Issue 2/2013

sera VIVO

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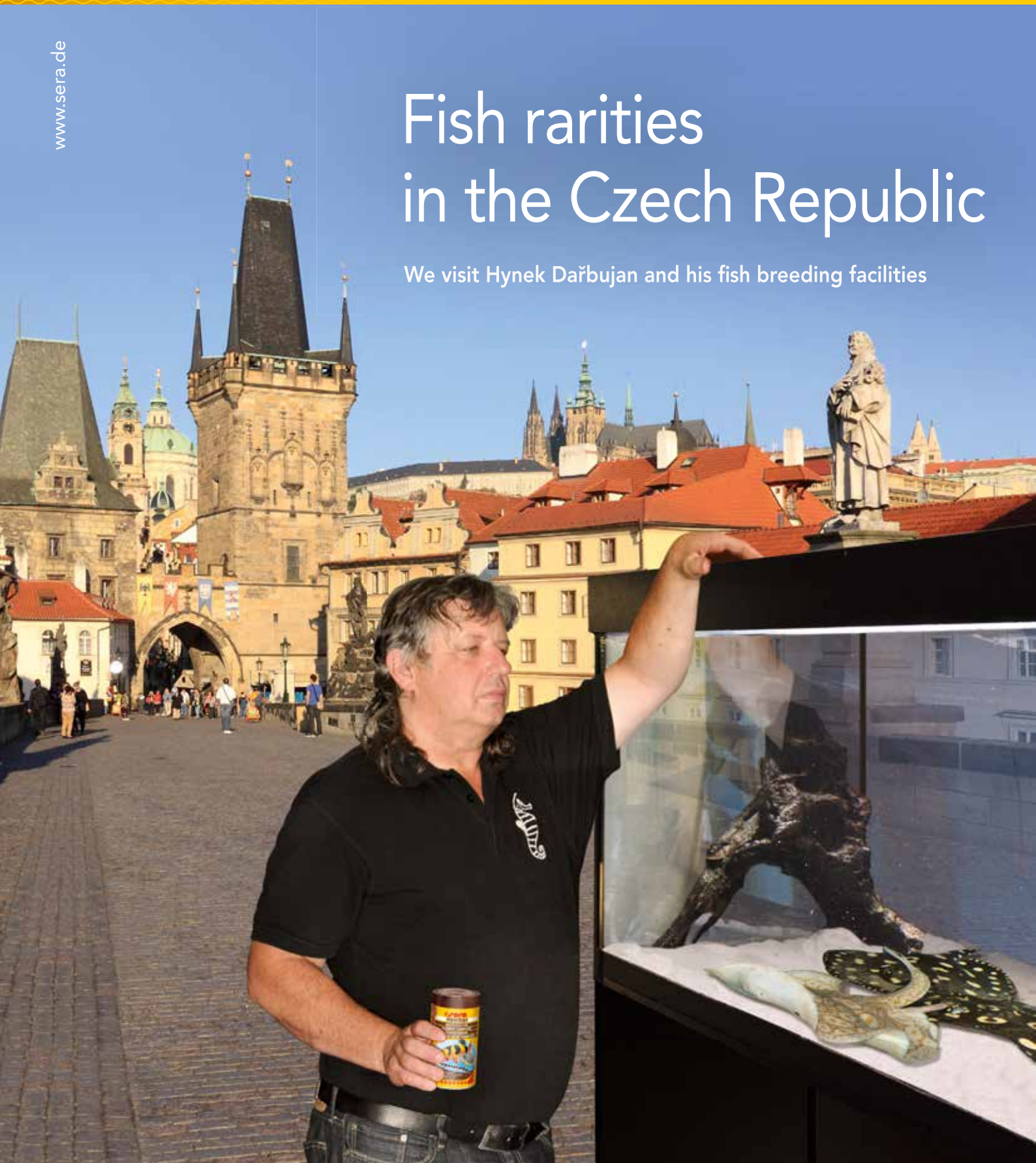
Fish rarities in the Czech Republic

We visit Hynek Dařbujan and his fish breeding facilities



Josef Ravnak
Founder and managing director
of the sera GmbH

Dear animal lovers,

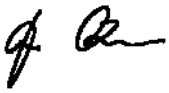
aquascaping is a type of aquarium design that focuses on the harmonic construction of an attractive landscape according to esthetic aspects. A well designed composition with a harmonic and elegant appeal is possible even in small and smallest aquariums. When proceeding correctly and maintaining it appropriately, setting up a lastingly beautiful and biologically healthy aquascape is not difficult at all! But see for yourself – from page 16!

