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NEWS

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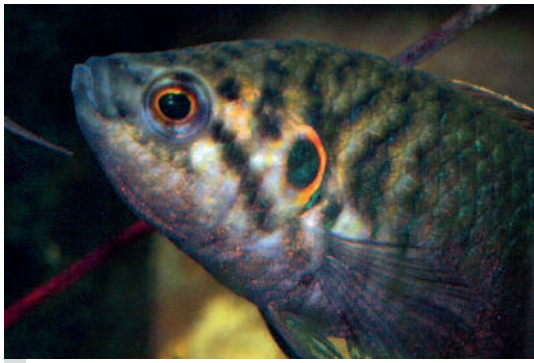
Labyrinthfishes

The Chinese Paradisefish: never give up!

by Frank Schäfer



Portrait of a recently imported new form with a red iris.

The Chinese or Roundtail Paradisefish (*Macropodus ocellatus*) has long been regarded as a rare jewel in the aquarium. That is a great pity, as this fish has much to offer the aquarist.

A little fish and world history

The story of the discovery of the Chinese Paradisefish dates back to 1842, when Theodore Cantor of Zhoushan (formerly Tschouschan or Tschusan, English Chusan) described the new species *Macropodus ocellatus*. Zhoushan is a group of islands off the east coast of China. The main island was occupied by the English in 1840, 1841, and 1860 and handed back only after the opening up of China for trade with Europe. Cantor (1809-1860), a Dane by birth, was a doctor and worked as a salaried employee of the powerful East India Company, which was responsible for the occupation of Zhoushan. He was interested mainly in amphibians and reptiles, and, for example, discovered and described the King Cobra (*Ophiophagus hannah*), the largest venomous snake in the world, in 1836, but he was also very well educated in biology in general. He authored a study of the animals and plants of Chusan, published in 1842, which contained inter alia the original description of the Chinese Paradisefish. He even had a very nice water-color made of the fish, which unfortunately cannot be shown here for copyright reasons. However Hans-Joachim Paepke was able to reproduce this water-color in 1994 in his monograph on paradisefishes, albeit unfortunately only in black and white, so you don't need to travel to London to see the original in the British Library.

The world thus ultimately has an aggressive economic policy to thank for the discovery of the Chinese Paradisefish.

Much speculation

Let us continue with the history for a while. In 1869 the true Paradisefish, *Macropodus opercularis*, was the first exotic aquarium fish after the Goldfish to reach Europe and triggered a wave of enthusiasm. Perhaps the aquarium hobby as we know it today wouldn't exist at all were it not for the Paradisefish, but of course that must remain a matter for speculation. But the fantastic appearance of the Paradisefish also gave rise to speculation: could such a colorful fish with such luxuriant finnage really exist in the wild? Many naturalists doubted it. Because the Paradisefish, just like, the Goldfish, originated from China, it was speculated that, like Veiltail and Co, it was a form cultivated by the Chinese.

But in that case what was the original form? It was thought that it might be the species *Macropodus chinensis*, described by the German doctor Marcus Eliser Bloch in 1790. But unlike the Paradisefish, which has a forked tail, Bloch's engraving shows a round-tailed fish. When, in 1913, the first Roundtail Paradisefishes became available to the general public (in fact the species had first reached Germany back in 1893, but that was kept secret) they were identified as Macropodus chinensis and given the common name of Chinese Paradisefish.

However, the Chinese Paradisefish remained largely unremarked and subsequently kept dying out in the aquarium hobby. Strange to relate, nobody wrote about the fantastic coloration of courting males.

It wasn't till 1989 that Paepke was able to show that Bloch's M. chinensis was just a Paradisefish with a damaged caudal fin, which is why the Chinese Paradisefish is now known to science as *Macropodus ocellatus*.

Major problems

It wasn't until 1983 that Chinese Paradisefis-

Displaying wild-caught male Chinese Paradisefish, imported by Aquarium Glaser in 2011.

Male of the new wild-caught strain described in the text. In addition to the red eye, the blue spot at the base of the dorsal fin is particularly striking. All photos: Frank Schäfer

hes reached Germany again, after apparently dying out completely during the Second World War. It was the Internationale Gemeinschaft für Labyrinthfische (= International Labyrinthfish Association, IGL) that managed to establish an aquarium strain, as the pet trade continued to show no interest in these fishes. Unfortunately Chinese Paradisefishes are very pale in color outside the breeding season and don't look attractive. These first fishes for a long time were imported on private initiative. In 1984 I obtained some of the first captive-bred specimens. The gorgeous color photos of Hans Joachim Richter had aroused my enthusiasm and I had been a paradisefish fan since the 1970s when a pair of Paradisefishes spawned in one of my very first aquaria.

Unfortunately, however, the Chinese Paradisefish proved extremely delicate. I believe that there are only a few fish species as susceptible to fish tuberculosis as *Macropodus ocellatus*. Fish tuberculosis is caused by a ubiquitous bacterium that can even cause skin lesions in humans under particularly unfavorable conditions - and is, by the way, the only noteworthy disease of ornamental fishes that can be transmitted to Man. It isn't known why Chinese Paradisefishes were so susceptible to the pathogen back then. Although nobody was ever infected by them, who wants to keep fishes that sooner or later die covered in nasty ulcers? These fishes were once again in danger of dying out in the hobby. But then - and again nobody knows quite why - at some stage an aquarium strain of these lovely fishes became established that virtually never fell victim to tuberculosis. So this first recent imported strain of the Chinese Paradisefish reinforced the old saying: never give up!

Splendid fishes - outdoors as well

With a maximum total length of eight centimeters, the Chinese Paradisefish is a small fish. Males always grow larger than females. Sexual maturity is attained at an age of around four months, when the fishes are between three and five centimeters long. The Chinese Paradisefish is a typical bubblenest builder. The male, resplendent in his finest colors, constructs a relatively compact bubblenest. But mating is initiated by the female, who becomes a very light cream color, almost white, when ready to spawn. Outside the spawning period males and females cannot be distinguished on the basis of color. Paradisefishes produce transparent floating eggs. Mating is labyrinthfish-typical, with the male clasping the female in a U-shaped embrace, initially approaching her from beneath. Once the male has embraced the female, he turns her onto her back, and the pair release the eggs and sperm while quivering.

Lexicon

Chinese Paradisefish

Macropodus means "large fin"
opercularis means "with a (special) operculum; the name refers to the spot on the gill-cover (operculum)
ocellatus means "having an eye-spot"
chinensis means "from China"

The young, which begin to hatch after just 24 hours, are very small. Once they become free-swimming, which begins after 48 hours (in labyrinthfishes there is always a degree of variation from early to late developers) they require some 10-12 days before they are able to take *Artemia nauplii*. Until then they require microscopically small live foods.

Chinese Paradisefishes are subtropical. The species distribution includes large parts of China and Korea, and they have also been introduced and become established in Japan. These fishes are sometimes found in areas where the thermometer can drop to -20 °C in winter. Hence some populations of Chinese Paradisefish are winter hardy in Europe and can be maintained year-round in the garden pond. One such population has lived for many years in an ornamental pond in front of the premises of the wholesaler Aqua-Global in Berlin. Because *Macropodus ocellatus* doesn't usually live for more than three years, the fishes must also be breeding successfully there. In severe winters very large numbers die, even in the wild. Because the Chinese Paradisefish cannot breathe using its labyrinth under ice, it has to rely on

Literatur:
Cantor, T. E. (1842): General features of Chusan, with remarks on the flora and fauna of that island. Annals and Magazine of Natural History (New Series) v. 9 (nos 58, 59, 60): 265-278, 361-370, 481-493.
Paepke, H.-J. (1994): Die Paradiesfische. Die neue Brehm-Bücherei Bd. 616, Westarp Wissenschaften, Magdeburg

The pair described in the text mating. The female is a typical light color.

breathing via the gills like normal fishes. It seems that juveniles 2-3 centimeters in length are best at surviving the winter.

Chinese Paradisefishes are strict carnivores. In the aquarium they can be fed without problem on flake, deep-frozen, and live foods of all types. The chemical composition of the water is of no importance to these fishes, although in soft water they are more susceptible to a number of parasites that prefer such water - above all Velvet Disease *Piscinoodinium* (formerly *Oodinium*).

Chinese Paradisefishes don't require any additional heating when kept indoors. They can be maintained without problem at a temperature between 14 and 32 °C, with the regular maintenance temperature ideally lying between 20 and 25 °C, and 3-5 °C higher for breeding. It has proven very beneficial to overwinter these fishes in cold conditions for 6-8 weeks (if need be in the refrigerator). The overwintering temperature should lie between 6 and 12°C, with it being safest to work within the upper part of this range when dealing with fishes of unknown provenance.

The future of the Chinese Paradisefish

The first step in studying a small fish species is always to establish an aquarium strain. That has been achieved in the case of the Chinese Paradisefish and at present at least the fish has sufficient fans that there is no longer any concern that it might die out in the near future. But the species has a huge natural distribution region, and, as we know from experience, local populations can differ considerably from one another. So attempts are now being made - albeit on a very small scale, as neither China nor Korea is typically an exporter of wild-caught aquarium fishes - to import wild-caught Chinese Paradisefishes from time to time and study the differences between them.

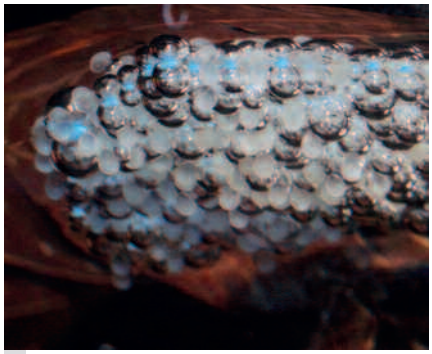
Within the labyrinthfish community it is mainly the indefatigable Thomas Seehaus that is collating all the available data on the wild forms of paradisefishes. He has also written a book on them. It is worth visiting his website at www.casa-di-lago.de !

Two years ago a wild-caught form was imported in which females don't assume the light coloration otherwise so typical. Unfortunately, for private reasons I was unable to obtain this strain. But: never give up!

Aquarium Glaser recently imported wild-caught stocks once again, and I took a pair of these fishes home with me. Unfortunately the female developed a virulent bacterial infection. The lower half of the caudal fin and around a third of the musculature of the posterior body rotted away before the disease came to a standstill. Unfortunately the stocks at Aquarium Glaser had already been sold at this point. I had virtually no hope of the female surviving, but I did all I could to make life as pleasant as possible for her. Two handfuls of autumn leaves enriched the water with secondary plant material (see News 107) and the only food used was deep-frozen adult *Artemia*, a particularly nutritious and germ-free diet.

Two weeks later something almost incredible took place: the pair spawned. Apart from the fact that the female was dreadfully scarred and looked very incomplete, everything took place by the book. Today, as I write this article, some 150 youngsters from this pair are swimming in one of my rearing aquaria and are already somewhat more than a centimeter long.

So yet again the Chinese Paradisefish confirmed the saying: never give up!



Success: bubblenest with eggs.

Das kleine Paradies im Wohnambiente

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Evergreens

Extra males, extra females, pairs ??!!

What is the right way to keep Guppy, Platy, & Co?

by Oliver Helker und Peter Merz

Although there is nothing to that effect in the aquarium hobby literature on livebearing toothcarps (see bibliography for the most important and most widely available handbooks), current wisdom on the Internet, and even in training manuals for those applying for a pet-trade license, is the abstruse recommendation that livebearing toothcarps are always best sold in the ratio of one male to three females.

