be handled unnecessarily. The poison mainly irritates the mucus membranes. If handling is required then the hands should be thoroughly washed afterwards. Toads are thus very good for teaching the two most important basic rules for dealing with terrarium animals: no unnecessary handling, and always wash your hands after handling!

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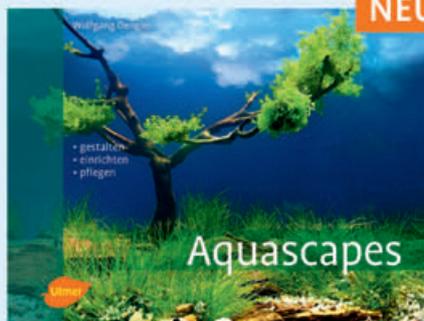
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