The Czech Republic has been a European fishkeeping center for many years. **sera VIVO** gives you an exclusive insight into the work of a professional breeder who, among others, supplies East African cichlids, stingrays and seahorses.

Target breeding of certain features has a long tradition not only in the aquarium hobby. The advantage of fancy breeding small shrimp species is that it is possible in small aquariums without any problems, and therefore does not require too much space. This issue of your **sera VIVO** gives you an introduction to this interesting topic.

You'll find all this, and more, in this issue.

We hope that you enjoy reading **sera VIVO**!



Josef Ravnak

Title feature

Corals

Aquarium environments

Pond environments

Behavior research

sera world

Special

Credits

sera VIVO 2/2013

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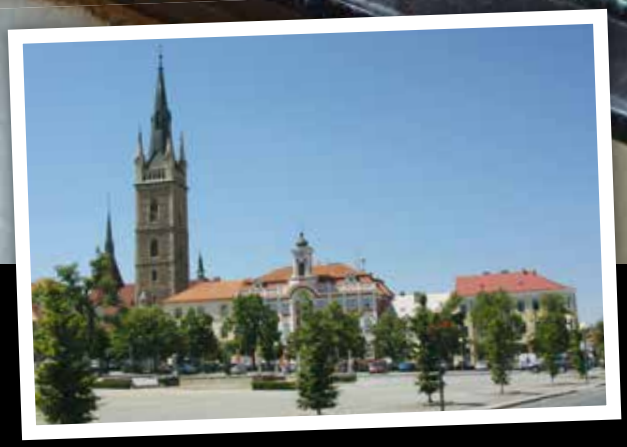
The breeder with his favorites –
a breeding pair of *Potamotrygon leopoldi*
"Black Diamond"



An exotic treasure in the heart of Europe

Čáslav, an idyllic and quiet town near Prague, is a real exotic aquarium jewel: It is here where the HD Cichlid and Marine Center of **Hynek Dařbujan**, an off-mainstream wholesaler where many have found a treasure, is located.


01


02

01 sera flora is the ideal diet for cichlids from the genus *Tropheus*

02 Aquarium shelves are self supporting and made entirely of glass

Hynek, how did you get started in fishkeeping?
Like most, my passion for fish began at an early age, starting with live-bearers as a child, and slowly expanding the hobby to other species. Fish have been a part of my life a very long time now.
When I was about 18 years old, I was enchanted by African Cichlids, and started gathering information and stock, and began breeding them. It was therefore only logic for me to watch the animals in their natural habitats in lakes Tanganyika and Malawi after my diving training was completed. That made me understand the natural requirements of the fish much better.

But apparently your fascination is not limited to fresh water …
Yes, in 1990 I also began to work with marine fish. I had planned to set up marine aquariums, but the limited availability of marine fish and corals in the Czech Republic forced me to start importing plenty of fish by myself.

In how far do you share your experience with others to promote fishkeeping?
I actively cooperate with a number of zoos and botanical gardens, and I have published several books on marine fishkeeping, and I occasionally host talks on fishkeeping. Since aquarium care is not only my profession but also my hobby, I am trying everything to give more and more enthusiastic young people a first correct impression of the underwater world.

Where do you get your uncommon species from?
My primary sources are in Germany and the Netherlands, where I have a number of good friends. I breed the rest of the fish myself. Very good quality of breeding conditions and the animals is very important for me.
With over 150 breeds available und geographic variants, my stock of east African Cichlids ranks among the best in Europe. »»


03


04

Freshwater stingrays

Freshwater stingrays of the genus *Potamotrygon* originate from the Amazon basin. These cartilaginous fish require large aquarium tanks and temperatures about 28°C (82°F). The average body disc of newly born juveniles is about 10 cm (4 in.) in diameter, the parents have about 50 – 60 cm (20 – 24 in.) in diameter.