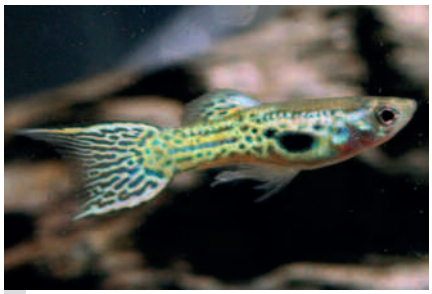
This is based largely on the permanent display and courtship by the males. An excess of females supposedly spreads this pressure more evenly and thus minimizes the negative stress on the individual females.

What does science have to say about it?
In the past precisely the opposite has been stated in several scientific works, namely that an excess of males is much easier on the females.

These studies were conducted in the 1940s and 1950s. The object of the work was to establish the scientific prerequisites for the optimal laboratory maintenance of Platies and Swordtails, as it had been discovered that certain crosses between Platy and Swordtail resulted in cancers in the offspring. This was a revolutionary discovery that permitted a giant leap forward in cancer research. Millions of people afflicted with cancer owe their lives to the knowledge obtained from these experimental organisms.

It was found that in Platies the aggressive

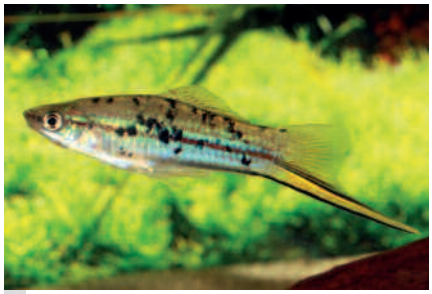
Variatus Platy, *Xiphophorus variatus*, male with Simpson finnage. All photos: Frank Schäfer



Endler's Guppy "Vienna Emerald".

interactions between males and females were comparable, ie females nipped one another just as often as males, and this was, moreover, independent of whether they were kept in single-sex (male or female) or mixed-sex groups.

In addition, when Platies and Swordtails are crossed behavioral characteristics are inherited true to type. This means that even



Green Swordtail, *Xiphophorus hellerii*, spotted wild form "Guentheri".

Swordtails that owe their coloration to a Platy in-cross exhibit typical, species-specific Swordtail behavior and are indistinguishable from pure-strain Swordtails in this respect. The same applies to Platies: they always retain their species-specific Platy behavior, even when they have Swordtail in-crosses in their ancestry.

What happens with an excess of males?
If you stop and think a little about why an excess of males should be easier on the females, then you can establish this quite simply for yourself without needing to read any dry studies or needing to be a biologist at all.

If you keep several males in an aquarium, then each male will try to attract the attention of females and secure a harem for himself by competing with other males. The majority of the time the males are busy among themselves and don't have much

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opportunity to display to a female. The moment a male starts to display in front of a female then his neighbor comes shooting over to steal the female. Because the two males then have eyes only for their opponent, the oppressed lady has the ideal opportunity to make herself scarce in the event that she isn't really ready to mate.

An excess of males is a good thing!

But there is an additional reason why an excess of males is an advantage: a single male can afford to be prodigal with his sperm, as he can inseminate several females within a short time without problem. There is no need to be fussy about choice of partner. As a result every female within

reach is courted as a rule and no selection takes place.

Matters are quite different in the case of the females, which can bring only a limited number of young into the world every 4-6 weeks. In addition the production of eggs abstracts energy and nutrients from the body of the mother.

The female must thus make a precise choice as to who is going to be the father of her offspring. If possible this will always be the largest, most beautiful, and strongest male, to provide her offspring with the best possible genetic inheritance.

Only large, strong, and healthy males are capable of outcompeting a large number of competitors. Because these characteristics are passed on to the offspring, such a male is, of course, the optimal choice in order to produce vigorous offspring that are, above all, likely to survive.

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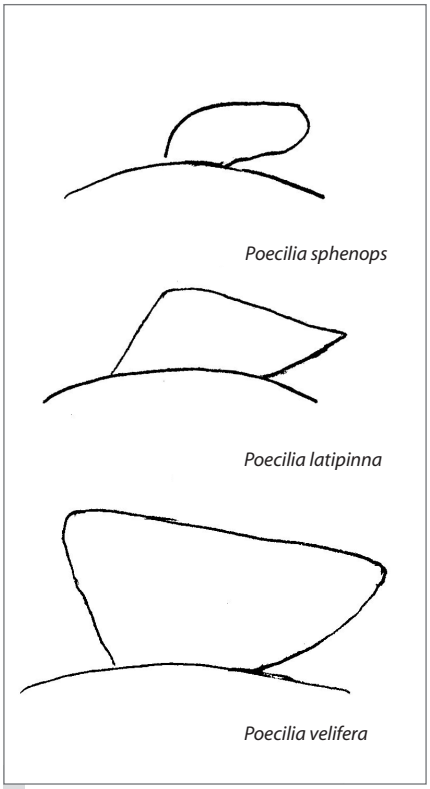
In order to keep a strain of livebearers healthy and vital in the aquarium for a long time, it is best to place the largest possible number of males in the tank. (The actual number will depend on the tank size.) And that way the best genes will prevail. The weaker males, by contrast, will hardly ever get to breed. The females will produce strong, vital young.

Species awareness required

The livebearers regularly found in the trade belong to several species, and knowledge about these is important, as each species has its own specific behavior and that too must be taken into consideration when deciding on the numbers of males and females.



The species-specific dorsal-fin forms of adult Molly males.

Guppies

All the guppies in the aquarium belong to the species *Poecilia reticulata* and *P. wingei*, as well as hybrids between them. What has been said above applies unreservedly to all guppies: an excess of males has very beneficial effects on the strain.

Platies

The platies maintained in the aquarium belong to two species: *Xiphophorus maculatus* and *X. variatus*. They aren't hybridized and both species breed true, at least as regards behavior. Again, there is an unreserved recommendation applying to both platy species: they should be kept in pairs or with an excess of males.

Swordtails

Platies and swordtails belong to the same genus, *Xiphophorus*, which contains a total of 28 species. But the only swordtail in the trade is *Xiphophorus hellerii*, the other species are so seldom maintained as to count as rarities. Swordtail males are, unlike the guppies and platies, very aggressive among themselves. Dominant males can oppress subordinate individuals to such an extent that they die as a result. For this reason only one male should be kept in standard sizes of aquaria up to 60 cm in length, but can generally be combined with several females. Perhaps this is the source of the incorrect blanket recommendation of keeping livebearers in the ratio 1:3. In sufficiently large aquaria that permit the maintenance of 10-15 individuals, however, the Swordtail too can be kept with five or more males together. But there should never be fewer than five males, as otherwise the dominant individual will seriously harass members of his own sex, even in very large aquaria.

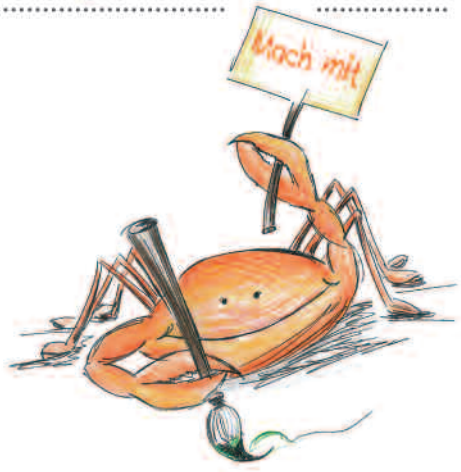
Mollies

Essentially, mollies trace their ancestry back to three original species: the Common or Shortfin Molly *Poecilia sphenops*, the Sailfin Molly *P. latipinna*, and the Giant Sailfin Molly *P. velifera*. While the Shortfin Molly should

TOLLE WASSERTIERE GESUCHT !

Gemeinsam mit dem WWF Deutschland will Söll Kinder und Jugendliche für die bunte und schützenswerte Unterwasserwelt begeistern. Der Hersteller für Aquaristikprodukte hat daher einen ganz besonderen Mal- und Bastelwettbewerb ins Leben gerufen.

Unter dem Motto „Tolle Wassertiere gesucht" können Kinder und Jugendliche noch bis Ende November Bilder von ihren Lieblingswasserbewohnern einreichen. Der Fantasie sind dabei keine Grenzen gesetzt: Ob es sich um naturgetreue oder um besonders originelle Darstellungen handelt, spielt keine Rolle. Wichtig ist nur, dass die Kunstwerke auch den Aspekt Umweltschutz berücksichtigen. Die schönsten Bilder werden prämiert.
Als Preise winken unter anderem Jugendmitgliedschaften beim WWF, Spiele sowie ein Aquarium inklusive Fischfutterset.



Mit der Aktion verfolgt Söll mehrere Ziele, wie Geschäftsführer Thomas Willuweit erläutert: „Wir sind ein Unternehmen, das seit jeher auf umweltverträgliche Produkte setzt. Um diese Philosophie auch gegenüber dem Verbraucher stärker zu verdeutlichen, sind wir im vergangenen Jahr dazu übergegangen, für unser Zierfischfutter nur Rohstoffe aus umweltverträglicher MSC-zertifizierter Fischerei zu verwenden."

Auf der anderen Seite wolle man als WWF-Partner Kinder und Jugendliche für Umweltprobleme in den Meeren sensibilisieren. Denn nur dann sehe man seine Aufgabe als engagierter Hersteller erfüllt, heißt es weiter.

Weitere Informationen gibt es im Internet unter:
www.soell-organix.de/malwettbewerb

▶ Noch bis November läuft die Aktion.

Male platy, *Xiphophorus maculatus*, "Bleeding Heart" cultivated form.

be kept like the guppies and platies, the other two species should be treated like swordtails. The three species can be distinguished by the form of the erect dorsal fin in males, in other words when the latter are displaying among themselves.

Animal welfare

The argument that females are too severely stressed by the constant attentions of ready-to-mate males when there is an excess of the latter, is anthropomorphic and incorrect from a scientific viewpoint. So it is of no relevance in terms of animal welfare.

Because males and females of livebearing toothcarp species come into the world roughly in the ratio of 1:1 and all the specimens found in the trade are exclusively captive-bred, selling them in pairs must be regarded as optimal from an animal welfare viewpoint, as otherwise what is to become of all the superfluous specimens?

So the conclusion to be drawn from all this must be, buy platies, swordtails, mollies, and guppies as pairs or with an excess of males.

This attractive Marbled Molly belongs to the species *Poecilia sphenops* (Shortfin Molly).

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JBL PlanktonPur – DIE Revolution in der Fischernährung!

Tatsächlich jeder Fisch, nur absolute Nahrungsspezialisten ausgenommen, schnappt in seinem natürlichen Lebensraum nach vorbeischwimmendem Plankton. JBL hat nun eine Möglichkeit gefunden, frisches arktisches Plankton, ohne künstliche Konservierungsstoffe, haltbar zu verpacken (temperaturprozess-gesteuert).

Damit gibt es jetzt erstmalig die Gelegenheit, frisch gefangenes Plankton an Aquarienfische zu füttern. Die Akzeptanz ist so außergewöhnlich, dass Spezialisten, die JBL PlanktonPur vorab zum Testen erhalten hatten, händeringend auf den offiziellen Produktstart warten. Das Plankton ist absolut luft- und lichtdicht in Metallfolie verschweißt, die am Ende aufgeschnitten werden muss. Eine Packung JBL PlanktonPur enthält 8 Sticks mit je 2 oder 5 g Plankton und wird in 2 Sorten angeboten:

JBL **PlanktonPur M** (Medium) mit Krebstieren bis 2 mm Größe (95 % Calanus finmarchicus, 5 % Calanus helgolandicus) für Fische zwischen 2 und 6 cm Länge.