03 *Potamotrygon leopoldi* "Black Diamond"

04 Very rare white specimen of *Potamotrygon* sp. "Pearl"


Aulonocara stuartgranti Usisya, West shore of Lake Malawi


Ophthalmotilapia nasuta Gold, Cape Kachese/Lake Tanganyika


Deep sea inhabitant from Lake Tanganyika: *Cyphotilapia gibberosa* "Blue Zaire Moba"

Seahorses

Rearing seahorses is difficult and laborious: Best water quality and fine live food (e.g. *Artemia franciscana*) are required. *Hippocampus villosus*, three days old, 8 mm

What is the total capacity of your breeding tanks?
The total volume is about 90,000 liters (23,790 US gal) of water, with my largest tank holding 3,000 liters (793 US gal.). One of my specialties are aquarium walls made completely of glass, avoiding metallic supports which are prone to corrosion. The filters I use are also designed to self-clean when changing water, preventing hours of laborious cleaning.

Where are your fish available?
A part of my stock is exported to Germany, another part through exporters all over the world, and yet another part of it is sold here on the Czech market. You surely know that Czechoslovakia, and today the Czech Republic, have long been considered traditional exporters and breeders of high quality aquarium fish.

Which uncommon fish do you have apart from that?
A couple of years ago I have started breeding freshwater stingrays, which become more and more popular. I can offer three different kinds:
- *Potamotrygon* sp. "Pearl", including a beautiful white stingray specimen.
- *Potamotrygon* sp. Itaituba
- *Potamotrygon leopoldi*

… and I can also see some seahorses here …
… yes, my newest endeavor is breeding *Hippocampus villosus* seahorses. I am the only provider in the Czech Republic who provides them, and one of the very few breeders in Europe.

We have been working together for quite a few years. Which sera products are particularly important for you?
I absolutely trust in products by sera. I use about two buckets of sera flora, san and vipan per week. Water quality is very important when breeding, and good food simply pollutes the water less strongly. sera siporax Professional, in particular, pays off in filtration. I use sera aquatan and toxivec products, plus others as required, for conditioning the water.

How do you see the future of fishkeeping in the Czech Republic?
Nano aquariums are momentarily a trend in modern offices and households, which may be connected with the trend toward miniaturization in many fields. I am happy that there are more and more young aquarists who are interested in the treasures of the underwater world. It is important to support them with good information and advice as to ensure the animals are being kept appropriately.

Can you share any of your current plans?
Momentarily, I am working with ZOO Zlín/Lešná on a marine stingray project. The visitors of the zoo, in particular children, will get the unique opportunity to feed the rays themselves.

Thank you for a very exciting visit to your tropical island in the heart of Europe!

SERA WORLD KÖLNER ZOO

Varanus melinus
from Molucca Islands, Indonesia

Fish, amphibians and reptiles from all over the world live in the aquarium of the Cologne Zoo – many of them are endangered species being bred for species preservation. **sera has been supporting the zoo** since 2007 and thus contributes to preserving endangered species.

Sponsoring of the aquarium in the Cologne Zoo

sera supports species preservation

The aquarium of the Cologne Zoo, opened in 1971, impresses more than 1.5 million visitors per year with tanks holding up to 77,000 liters (20,370 US gal.). The modern aquariums arranged according to their topic fields show sections of different waters and their inhabitants ranging from the course of the river Rhine up to indopacific coral reefs. The range of species that can be admired there is accordingly wide. It includes cichlids and small characins, but also reptiles and amphibians as well as real rarities such as Australian lungfish or one of the biggest freshwater fish, the Arapaima. With their naturally designed aquariums and terrariums, the Cologne Zoo makes a journey into the animal world possible. Besides recreation, it is also important to transfer information about endangerment status, protective measures etc. to the visitors. This is achieved by a new sign system.

sera has been supporting the Cologne Zoo with food and technical equipment for the complex tanks and setups in the aquarium and terrarium section already since 2007. Besides the cooperation on location, sera also supports projects of the zoo dealing with species preservation in other countries. For instance, an amphibian care and breeding station was set up in Vietnam.