JBL **PlanktonPur S** (Small) mit Plankton zwischen 0,2 und 1 mm Größe. Es enthält eine Planktonmischung aus Copepoden (Ruderfußkrebsen), Schneckenlarven, Muschellarven und verschiedenen Copepoden der Arten Temora, Pseudocalanus, Paracalanus, Acartia, Centropages, Calanus und Oithona.

Die Planktonorganismen sind rein, gesiebt und ohne Konservierungsmittel verpackt. Der Verkauf startet ab 07.10.2013. Gratismuster zum Ausprobieren werden dem Aquaristik Fachmagazin (August-September Ausgabe) und der aquaristik (Ausgabe 5/13) beigelegt. Weitere Infos und Videos zu Fütterungsversuchen auf:

▶ *www.microsites.jbl.de/PlanktonPur*

Tortoises

The proper way to keep young tortoises

by Christoph Fritz, www.reptilia24.com

The season for tortoises is here once again. The pet trade is full of the charming little youngsters that hatched from their eggs during the summer. Anyone can keep these tortoises successfully. But only a few other animal species are subject to as many incorrect prejudices as tortoises.

Hence it is absolutely essential to research these animals before buying them. This article will provide a number of hints, but even so a good handbook on the rearing and maintenance of European tortoises should figure on the bookshelves of every serious tortoise-keeper !

Juvenile Spur-Thighed Tortoise, *Testudo graeca*. All photos: Frank Schäfer

Where to buy - breeder or pet-shop?

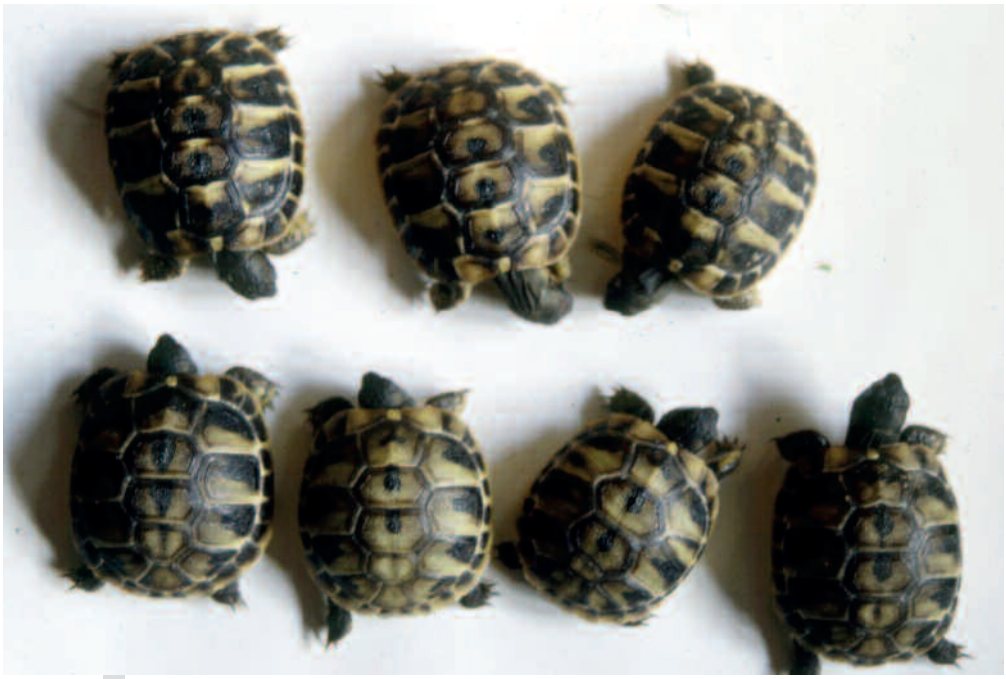
Essentially there is no difference at all, as without exception all baby tortoises in the trade are captive-bred. There has been a ban on taking them from the wild for the past 30 years. Hence even the specimens seen in the pet trade originate either from German breeders or from farms in southern Europe. On the Internet they should, essentially, be bought from reputable vendors. These are best recognized by their offering a proper service in association with the purchase. At the same time the cheapest are not necessarily the best choice. A little research on the vendor can do no harm. Or you can buy your tortoises somewhere where you can select them at your leisure, and where ideally you can also see the maintenance conditions.

Which species?

In the case of the beginner, only three species of European tortoises come into consideration:

Adult pair of Hermann's Tortoises, *Testudo hermanni* boettgeri. The male (the individual on the left) was incorrectly fed and kept in over-dry conditions when young, resulting in his humped carapace.

Firstly, the Hermann's Tortoise, *Testudo hermanni*, two subspecies of which are bred regularly. The eastern or "common" Hermann's Tortoise, *T. h. boettgeri*, which is very widespread in southern Europe (Bulgaria, Greece, Albania, Croatia, Bosnia and Herzegovina, Montenegro, Macedonia, Serbia, Romania, and parts of European Turkey) and the somewhat smaller western race *T. h. hermanni* (formerly *robertmertensi*), which is found only in parts of the western area of the species' range (Spain, Italy, France). The Hermann's Tortoise can be recognized by the horny "nail" on the end of the tail and by the marginal plate above the tail being divided centrally. Unlike *T. h. boettgeri*, *T. h. hermanni* has a yellow spot behind the eye and two parallel black bands on the ventral armor. The yellow spot is absent in *T. h. boettgeri* and there are large black spots on the ventral armor, but these do not merge to form bands. The eastern race grows to around 15-18 cm (males) and 18-25 cm (females) long, rarely with larger specimens, while the western race attains 10-15 cm (males) and 14-20 cm (females).

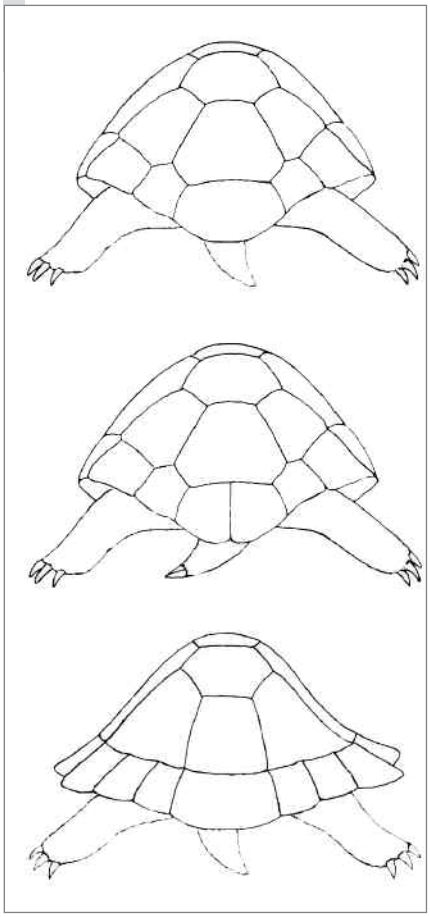


All the specimens in this photo are siblings that originated from the same clutch. Note that each specimen nevertheless exhibits individual markings and variations in the plates of the carapace. (*Testudo hermanni*, Hermann's Tortoise).

Secondly, the Greek or Spur-Thighed Tortoise, *Testudo graeca*, with 14 subspecies, whose distribution encompasses practically all the all countries in Europe and Africa that border the Mediterranean, and which also occurs in the Middle East (Iran, Iraq, Turkmenistan, Armenia, Georgia, Azerbaijan). To enumerate the differences between the subspecies here would be to go way too far, and in any case they usually cannot be detected in juveniles. It is sufficient to know that there are a very large number of subspecies, so that you don't inadvertently produce a mishmash when putting together breeding groups. The Spur-Thighed Tortoise has no horny nail on the end of the tail and the marginal plate above the tail is not divided. This species grows to 20-30 cm long.

The Marginated Tortoise (*Testudo marginata*) is the largest European tortoise species, exceptionally attaining 45 cm in length. Normally, however, it grows to only around 35 cm long.

Identification characters of European tortoises. From top to bottom: *Testudo graeca*, *T. hermanni* and *T. marginata*.



Thirdly, The Marginated Tortoise, *Testudo marginata*, with an unknown number of subspecies. This tortoise was probably originally found only in Greece south of Mount Olympus, but even in ancient times was introduced for food in many places around the Mediterranean. Thus the population on Sardinia probably derives from such an introduction by the Romans. Whether the slightly deviant appearance of the Marginated Tortoise on Sardinia justifies the erection of a subspecies (*T. m. sarda*) is a subject much discussed and hotly debated among biologists. The same applies to the dwarf form of the Marginated Tortoise, which has been described as the subspecies *T. m. weissingeri*. Some scientists accept this, others not.

With a length of more than 35 cm, the Marginated Tortoise is fundamentally the largest of the European species. Adult specimens are difficult to mistake because of the typical form of the carapace - a narrowing of the carapace in the posterior third followed by the broad, projecting marginal plates. When it comes to the tail and the marginal plate above the tail, juveniles resemble the Spur-Thighed Tortoise, from which they can be distinguished by examining the underside: juvenile Marginated Tortoises have a striking light and dark coloration to each of the ventral plates. In addition Marginated Tortoises lack the enlarged, spur-like scales always present on the thighs of the Spur-Thighed Tortoise.

The Horsfield or Russian Tortoise (*Testudo horsfieldi*) is also frequently offered for sale, but is so specialized in its maintenance requirements that we would prefer to devote a separate article of its own to it in a later issue of the News.

Different requirements?

By and large it can be said that the first three species have similar requirements and can be kept under similar conditions. All three species can be found together in certain habitats in Greece! Hence the recommendations below apply equally to the three species listed.

Babies live dangerously

Newly-hatched tortoises are hardly ever seen in the wild. Why? Well, the little creatures with their still relatively soft armor are easy prey for numerous animals. Snakes capture them with ease; every fox, dog, or cat can eat them; they are a delicacy for hedgehogs and other small carnivores; and danger also threatens from the air in the form of raptors and corvids. But once a

Adult specimen of *Testudo graeca* ibera of unknown provenance.

Baby *Testudo graeca ibera.*

Baby *Testudo graeca terrestris.*

Baby *Testudo graeca anamurensis.*

Baby *T. graeca* "East Anatolian Giant".

Female Hermann's Tortoise *T. h. boettgeri* from the Zadar area (Croatia).

tortoise reaches an age of around 10 years and begins to breed, then it lays on average 8-12 eggs year-round. An adult tortoise has hardly any enemies and can live to 80 years and even older in the wild. Hence it will produce around 700 eggs in the course of its life, and statistically speaking only two individuals need to grow to adulthood in order to maintain the population. From this it can be seen that the mortality rate among juveniles in the wild is immense and well over 90% of the offspring perish when still young. In order for any youngsters to survive at all they need to stay very much in hiding, and that is precisely what they do. Which explains why small youngsters are practically never encountered in the wild.

So what does this mean when it comes to terrarium maintenance? Quite simply, the terrarium, be it in the house or outside, must be arranged with numerous hiding-places so that the little ones can feel secure. But these hiding-places must also be easy for the owner to monitor, as otherwise he will lose control over what is going on. Cork bark is best suited to the purpose, as it is relatively light and so presents virtually no risk of injury to the young tortoises if the pieces are lifted every day for checking and then put back in place. If the tortoises

Adult female and juveniles of *T. h. hermanni* from the area around Rome (Italy).

are forced into a permanently visible existence then the more sensitive specimens among them will be subject to such long-term stress that sooner or later disease will set in, perhaps with fatal results. So, always provide hiding-places! If the tortoises don't use them then they can always be removed, but first make absolutely sure that the hiding-places aren't being avoided for reasons such as too hot or cold, too dry or wet, too difficult to get into, etc.

Not too dry!

Their secretive way of life also explains why baby tortoises are adapted to a higher degree of moisture in their environment than are adult individuals, which are often found in bone-dry areas. It is always somewhat damper in holes, beneath stones, and so forth than in the open countryside. If young European tortoises are kept in too dry an environment then the result may be unnatural deformations of the carapace, especially the dreaded hump development. Ideally they should be maintained on a relatively deep, loose, substrate comprising a mixture of one part each of sand, earth, and humus. This substrate should be about 10 cm deep and set with a number of shrubby plants: indoors the ideal is small palms (for example *Chamaerops humilis*), as they are very robust and can't be trampled down even by larger tortoises, while outside shrubby cinquefoils (for example *Potentilla fruticosa*), thymes, or lavenders can be used. If the watering is such that the plants grow well (ie no drying out or flooding) then the moisture level will always be correct for the tortoises as well.

Feed sparingly!

The second mistake that is repeatedly made is to feed much too much of a far too lush diet. Young European tortoises should be given exclusively grasses and greens (including lettuce, hay etc.), but never fruit, vegetable, meaty foods, soaked bread, or the like. The tortoises may well eat all this with enjoyment, but it is extremely unhealthy for them. Nature is parsimonious in the natural habitat! They are unable to travel far for food in the wild as they wouldn't survive such wanderings. So they search

for food in the relatively limited area around their hiding-places, and there won't be all that much there. Food too rich in calories is undoubtedly the commonest cause of death in young tortoises in captivity. In practice this means that unlimited amounts of dry, nutrient-poor, but roughage-rich food such as hay and hay pellets should always be available. In addition you can give a handful of mixed fresh food (plantains, dandelions, clover, grasses, etc) per individual per day or, if nothing is available from the meadows, salad leaves such as Rocket, Romaine lettuce, Endive, or Lamb's Lettuce. Iceberg and cabbage lettuce should be avoided, they aren't particularly healthy.

Lots of light!

Light is of immense importance for keeping European tortoises healthy. Here too well-planned planting can be very helpful: if the plants listed above are growing well then there is also sufficient light and its composition is suitable for the tortoises. UV light is of particular importance. As in us humans, Vitamin D3, which is of great importance in bone metabolism, is synthesized in the skin of reptiles under the influence of UV light. Softening of the bones (best seen in the shell, which is, after all, composed of bone) can be the result of too little UV light. The trade offers a huge selection of UV-light sources, providing something suitable for every need. But be aware that UV light alone cannot replace the amount of full-spectrum light required! The amount of full-spectrum light has a huge effect on the hormone budget of tortoises; without adequate light they will certainly fall ill.

Singly or in groups?

European tortoises are essentially solitary in the wild and come together only to mate and in response to particular triggers (overwintering; local, seasonal reductions in food supply). They do not become imprinted on humans and even a newly-hatched baby tortoise knows instinctively that it is a tortoise, as it will never have known its mother or another adult tortoise in the wild. European tortoises always become tame, ie they learn to recognize humans as a source of food and react to them accordingly. All this is independent of whether they are kept singly or in groups.

Adult *T. graeca* ibera from Turkey.

The advantage of group maintenance is that individuals kept in groups experience more social stress, which has a positive effect on their health. Unlike in everyday usage where the word "stress" always has negative connotations, scientists draw a very clear distinction between negative stress (the technical term is "distress") and positive stress ("eustress"). Either can cause illness if it outweighs the other to a significant degree. Too much peace and quiet can be just as harmful as too much excitement. A balanced mixture is ideal.

Many animals experience too little negative stress in captivity, as predation pressure is lacking, and likewise the harmful environmental influences that cost very many lives in the wild are largely absent. In addition parasite pressure is very much lower in captivity than in the wild. So in terms of maintaining good health the negative stress resulting from social stress (ie competition for food, squabbling over the best hiding- and sunbathing-places, etc.) is very beneficial and hence group maintenance is preferable to keeping them singly. In addition it will provide the owner with numerous opportunities for interesting observations on the social interactions of the tortoises

As mentioned at the beginning, an article like this cannot and should not try to be a substitute for a comprehensive handbook. It is intended to provide advice on the commonest causes of mistakes in the maintenance of baby tortoises and how to avoid them. Major and important topics such as "outdoor or terrarium maintenance", "terrarium and pen size", and "over-wintering" have been deliberately omitted, as they are beyond the scope of an article like this. They will instead be discussed in another issue of the News.

If you are now filled with the desire to keep European tortoise babies then you can obtain them via www.reptilia24.com, for example, or get your pet dealer to order them for you there.

Baby Marginated Tortoise, *Testudo marginata.*

Freshwater fishes

A new star in the dwarf sky: The Neon Blue-Eye

by Wolfgang Löll

The blue-eyes (*Pseudomugil*) are a group of small fresh- and brackish-water fishes. At present there are some 15 species known from Australia, New Guinea, and a number of smaller islands in the region.

Male Neon Blue-Eye. All photos: Frank Schäfer

From a scientific viewpoint *Pseudomugil* are nothing new. The genus was described as long ago as 1866 by Rudolf Kner for the species *P. signifer* , and Max Weber supplemented it with the species *P. novaeguineae* in 1907 and *P. gertrudae* in 1911. Then everything went quiet for a long time regarding these dainty little fishes. They first appeared in the aquarium hobby in Europe in the 1970s. Until then nobody had any idea what breath-taking little jewels they would be in the aquarium.

Females of the red variant of the Neon Blue-Eye.

Numerous new species

In 1955, 1964, and 1978 three further species were described, but only with the awakening of aquarium-hobby interest did the study of the group take a huge upturn. Some 10 of the 15 species known to science were first discovered and named between 1981 and 1999. Of course it is always difficult to say who has the most influence on whom, science on the aquarium hobby or the aquarium hobby on science. In the case of the newly-discovered Neon Blue-Eye, however, the aquarium hobby is a step ahead and is now waiting for the scientists to undertake the formal naming of the species.

The Neon Blue-Eye

The aquarium world first became aware of this new, spectacularly colored little species - maximum length is only around three centimeters - at the end of 2012. The first imports were still very expensive, but the new blue-eyes proved to be completely hardy and very easy to breed. In the meantime both German tank-breds and imported specimens have become available, though it remains unclear whether the latter are wild-

Aquaristika - Aquaristikmesse Schweiz

Das internationale Messe Erlebnis für Aquarianer, Fachleute und die ganze Familie.
Am 21. & 22.09.2013 findet die 2. Schweizer Messe für Aquaristik statt.

Das Messegelände der Vianco Arena Brunegg ist prädestiniert für Grossveranstaltungen dieser Art. Die Halle befindet sich direkt bei der Autobahnausfahrt Mägenwil und ist sehr gut mit Bus und Bahn erreichbar. Die Entscheidung der Organisatoren, die Messe in der Vianco Arena durchzuführen, begründet sich darin, dass das Messegelände sehr zentral liegt. Sie ist von Bern/Basel/Zürich jeweils in max. 1Std zu erreichen. Die Ausstellung bietet nebst einer Aquaristik- und Teichmesse auch privaten Züchtern die Möglichkeit Ihre Tiere an einer Börse präsentieren zu können. Auf 2000m2 Ausstellungsfläche im Innenbereich für die Austeller der Aquaristik und die Teilnehmer der Tierbörse sowie weitere 1000m2 Ausstellungsfläche im Aussenbereich bieten ein breit gefächertes Angebot.

Technik, Wasseraufbereitung, Beleuchtung, LED, Filter, Aquarien, Futter, Meerwasser-, Süsswasseraquaristik und viele Neuheiten werden angeboten. Die Aquaristika bietet an beiden Tagen die Möglichkeit, die Produkte zu erstehen welche in der Aquaristik und Teichbranche angeboten werden. Aktuelle Informationen sowie eine Anfahrtsbeschreibung erhalten sie auf:

www.aquaristika.ch

Das Messeteam der Aquaristika freut sich auf Ihren Besuch.

Aquaristika.ch

HIKARI First Bites -
Die Aufzuchtnahrung für alle Jungfische

HIKARI First Bites mit ausgesuchtem Fischmehl liefert hochwertige Proteine und essentielle Aminosäuren für ein schnelles und gesundes Wachstum für alle Arten von Jungfischen. Die langsam sinkende Nahrung in feiner Pulverform sorgt für eine hohe Akzeptanz bei den Jungfischen und ist besonders ergiebig. Die optimale Vitamin- und Mineralstoffzusammensetzung von HIKARI First Bites unterstützt zudem die Immunabwehr der jungen, sensiblen Aquarienbewohner. HIKARI First Bites ist im 10g-Beutel im ***www.pet-experts.eu*** Online-Shop erhältlich.

caught or captive-bred. The specimens first imported have a rich, orange-red base color. The vertical fins are the same color, and the tips of the caudal fin and the pectoral fins yellowish-white in males. A neon-blue iridescent band runs along the back.

Two color forms known already

A short time ago a second color form was imported from Indonesia. In these likewise very attractive fishes the body base color is more of a yellow. But the males of the new form are easier to distinguish from the variant first imported by having deep orange-colored tips to the caudal fin and almost transparent pectoral fins, again with orange tips. There is very little doubt that both Neon Blue-Eyes belong to the same species, although the yellow form also differs somewhat from the red in body shape: the former is somewhat slimmer and has a more pointed head. But the neon-colored dorsal band alone makes the species unmistakable. However, the females of the two variants look extremely similar. It will be very important not to mix them up as otherwise there is a danger of crosses, as it is likely that the two variants of the Neon Blue-Eye will interbreed readily.

What are the closest relatives?

There is very little doubt that the Neon Blue-Eye is a very close relative of the long-known Spotted Blue-Eye, *Pseudomugil gertrudae*. The latter species was the third of all the *Pseudomugil* species to become known and was, as already mentioned earlier, described from the Aru Islands by Max Weber back in 1911. The Aru Islands lie around 150 km south of New Guinea. They are, geologically speaking, young, or more precisely the sea that separates the Aru Islands from New Guinea and Australia is recent. Until 10,000 years ago there was still a land connection between the Aru Islands and New Guinea and Australia. This also explains why *Pseudomugil gertrudae* occurs not only on the Aru Islands but also in New Guinea and Australia, even though the species is a freshwater fish.

Courting male of the red variant of the Neon Blue-Eye.

However, numerous different local forms have evolved within the huge range of *P. gertrudae*, and these sometimes differ very clearly from one another in their coloration.

The Spotted Blue-Eye is without any doubt a very close relative of the Neon Blue-Eye, and, like the latter species, again grows to only around three centimeters long.

This new, rather yellow color form of the Neon Blue-Eye was first imported by Aquarium Glaser in June 2013.

Two rival males of the yellow form of the Neon Blue-Eye.