Stylophora pistillata (Pocilloporidae) on a reef surface off the Sera islands, Molucca Islands, Indonesia.
The pigments concentrate in the tips of the coral branches. Particularly intense growth takes place there.

Corals and their pigments


01


02


03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01 – 03 *Montipora digitata* (Acroporidae): Different color morphs growing aside each other in a seagrass meadow. Mansuar archipelago, Radjah Ampat, Indonesia.

04 Differently colored *Seriatopora hystrix* (Pocilloporidae) colonies on the reef surface at low tide. Sera island, Molucca Islands, Indonesia.

by Johannes Dürbaum

Stony corals are very popular, among others due to their coloration. Whenever "new colors" of a species appear in the trade, these are very much sought after and therefore may cost several times as much as the already known color morph. This is a reason for vegetative multiplication by means of fragments ("fragging").

Where does the color of stony corals come from? Colors originate from different absorption and reflection of light. Upon close observation, not only the coral animals themselves – the so-called polyps – have such pigments within their tissue, but also the single celled endosymbiotic zooxanthellae with their ambivalent animal and plant character that live within the coral tissue. Zooxanthellae mainly belong to the dinoflagellates, which neither belong into the plant nor the animal category. They have flagellae on the outside for moving, thus they have animal characteristics. However, they have chloroplasts inside where chlorophyll and other pigments productive in metabolism can be found, just as in a photosynthetically active plant cell.

Light intensity is crucial for the productivity of the zooxanthellae and, subsequently, for the growth of the coral. As in photosynthetically active plants, there is an optimum in photo synthesis performance. If the irradiation is increased beyond this optimum, the production of glucose breaks down as photo synthesis processes are being inhibited. The complicated energy transfer and bond chain breaks down because of overload – from the viewpoint of the animals, this is exactly what must be avoided. Coral colonies of the same species often live in different depths and, correspondingly, in entirely different lighting scenarios. Apparently, certain species have found ways to live lastingly with such different living conditions, in spite of their intense light requirements. Pigment distribution is involved here.

Being energy fixating organisms, the zooxanthellae are not distributed randomly within the coral tissue. When particularly much light – as at the ocean surface – is present, they retreat deeper into the coral tissue, the pigment layer lies on top and serves as a filter. Light hitting the pigments is reflected as colored light. Consequently, only a part of the irradiation hits the zooxanthellae. This protects them against excess light and inhibition.

However, the zooxanthellae are located in the upper tissue layers in the deep water forms. The zooxanthellae literally are thirsting for the little light. The light they cannot trap hits the pigments located deeper, which reflect it to the back side of the zooxanthellae. This construction is similar to a light trap.

However, corals of the same species can be seen directly adjacent to each other in nature. Colonies of *Seriatopora hystrix* (Pocilloporidae) or *Montipora digitata* (Acroporidae) are examples. Brown and colorful varieties grow side by side. This again suggests these are genetically caused preconditions which, however, do not have significant advantages for the symbiosis, otherwise one color morph would at least dominate considerably.

So you will require ideal light intensity if you want particularly colorful corals, as to make the pigments within the tissues move to the surface. But you will also require the correct light! The numerous zooxanthella pigments involved in photo synthesis require certain light wavelengths. This may possibly include low amounts of UV-A and UV-B light, to which the animals, after all, are also exposed in nature. The fluorescent pigments in the tissues take up the UV-A and UV-B radiation and "slow it down" to lower frequencies that make them useable for photo synthesis by the zooxanthellae.

There is no doubt that certain minerals enhance the overall color impression of stony coral colonies and their pigments without being able to trace them in pigments due to the very low concentrations. The colors will intensify within a few weeks if you offer these trace elements in the aquarium. However, the nitrate and phosphate water parameters must be close to zero as in nature for achieving this.

sera marin COMPONENT 3 and 4 contain the trace elements important for natural growth and color enhancement.