Paska's Blue-Eye

In 1986 Gerald R. Allen and Walter Ivantsoff described a new blue-eye from New Guinea under the name *Pseudomugil paskai*, popularly known as Paska's Blue-Eye. This species is extremely similar to *P. gertrudae* and distinguished primarily by the development of the fins. At present this blue-eye appears not to be present in Germany, so unfortunately we can't include a photo of it here.

Pseudomugil gertrudae, aquarium strain, male.

We now know that *P. paskai*, *P. gertrudae*, and *P.* sp. "Neon" form a closely-related group of species, so it is unwise to term the new species *P. cf. paskai*, as was initially the case.

A cultivated form?

At present the localities for the Neon Blue-Eye in New Guinea remain secret. Evers (2012) gives a clear indication that the species comes from the drainage of the Kopi River. In addition the exporter in Indonesia confirms that it is a natural form. This has also been confirmed by DNA studies already performed, which revealed that the Neon Blue-Eye is no hybrid but a distinct species. But as long as no locality data are available, no serious scientific study of the species can take place.

Maintenance and breeding - easy!

Fundamentally the Neon Blue-Eye doesn't pose any stringent demands. Unfortunately, of course, nothing can as yet be said about the natural habitat, but it certainly wouldn't be inappropriate to deduce that the Neon Blue-Eye occurs under similar ecological conditions to *P. gertrudae* and *P. paskai*. These two species occur mainly in small flowing waters with brown "black water". So far only a few sites are known for *P. paskai*, while *P. gertrudae* has been reported from a multitude of locations. Almost all contain "black water", that is soft, slightly acid water stained deep brown by assorted leaves, dead wood, earth, etc. The range of measurement in the wild is, however, large (according to Tappin, 2010): water temperature 12-34 °C, pH 3.68 - 9.4, conductivity 12-646 µS/cm, total hardness 0-18° dGH. The fishes are thus fundamentally very adaptable. However, we mustn't forget that the mortality rate of fishes in natural waters is enormously high, at least compared to in the aquarium. Nature can afford to be prodigal, while aquarists can't always, and hence extremes should be avoided. A water temperature between 18 and 28 °C, a pH between 6 and 8, with soft to medium-hard water, are conditions that can usually be regarded as being on the safe side.

Neon Blue-Eyes are, like their closest relatives, continuous spawners. These fishes should always be kept in a shoal of 10 specimens or more. Spawning will take place almost every day, though there may sometimes be breaks in spawning and that is normal. The eggs are deposited by preference on feathery-leaved plants or their roots, and breeders also like to use spawning mops made of wool. The eggs require between eight and 40 (!) days to develop; the long ripening period of the eggs is one of the main demands placed on the breeder. The fry always swim immediately beneath the water's surface and can usually take freshly-hatched *Artemia nauplii* right away; they are themselves ready to breed after around three months. Maximum life expectancy in the aquarium is around four years, but *P. gertrudae* usually live for only a year in the wild.

All in all the Neon Blue-Eye is a breath-taking new discovery which we hope enjoys a meteoric aquarium career!

Lexicon

Blue-Eyes

Pseudomugil means "false Mugil"; Mugil is another fish genus.
gertrudae: dedication in honor of Gertrud Merton, the wife of the discoverer.
paskai: dedication in honor of M. John Paska, one of the co-discoverers of the species.

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Aqualog KIDS

Red mini-flitters - shrimps for kids

You may already be familiar with shrimps from holidays by the sea. But they also occur in fresh water. Dwarf shrimps are very small, growing to only 2-3 cm long, and you can also keep, observe, and breed them at home in the aquarium, which is a whole lot of fun and will enable you to learn a lot. The fire-red dwarf shrimps are the easiest to keep.

Male

Female

Fire-red dwarf shrimps are bred in numerous colors. Yellow individuals are also very popular at present.

Many colors, many names, one species

Just as there are people with different colored skin and hair, dwarf shrimps exist in many different colors: blue, red, yellow, checkered, brown, etc, and many of these color forms have their own special names. They nevertheless all belong to the same species and can also breed together and produce young. The fire-red dwarf shrimp is, however, the form most commonly found in the pet trade.

Very easy to keep

There is no other pet that is so easy to keep. Normally you need to do virtually nothing at all, just add a few dry leaves to the aquarium now and then and change part of the water every two weeks. If you go on holiday then you can leave the shrimps alone without worry. Just feed a few more leaves than normal, and then you can easily leave the aquarium and the shrimps to their own devices for three or four weeks. But when you are at home there are all sorts of tastier foods that you can buy for your shrimps. It is a lot of fun to watch them feeding. They pick at the food with their tiny clawed hands and stuff it into their mouths.

Small males, large females

Males are smaller and slimmer than females. The females brood the eggs alone, carrying them around with them beneath the rear part of the body until the young hatch. This takes 2-3 weeks. The norm is 20 to 40 young per brood. The babies feed on very fine mulm, the term for the silt that forms in the aquarium over time. The parents don't look after the young, and males and females don't pair permanently either. For this reason it is best to buy 10 to 12 specimens. Such a group will always contain males and females that get along well together.

Infobox for Parents

Dear parents,

Dwarf shrimps can be kept and bred in small aquaria with a volume of just 10-20 liters. Before buying them you should purchase a handbook on setting up and maintaining an aquarium or borrow one from your local library, and read it together with your child.

The correct name for the fire-red dwarf shrimp is Neocaridina heteropoda. This is important as there are other red dwarf shrimps that are much harder to keep. Neocaridina heteropoda can be kept in any sort of mains water. No heating is required for the species, which tolerates any temperature between 4 and 30 °C. Because there is a danger of this adaptable species surviving in the wild here in Europe and maybe causing a lot of harm, you should never release dwarf shrimps or flush them down the toilet.

The eggs can readily be seen on this checkered female - the color form is called "Rili".

The main diet of dwarf shrimps is decaying plant material, which in the wild means dead leaves. You can put four or five Beech, Oak, or fruit-tree leaves in the aquarium without any worries. But they must be dead, fallen autumn leaves. The trade offers a range of excellent substitute foods, but there should always be dead leaves in the aquarium as well.

Hazards

These shrimps don't transmit any known diseases, can't bite or nip, and are completely harmless. You need only to teach your child that electrical equipment should never come into contact with water

Terralog KIDS

Banded snails - super colorful!

If you go out into the garden or to the playground on a rainy day, then you will find almost certainly find beautiful colorful snails. They are sometimes called banded snails. You will usually find two species: one with a dark opening to the shell - the Brown-Lipped Snail (Cepaea nemoralis), and one with a light opening - the White-Lipped Snail (Cepaea hortensis). Every individual snail looks a tiny bit different. You can easily keep and breed these snails at home and thus learn a lot about them.

Every snail has a somewhat different coloration. The Brown-Lipped Snail can be recognized by the black edge to the shell opening.

By contrast the edge of the shell opening is the same color as the rest of the shell in the White-Lipped Snail.

Two are always a pair!

Banded snails are hermaphrodites. This means that each individual is simultaneously a male and a female. For this reason two specimens are always a pair and can produce young together. Banded snails lay eggs, which they bury in the earth. You can experiment to see what color the young are when you pair adults of different colors and when you put a look-alike pair together. But Brown-Lipped Snails and White-Lipped Snails will never produce young together as different species can't do that.

Two snails of the same species are always a pair.

Veggies with a hunger for calcium

Banded snails eat lots of different plants: pieces of fruit and vegetables, lettuce, and weeds, especially dandelions. But everything must always be organic, as otherwise the snails may die! You can experiment to find out what your snails like to eat best. Write down all your observations and experiments carefully, ideally in a special notebook of their own! Snails in the terrarium require not only greenstuff but also chicken eggshells as food. You need to hard-boil an egg (please ask your parents first!) for 10 minutes, shell it, and leave the shell on a window ledge to dry out nicely. Then you can use it as food.

Not only out and about during rain

Snails remain asleep when the sun is shining outside and the weather is dry. But in the terrarium they will be active if you spray them hard with lukewarm water from a plant-spray. You should do this in the morning and evening. Never leave the terrarium in the sun, it should always remain in the shade all day as otherwise it will be too hot for the snails and they may even die. But the snails won't need a water dish, and using one could even be dangerous as they could easily drown.

Info box for parents

Dear Parents,

Banded snails are very common and not protected, so it is OK to collect them. But only a few specimens please, which can then be looked after properly! If your child loses interest in the snails then you can put them back where they came from between the beginning of March and the end of October, ideally on a rainy day.

Setting up the terrarium

The terrarium should measure around 40 x 20 x 20 cm (larger will be fine, but significantly smaller is not a good idea because of the large amounts of droppings that snails produce). It must be of all-glass construction, have sliding doors at the front, plus a lower and an upper air slot. Preserving jars and plastic terrariums are not suitable as air exchange won't work properly in them: carbon dioxide will accumulate at the bottom and poison the occupants. The terrarium should be filled to the level of the lower air slot with terrarium soil from the pet store. Don't use potting compost, which often contains fertilizer or pesticide residues. And don't use garden soil as it will rapidly become rock hard in the terrarium and it may contain "germs" that cause snail diseases. Don't use peat, as the acid pH won't suit the snails. You can use stones, bogwood, and twigs as decoration.

Maintenance tasks

Provide fresh food every day and spray lukewarm water with a plant spray until all the walls of the terrarium are damp. The food may be wilted a bit (sometimes it is particularly enjoyed that way), but neither rotten nor moldy. Twice a week the inside of the glasses should be wiped clean with a damp cloth. The substrate must be damp but not wet. It isn't usual to change the substrate as the snails lay their eggs in it. If the soil begins to smell, however, you can collect the eggs from it and refill with fresh soil. If this happens it usually means that the terrarium is too small or inadequately aerated, too much food is rotting away, or there are too many snails in the tank.

Hazards

Your child can learn the normal rules of hygiene through dealing with the snails (ie washing hands after handling, not putting snails in mouths, not eating any food left by the snails), but there are no known diseases that can be transmitted to humans by banded snails. The snails are completely harmless!

Environment

Buy a fish and save a tree

by Ulrich Glaser, Geschäftsführer Amtra Croci GmbH

"Buy a fish and save a tree" is at first glance a rather incomprehensible statement, but it's true! As the export of more than 30 million ornamental fishes per year from the Amazon region in Brazil makes an important contribution to the retention of the rainforest and provides a living for the indigenous population of the region. amtra, as a manufacturer of aquarium maintenance products, has been supporting the project for years.

In September 1991 the self-styled "fish-nerd" Scott Dowd from Massachusetts fulfilled a long-cherished dream. He traveled in the Amazon region, the home of some of the most popular freshwater ornamental fishes such as the Cardinal Tetra and the Discus. "At sunrise my boat was afloat on the Rio Negro, flocks of squawking macaws traversed the sky, and otherwise there was just endless water and green forest as far as the horizon", remembers Scott. The water beneath his boat teemed with gorgeous ornamental fishes, many of which he had kept in the aquarium since he was ten years old. And now he had come to the place where these fishes were found, Barcelos, a town in the heart of the Amazon region.

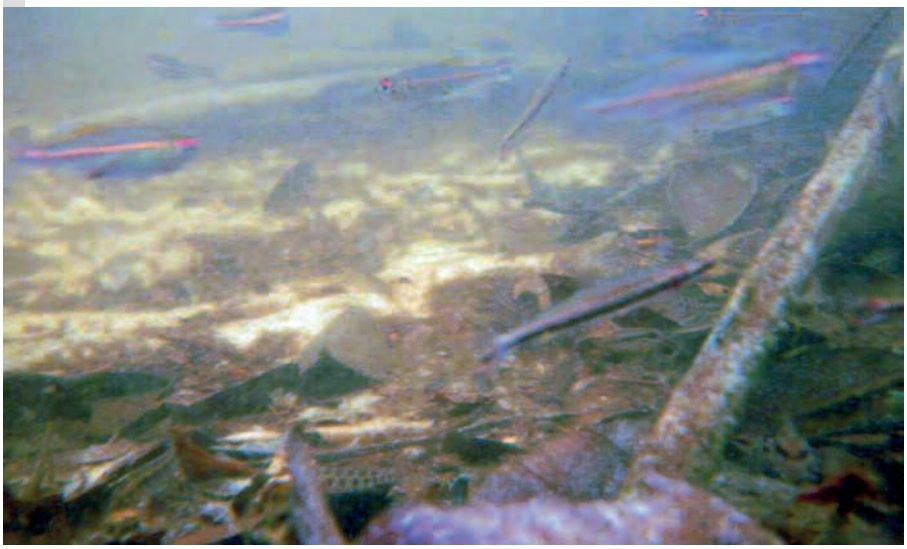
Typical forest stream (igarapé) in Brazil, home to innumerable aquarium fishes.

But when he arrived there he was initially horrified. On the riverbank he found a multitude of men who had tied up their little boats and were delivering hand-woven, plastic-lined baskets filled with water and containing masses of ornamental fishes caught in the nearby rivers and streams. The collecting area worked by the fishermen was around 75,000 km², about a quarter of the size of Germany. The collecting baskets were loaded onto a passenger steamer where they occupied the entire lower deck. The steamer transported them to Manaus, around 450 km away. The fishes were delivered to the exporters there, who then dispatched them all over the world.

His first reaction was, "Something isn't right here, so many wild-caught fishes leaving the region". But nowadays, 23 years later, he knows better: "The collecting of ornamental fishes in this region makes an important contribution to the regional economy while simultaneously conserving its resources and hence preserving the rainforest in its original form". It is a fact that the roughly 40,000 inhabitants of the Barcelos region earn up to around 60% of their living from collecting ornamental fishes – the locals call them piaba (= little fish).

And thus arose the idea of the Project Piaba Eco Amazon, and when Scott Dowd isn't busy training Electric Eels or working with Anacondas at his current workplace, the New England Aquarium in Boston, then he invests every spare minute in promoting and supporting this project, which was founded in collaboration with the University of Manaus and with support from the United Nations. Its declared goal is to conduct the collection of piaba, the unique ornamental fishes of the Amazon region, in

Underwater scene in the igarapé: *Hemigrammus bellottii, Curimatopsis evelynae, Nannostomus unifasciatus, Apistogramma agassizii, Dicrossus maculatus* - a huge, colorful aquarium!



an environmentally-friendly and professional manner and to train the fishermen on the spot so they are better qualified for the work. This means that the inhabitants of the region can earn their living in a sustainable fashion and are not forced to resort to alternative sources of income such as the felling of forest with all the well-known associated

School bus in the Barcelos region.

problems. Scott Dowd is currently the leader of the project.

It is fascinating to watch how the local fishermen collect the fishes carefully and very skillfully with their little nets. The entire family, whose life takes place almost exclusively on the veranda of their straw-thatched hut on the river bank, helps with the work. They sort the fishes and transfer them into baskets using hollowed-out gourds. Unwanted bycatches are sorted out on the spot and returned to the water.

"I know of no other more environmentally friendly fishery," enthuses Scott. But we

A typical settlement on the Rio Negro. All photos: Ulrich Glaser

cannot help but ask how even so large a region can cope with the annual removal of more than 30 million fishes? Scott explains it to us. The entire, vast Amazon region is affected by dramatic fluctuations in water level. Every year, during the dry season, the water level drops by around 10 meters, in order to rise again very dramatically during the rainy season. This is, by the way, the reason why the houses of the local people are built on tall stilts on the bank. When the water level sinks millions of ornamental fishes disappear, trapped in evaporating pools or puddles. Evolution has adapted to this. Many species produce enormously large numbers of offspring via the production of hundreds, sometimes even thousands, of eggs by a single mother fish. In this way the population recovers again with every rainy season.

In fact the fishes that are collected and exported to aquaria all over the world are better off, as numerous fishes live for many years in the aquarium, while in the natural habitat they survive for only one season,

School children in the Barcelos region. Many of their families earn their living by collecting ornamental fishes.

Impression of the Rio Negro, the home of the Cardinal Tetra and many other popular aquarium fishes.

until the next dry period. "A Cardinal Tetra that manages to survive from the previous year in the Rio Negro is a real veteran," jokes Scott.

In the course of evolution the fishes have adapted to the extreme living conditions in the dark, humin-stained, very soft water and have sometimes evolved surprising, even bizarre lifestyles: the Marbled Hatchetfish, ever popular in the aquarium, can leap a long way out of water, as can a tetra species that jumps out of the water to spawn, attaching its eggs to the undersides of leaves and thus protecting them from predators.

We at amtra have worked closely with Project Piaba right from the start. The project is an ideal fit with the precept to which we have dedicated ourselves at amtra for more than 25 years – keeping fishes following Nature's example. For careful preparation of the water is indispensable in providing of the piaba with a natural biotope in their new home, the aquarium. But this means avoiding chemically aggressive substances that can spoil the water. amtra has relied on the power of Nature since 1986. amtra is the only company on the market to offer a mains-water conditioner that contains only pure, natural ingredients, and specifically the substances that are present in large amounts in tropical soft-water rivers and streams, the so-called DOC (dissolved oxygen carbon) compounds. These are, for example, responsible for the dark amber coloration of the Rio Negro, the home of by

Aquarium-fish collector at work.

far the most popular aquarium fish, the Cardinal Tetra.

If you have any other problems then always ask for the natural solution from amtra. Your local aquarium store will be pleased to help you.

Because we at amtra, just like the UN, are convinced of the sense of Project Piaba Eco Amazon, we promote it wherever possible. You can do so as well by buying amtra pro nature products. We undertake to donate part of our profits to Project Piaba Eco Amazon.

Scott Dowd and we at amtra are working together on a new idea, the development of a QR code. Scanning this will link the ornamental fish enthusiast with a web page where he can see how he can help preserve one of the world's unique landscapes by buying piaba and amtra products. "if it helps the families to make a living in harmony with the unique world of the Amazon, then it is a good thing," says Scott.

We agree, and we're working on it.

Lizards

Bearded Dragons

are always in

by Thorsten Holtmann

More than 30 years ago Australia imposed a total ban on the export of reptiles and amphibians. As a result since then people have resorted to keeping popular species available via captive breeding. This has worked very well for all the affected species, but none so successfully as the Bearded Agama.

Baearded Agamas live a hard life in the wild. They are true desert dwellers that suffer a constant lack of food and water. And they in their turn are an important source of food for carnivores. Bearded Agamas counter these challenges with a variety of strategies: thus they eat pretty much anything that fits into their mouths, get by with very little water, and breed extremely abundantly. This method of survival functions not only in the desert, but also under terrarium conditions. And this is one of the basic reasons why the Bearded Agama has become a perfect terrarium occupant.

Naturally tame

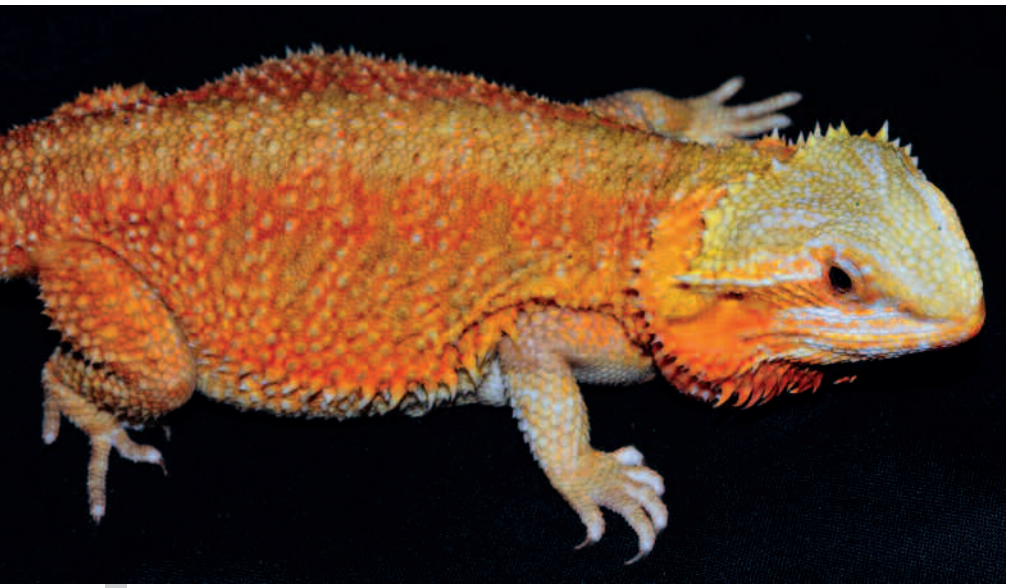
But a second such basic reason is that by nature Bearded Agamas exhibit very little fear of humans and have a rather phlegmatic approach to life. In the wild this behavior helps to conserve valuable energy resources. No animal wastes energy unnecessarily, but for an animal from a habitat with so little food as that of the Bearded Agama to do so would be a senseless invitation to a death sentence.

In addition the Bearded Agama bites only rarely, a characteristic that is seen as a positive by the majority of animal owners. There may be individual variations, but normally a Bearded Agama gives plenty of warning by opening its mouth wide, lowering its "beard" in threat, and hissing, before it bites.

Interestingly it has only recently been discovered that Bearded Agamas possess primitive poison glands, whose purpose remains totally unclear at present, however. No signs of poisoning in humans have been described. Thus a bite from a large Bearded Agama may well bleed, but apart from the treatment of the wound with antiseptic usual for any animal bite, no further medicinal measures are required.

Red specimens are a particularly popular cultivated form of Bearded Agama.

All photos: Frank Schäfer



The names used for cultivated forms are very fanciful: this is the Blood Sandfire.

The cute factor

Its undemanding nature and tameness were certainly important factors in the triumphal progress of the Bearded Agama through the terrariums of the world. After all, the Bearded Agama is thought to be the reptile most frequently traded all over the world! But a pleasing appearance is also important. And the Bearded Agama offers that in several respects.

Firstly, the Bearded Agama - zoologically speaking "the" Bearded Agama belongs to the species *Pogona vitticeps* - has the broadest head of all Pogona species. This makes juveniles in particular look particularly charming to us humans. Creatures with large heads instinctively awaken protective urges in us humans. This is probably a decisive reason why of the remaining seven Pogona species, only *P. henrylawsoni* has achieved any degree of terrarium-hobby importance; the other species are maintained only by specialists.

Widely distributed and rich in variants

In the wild the Bearded Agama is distributed over a large part of the desert regions of eastern central Australia (New South Wales, Northern Territory, Queensland, South Australia, Victoria). It is considered completely unendangered in the wild and isn't included on the IUCN Red List.

Not surprisingly, within this huge distribution region there are local differences in the appearance of the populations. Witten & Coventry (1990) studied a dwarf population from the Big Desert (Victoria), but found that apart from the fact that these specimens attained a head-body length of at most only 17.5 cm (as opposed to 25 cm in the other populations studied to date), there were no significant differences that would justify erecting a separate subspecies or even species.

But a wide distribution is almost always a prerequisite for a completely different phenomenon: the occurrence of cultivated forms. As the crossing of individuals from different populations that never encounter one another in the wild leads relatively quickly to genetic patterns that manifest externally, including in coloration for example. If such specially colored specimens are then bred together deliberately then the result is cultivated forms like those illustrating this article.

Inbreeding - a problem?

The term "inbreeding" always has negative connotations for amateur breeders. This is because among humans very close relatives shouldn't have children together as there is a danger of genetically-induced deformities or illnesses resulting. But this is of no concern in animal breeding. Without close inbreeding there wouldn't be a single domestic form of animal, ie no dogs, no cats, no cattle, sheep, or horses, no chickens, and no Bearded Agama color forms. The Bearded Agama color forms are essentially just as healthy and fit for survival as their wild-colored and wild-living cousins.

Beware of overbreeding

You should, however, be suspicious if Bearded Agamas are offered at knock-down prices. The reproductive rate of Bearded Agamas is very

Tricolor cultivated form, "Rainbow".

Bearded Agamas sometimes threaten a lot, but only very rarely bite.

News Veranstaltungstips

Aquaristika – Aquaristikmesse Schweiz
www.aquaristika.ch

21.09. – 22.09.2013 I Vianco Arena, Brunegg
Täglich von 10 – 18 Uhr geöffnet

Messe für Aquaristik und Teich

aqua EXPO Tage 2013
www.aqua-expo-tage.de

04.10. – 06.10.2013 I Dortmund
Täglich von 10 – 18 Uhr geöffnet

Faszination Unterwasserwelten:
Show & Ausstellung, Information, Präsentation

heidenheimer aquaristik-triennale
www.esemge.de

19.10. – 20.10.2013 I Congress Centrum, Heidenheim
Samstag von 9 – 18 Uhr geöffnet
Sonntag von 11 – 17 Uhr geöffnet

Messe . Börse . Foren

4. Aquaristik Tage Ulm
www.uag.de

01.11. – 03.11.2013 I Messegelände, Ulm
Täglich von 10 – 18 Uhr geöffnet

Faszinierende Unterwasserwelten erleben !

TIERISCHgut Haustiermesse Karlsruhe
www.tierischgut-karlsruhe.de

09.11. – 10.11.2013 I Karlsruher Messe und Kongress
Täglich von 9 – 18 Uhr geöffnet

Hund, Katze, Fisch & Co.

Terrarienbörse Hannover
www.terrarienbörse-hannover.de

01.12.2013 I Glashalle Hannover Congress Centrum

Terraxotica Germany (Terraristikbörse)
www.terraxotica-germany.de

29.09.2013 I Wiesengrundhalle, Kellinghusen / Hamburg
13.10.2013 I Stadthalle Chemnitz, Chemnitz
27.10.2013 I Halle Gartlage, Osnabrück
03.11.2013 I AMO Kultur- und Kongresshaus, Magdeburg
17.11.2013 I Messe Bremen - Halle 3, Bremen mit Giftlierbereich

Juvenile of a "Striped" cultivated form.

high. Females produce between 11 and 16 eggs in every clutch. Sexual maturity is attained at the age of 2-3 years and females can produce several clutches per year. And that is precisely the point: even though Bearded Agamas lay eggs, and hence the embryos aren't nurtured via the uterus as in mammals, the subsequent fitness of the young is nevertheless strongly dependent on the state of health of the mother.

There are short-sighted breeders who see only the chance of a quick profit and treat their females as regular breeding machines. Among enthusiasts this is known as overbreeding, and the resulting youngsters are very often susceptible to disease and not properly equipped for survival. These phenomena are then, out of ignorance, blamed on "inbreeding", when in fact inbreeding has nothing at all to do with it. Responsible animal breeding always involves

Just a reminder of what wild-colored babies look like.

stringent selection and proper treatment of the breeding stock. That costs money and hence top quality Bearded Agamas are always somewhat more expensive.
Good quality Bearded Agamas will always provide you with a lot of enjoyment. No other reptile combines robustness, attractiveness, and ease of maintenance in such an ideal manner.

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

This cultivated form is called "Cawley".

Literatur:
DPIPWE (2011): Pest Risk Assessment: Central bearded dragon (Pogona vitticeps). Department of Primary Industries, Parks, Water, and Environment. Hobart, Tasmania.
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Witten, G. J. & A. J. Coventry (1990): Small Pogona vitticeps (Reptilia: Agamidae) from the Big Desert, Victoria, with notes on other Pogona populations. Proceedings of the Royal Society of Victoria 102 (2): 117-120

Sea water

Ancient nobility:
Soldierfishes and squirrelfishes

by Levin Locke

Anyone seeing a soldierfish of the genus *Myripristis* for the first time will probably immediately think "mooncalf". The huge eyes and short snout look very odd. But these fishes are anything but mis-shapen. They have inhabited the seas very successfully for millions of years and are among the most ancient of fishes that exist today

Some 65 species divided between eight genera belong to the soldierfishes (Holocentridae).

They are divided into two subfamilies, the squirrelfishes (Holocentrinae) and the true soldierfishes (Myripristinae). The two subfamilies are most easily distinguished on the basis of the form of the snout: blunt and round in the soldierfishes, relatively pointed in the squirrelfishes. Moreover squirrelfishes always have a long spine on the lower edge of the operculum, while this is absent in the soldierfishes.

Whence the popular names?

When, around 250 years ago, the study of the tropical fish fauna began, the sometimes splendid, but always striking coloration of soldierfishes reminded scientists of the military uniforms of the 18th century. Because soldierfishes are predominantly red in color and the coats of the infantry back then were likewise often red (a practical color, as blood spots don't show up on it all that much) they arrived at the name soldierfishes.

In Germany the squirrelfishes are known as hussarfishes, again because their striped coloration reminded the early ichthyologists of the braided jackets of the hussars (lightly armed cavalry). The English name squirrelfishes relates to the fact that there are large numbers of striped squirrel species in North America.

Myripristis adusta from Sri Lanka. All photos: Frank Schäfer

Peaceful fellows

Despite their saber-rattling popular name, all soldierfishes (and squirrelfishes) are very peaceful fellows and that, along with their attractive colors and unusual shapes, makes them generally desirable as aquarium fishes.

Soldierfishes will never attack other fishes or even behave badly towards their owner. But some circumspection is nevertheless required when dealing with them, as all Holocentridae have numerous sharp spines on their bodies and fins, and the squirrelfishes also have a long spine on the lower edge of the operculum. This spine even secretes a poison in some species (recorded in *Sargocentron*).

But nobody has ever died as a result, although "stings" are described as very, very painful. However people with allergies should be particularly careful when dealing with these fishes. Bathing the injured part of the body in very hot water (as hot as is bearable) usually brings quick relief, as the poisons in question are very temperature-sensitive protein compounds.

Myripristis jacobus from the Caribbean.

Myripristis kuntee from Sri Lanka.

Myripristis murdjan - both photos show the same specimen from Sri Lanka - are relatively frequently offered for sale.

Deep-sea fishes?

No, the majority of all soldier- and squirrelfishes occur in relatively shallow water down to around 30 meters of depth. Only a very few species go really deep. Soldier- and squirrelfishes are even regarded as notable coral fishes and are found mainly on coral reefs. Nevertheless the large eyes may be the result of soldier- and squirrelfishes originally evolving in the deep. This is supported by, inter alia, the fact that to the present day close relatives of the Holocentridae inhabit the deep sea and also live to a great age there: the Deep-Sea Perch (*Hoplostethus atlanticus)*, which has a worldwide distribution and is used commercially as a food fish, is said to live for up to 160 years. In addition other close relatives of the Holocentridae have evolved light organs, which are otherwise known only from deep-sea fishes. These so-called flashlight fishes (Anomalopidae) have light organs beneath their eyes, which they can uncover and illuminate. They then shine so brightly that divers can supposedly read in their light.....

Myripristis violacea, specimen from the Philippines.

Anomalops katoptron, one of the famed flashlight fishes. The similarity to the soldierfishes is unmistakable.

Lexicon

Soldierfishes

adusta means "burnt, brown".
hastatus means "armed with a spear".
jacobus: Latinized form of the name "Jacob", as the species is/was popularly known as "Brother Jacob" on Martinique.
kuntee: this fish was first pictured, without any scientific description, by Russell in 1803 as "sullaneroo-kuntee" (a native name); Valenciennes later referred to this in giving the species a valid scientific name.
murdjan: after the Arabian name for the species.
Myripristis means "with a myriad of saw-teeth", referring to the large number of spines.
Neoniphon means "new Niphon"; Niphon is another fish genus.
praslin: after the port of the same name in the Seychelles, where the species was first discovered.
rubrum means "red".
sammara: from the Arabian name "Abu msammer".
Sargocentron means "Sargos with a spine"; Sargos is an old fish name.
violacea means "violet".

Nocturnal shoalers

The large eyes are also a survival from the deep-sea past, but are used by the species that exist today in order to go hunting at night. Soldier- and squirrelfishes spend the day in caves and beneath overhangs, often accompanied by cardinalfishes (Apogonidae), bigeyes (Priacanthidae), and other crepuscular species. It is very common to find several species of soldier- and squirrelfishes there together. One of the peculiarities of these fishes is that they don't always swim "normally", but also very often do so belly-up.

Little predators

Soldier- and squirrelfishes feed exclusively on meaty foods, with squirrelfishes preferring bottom-dwelling crustaceans while soldierfishes instead take larger planktonic organisms (small fishes, shrimps, cuttlefishes, etc) from the open water. But in the aquarium they adjust very quickly to the usual deep-frozen foods and are genuinely problem-free to feed. They will even take food sticks from the water's surface within a short time of settling in.

Sargocentron praslin

The vast majority of soldier- and squirrelfishes remain fairly small and grow no longer than 20 cm. But because they are very common they are caught and eaten everywhere. The largest of all the soldierfish species is *Myripristis adusta*, which attains a maximum length of 32 cm, but usually grows to only 25 cm long in the wild; all the other soldierfish species remain smaller. The largest squirrelfish species is *Sargocentron spiniferum* with a maximum length of 45 cm, but which usually attains only 35 cm long. Here too the remaining species usually grow to around 20 cm long.

Unspectacular breeding

Just like the overwhelming majority of marine fishes, the soldier- and squirrelfishes employ the "quantity rather than quality" approach when it comes to breeding. Brood care isn't practiced in any shape or form, but the eggs are simply released in large quantities into the open water, where they are abandoned to their own devices. No visible external sexual differences have been described to date, and details of courtship behavior are likewise unknown. There is considerable scope for research-oriented aquarists here, because, as can be

Neoniphon sammara

seen from the photos, numerous species of soldier- and squirrelfishes look extraordinarily similar. And because three or four species often occur together in the wild, there must be some sort of mechanism that prevents hybridization. Hybrids between soldier- or squirrelfishes have not been mentioned to date in the literature, so if they exist they are at least rare. The barriers to crossing are probably to be found in the courtship behavior, but for obvious reasons that is difficult or impossible to study in the wild (bearing in mind the nocturnal activity). Soldierfishes (*Myripristis murdjan*) spawned in the aquarium as long ago as the 1960s, so in this respect they are generally cooperative fishes (de Graaf, 1970).

In the aquarium

Soldier- and squirrelfishes are exceptionally well suited to maintenance in the

Sargocentron hastatus, specimen from Sri Lanka.

aquarium. Being plankton feeders, they leave sessile invertebrates completely alone and other fishes have nothing to fear from them as long as they aren't regarded not as food.

In my aquarium containing two large, easily 20 cm long, *Myripristis* I observed that even small fishes were pursued for only a few days. Once they had survived this period and become familiar with their surroundings, the soldierfishes no longer represented any threat to them. The soldierfishes then made only half-hearted attacks that the small fishes were easily able to avoid.

A young specimen of Neoniphon sammara.

Sargocentron rubrum

The aquarium for soldier- and squirrelfishes should, however, be as large as possible, as they are active swimmers and rather imposing as aquarium fishes go, Soldier- and squirrelfishes are heavy feeders, and pollution of the water is correspondingly high. As mentioned earlier, feeding these fishes poses no problems of any kind.

Sargocentron praslin, juvenile.

Unlike in the wild, soldier- and squirrelfishes aren't crepuscular or nocturnal at all in the aquarium, but after a short settling-in period are out and about all day. But a large cave or similar should nevertheless be available to these fishes, if only so that you can observe the interesting belly-up swimming behavior from time to time.

Even though soldier- and squirrelfishes aren't noted as shoaling fishes, they should be kept in a small group, or at least in twos. A group can generally consist of different species.

Unfortunately soldier- and squirrelfishes are only very sporadically available in the aquarium trade. But if the opportunity offers, anyone with a large aquarium should seize it without worries - it will certainly be worth it!

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Amphibians

Charming toads (1)

by Volker Ennenbach

To many people toads are the epitome of the ugly, slimy, and slippery - in short, they find them repulsive. But animal owners are quite different, and from the very beginning of the terrarium hobby around 1880 toads have found enthusiastic devotees. And who doesn't remember Catweazle's familiar, Touchwood the toad?

Common Toads can be very variable in color. This pair is from Aalborg in Denmark...

There are three species of toad in central Europe, the European Common Toad (*Bufo bufo*), the European Green Toad (*Bufo viridis*), and the Natterjack Toad (*Bufo calamita*). But worldwide there are more than 250 species and that makes the toads the most species-rich genus among the batrachians. Or should that be "made"? Because, as everywhere, zoologists have enthusiastically seized on the new opportunity to use DNA analysis to gain new insights into the phylogenetic relationships

Common Toad from the area around Darmstadt, Germany.

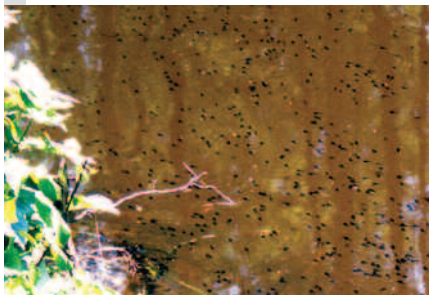
...and this pair is also from Aalborg ...

of the various toad species. Interpretation of these DNA analyses shows that *Bufo* in the traditional sense doesn't represent a single evolutionary lineage (ie monophyletic), but that the toad species historically united in *Bufo* derive from several evolutionary lineages (ie polyphyletic). Because genera have to be monophyletic assemblages, a whole mass of new toad genera were subsequently erected and old names resurrected.

Following the new systematics, only 17 species currently still belong to *Bufo* Garsault, 1764, specifically the very closest relatives of the Common Toad. And many of the species were formerly regarded only as subspecies of *Bufo bufo*. The European Green Toad is now in Bufotes Rafinesque, 1815 (14 species) and the Natterjack Toad in the monotypic (= contains only one species) genus *Epidalea* Cope, 1864. But one shouldn't treat this DNA-based systematics as gospel, as much of it appears open to scrutiny.

In the coming issues of the News we will look

Toad tadpoles are always black and always swim in swarms. The spawn of *Bufo* species is always laid in strings (not balls).



...and so is this pair, in which the female is a splendid golden yellow. All photos: Frank Schäfer

MäMales of *Bufo* species (this is *B. j. japonicus*) have powerful forearms.

Female of the Western Japanese Common Toad, *Bufo japonicus japonicus*

Eastern Japanese Common Toad, *Bufo japonicus formosus*

at and recommend a number of toad species commonly available in the trade. As all toads have one thing in common, regardless of what they are called: they are excellent and very charming terrarium occupants!

Toads are cool

What makes toads so charming is their indolence. Toads possess a very potent skin poison which they can also release in concentrated form from large glands (the so-called parotids), sited behind the eyes, in situations where they are really frightened. This poison is a milky secretion that causes a strong burning sensation in the mucus membranes and also tastes very bitter. Thanks to this poison toads have only a few predators, and so their flight reflex is only very weakly developed. This means that toads very quickly become tame in captivity once they have learn to recognize humans as a source of food.

The poison of the Common Toad assemblage is relatively harmless to humans. But essentially you should never handle amphibians with bare hands if you have an open wound, and always wash your hands thoroughly after handling, before touching your eyes, mouth, or other sensitive part of the body.

Swallowing Common Toad poison (bufotoxin) leads to vomiting and hallucinations. But overall, normal quiet handling of Common Toads poses no danger of any kind for humans.

Slippery?

Common Toads are terrestrial amphibians that normally visit water only to breed. They prefer slightly damp, but not wet, habitats. Hence *Bufo* species usually feel dry rather than slippery. The substrate in the terrarium should be at least 10 cm deep and the toads allowed to dig. Because large toads eat a lot and excrete a corresponding amount, it is important to use a biologically active substrate that will rapidly break down the pollutants. Nothing is as dangerous for toads as stagnant water and an ammonia fug in the terrarium. Loose garden soil or leaf mold covered in dead leaves (Oak, Beech, Birch, fruit trees, etc) is an ideal substrate for the maintenance of *Bufo* species.

Juvenile *Bufo bufo*, just a few weeks old.

More on the terrarium

Bufo species are usually found in association with human habitation and the terrarium decor can, for example, simulate a section of wild garden. It is important to include one or more hiding-places, which must be arranged so that the skin on the back of the toad comes into contact with the ceiling of the cave, as only then will it feel completely secure. Avoid heavy rocky structures, as toads are very good at digging and that can lead to unfortunate "avalanches". A flowerpot drainage dish filled with water (which should be kept fresh) should always be included in the toad terrarium to permit bathing.

Outdoor maintenance

All *Bufo* species are well suited to maintenance in an outdoor terrarium, though they should be overwintered in the house at 5-10 °C. Breeding almost always takes place outdoors. Common Toads may be conservative as regards their spawning waters - they are well known for their annual breeding migrations - but essentially will also regard any new garden pond as a possible place to breed. Like all European species, the European Common Toad (*Bufo bufo*) is protected and can be kept only with a permit. A good alternative is the Japanese Common Toad (*B. japonicus*). However, it is essential to make sure that this and other foreign species cannot escape when kept outdoors, as the introduction of alien *Bufo* species is the very last thing that a responsible terrarium keeper will want to occur.

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

The worst threat to *Bufo* species is the Toadfly (*Lucilia bufonivora*), whose larvae eat into the brain of the living toad and thus cause its death. Hence the outdoor terrarium should always be fly-proof!

Brand new

The best left till last:

a new halfbeak!

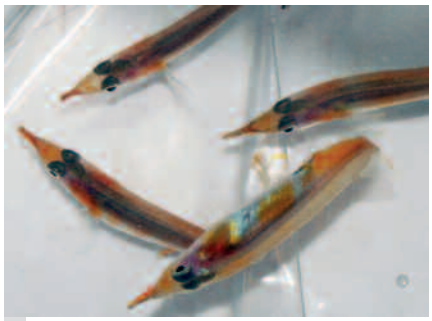
by Frank Schäfer

Things sometimes take a strange course. For years there wasn't a word about halfbeaks anywhere in the entire hobby press. Then the magazine "Amazonas" made these fishes, which are as interesting as they are beautiful, the cover story in their July/August 1913 issue. And simultaneously Aquarium Glaser imported a completely unknown halfbeak from Sulawesi, which we can now introduce exclusively, and for the first time worldwide, here in the News....

The discovery of the new species was likewise a matter of chance. I was on my way to a totally different other tank in the fish rooms at Aquarium Glaser, in order to identify fishes in it, when a customer asked me something. So I turned off into the aisle where the customer was standing and a short conversation followed. It was about something totally unrelated to halfbeaks, but the customer was standing with his back to an aquarium containing around 70 specimens of *Nomorhamphus ebrardtii*. I took the opportunity to look somewhat more closely at these fishes, as they were exceptionally attractively colored. And lo and behold, there were some totally different fishes in the tank! Halfbeak bycatches from Sulawesi: that is always interesting, as many species aren't imported commercially as there is hardly any demand for such fishes.

At present only three species of *Nomorhamphus* are regularly imported from Sulawesi: the orange-finned *N. ebrardtii*, the only recently described N. rex (which has, however, been imported for some time but was mistakenly thought to be a color variant of *N. ebrardtii* prior to its description), and *N. liemi*.

But the new species has a completely different coloration to all the *Nomorhamphus* that I have seen until now (see Kempkes & Schäfer, 1998). I sent photos to Jan Huylebrouck at the



The very distinctive "beak" form of the new halfbeak can be seen very well from above.

Nomorhamphus rex was first described as a new species in August 2012.

Nomorhamphus liemi is the best-known species of the genus in the aquarium hobby.

All photos: Frank Schäfer

The new halfbeak prefers to swim in a group. Note the individually variable coloration!

Unfortunately all the 17 specimens of the new halfbeaks known to date are females.

Museum Alexander König in Bonn, as he works scientifically with halfbeaks and was also the senior author of the description of *Nomorhamphus rex*. On the basis of the photos he too was unable to assign the new species to any species of halfbeak known to him, but inclined towards a member of the genus *Nomorhamphus*. However, the generic placement of halfbeaks can be determined unequivocally only by examination of the copulatory organ of the male, the so-called andropodium, under the microscope.

I immediately purchased the total of 17 specimens of the new halfbeak in the tank and put them in a tank of their own at home for closer observation. Unfortunately they are all females! So these gorgeous, individually very variable, orange-checkered halfbeaks, which measure around five centimeters long, cannot be determined. And their exact provenance isn't known either. The coloration of the *N. ebrardtii* with which the species was imported resembles that of the specimens that Evers in the already mentioned Amazonas magazine describes as the form from Balambano, as does their relatively small size.

There is still the hope that one of the females of the new species may have been fertilized (female halfbeaks store sperm), and if the young then include a male, it may be possible not only to determine the species but also to establish an aquarium strain of these attractive fishes. Hence in the first instance I have handed the fishes over to Dieter Bork, who is very experienced in the breeding of halfbeaks. Keep your fingers crossed, Dear Readers!

The new halfbeak arrived as a bycatch with these *Nomorhamphus ebrardtii*.

Lexicon

Halfbeaks

Nomorhamphus means roughly "with equal jaws ", referring to the ; upper and lower jaws being around the same length, unlike other halfbeaks.
liemi: named in honor of the Indonesian ornamental fish exporter Dig Liem of the company Vivaria Indonesia.
rex means "king"; the name was chosen as the teeth of this halfbeak are slightly reminiscent of those of the dinosaur Tyrannosaurus rex.
ebrardtii: named in honor of Herr Geheimrat Ebrardt.

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