Breeding valuable shrimps

Due to their relatively easy care, their interesting behavior and the splendid colors, many shrimp species and breeding variants have earned their place in the aquarium hobby.

by Peter Maletschek and Dieter Untergasser

The aim in breeding valuable shrimps is not only the multiplication of purchased animals, but trying for the "perfect" shrimp. Breeding targets are more intense colors by selecting particularly beautiful animals and developing new color variants by cross-breeding.

Those who wish to get involved in breeding valuable shrimps should be aware that this is possible only by using several aquariums. Aquariums with a volume of about 60 liters (16 US gal.) are best suited, since mass production is not intended.

Aquarium setup depends on the species you wish to breed. The animals presented in this article are from the species group *Caridina* cf. *cantonensis*. The groups of bee and tiger shrimps have the same requirements concerning water parameters. These animals prefer a pH value between 6.5 and 7.0, and a temperature between 20 and 24°C (68 and 75°F). In the breeding setup, a pH lowering bottom ground ensures proper pH values. The bottom ground should be rather flat, as to avoid uneaten food sinking into the bottom. The decoration should consist of bog wood and moss which also provides shelter while the juvenile shrimps shed their skin.

Filtration can be achieved biologically efficiently and economically is ensured by means of air operated sponge cartridge filters. Unlike internal filters with a casing and external filters, juvenile shrimps are not drawn into the sponge filters. Bacteria and micro organisms settle on the sponges, where they serve as food for the juveniles. The adult shrimps also very much like to graze off the sponge surfaces (see picture 1 and 2).

If you operate only few aquariums, you can also use motor driven internal filters without casing, such as the sera F 400. The Biotop Nano LED Cube 60 with integrated internal biofilter is ideal as a breeding aquarium. It is not advisable to add fish, as these might eat the shrimp offspring. They can, however, be kept together with small snails without any problems. Ramshorn snails take very good care of uneaten food, and horned nerite snails [6 – 10 specimens per each 50 liters (13 US gal.) of water] keep the aquarium glass clean.

You can start once the aquariums are biologically active. Please consider the following when purchasing the first animals: The higher the quality of the first animals, the quicker you will achieve your goals. Selecting the shrimps takes place in several steps.

01

02

An example of red and black bee shrimps in which the breeding target is intensifying the white colors.

Red Crystal with few white zones

Sporadically, animals with a better pattern appear in Red Crystal offspring, these are then selected for future breeding

Almost a Red Bee shrimp

The step towards a Red Bee is done, S grade quality (tiger tooth pattern)

Tiger shrimps are another example. Plain black or dark blue colors and the orange colored eyes are in this case the breeding goal.

The origin,
plain bee shrimp

The black pattern is
already quite well bred

Tiger shrimps
with orange eyes

Hybrid between black tiger shrimp and
tiger shrimp with orange eyes

The goal is achieved when the offspring is
colored entirely black and has orange eyes

Color development does not only depend on the genetic potential of the shrimps. Minerals and trace elements in the water as well as a balanced diet of high quality are just as important. The mineral and trace element level is increased with sera mineral salt after every water change and when filling the aquarium for the first time. High conductivities and total hardness in tap water do not necessarily ensure that all important minerals and trace elements are present. Water changes and first filling should not take place without a suitable water conditioner such as sera aquatan or blackwater aquatan, as this is the only way to ensure the water is suitable for shrimps.

We recommend sera shrimps natural and Plankton Tabs for the daily feeding of the shrimps. The high percentage of Spirulina supports intense colors. The processed shrimp meal makes sure the shrimps do not attack members of their own kind that have just shed their skin because of lacking animal protein.

What if multiplication does not proceed?

Pollutants in tap water can make multiplication impossible. Some of these substances cannot be neutralized with water conditioners. They are only removed from the water by adding active carbon. You can simply hang a mesh bag with the active carbon into the aquarium.

Sometimes there are pregnant shrimps in the aquarium, but none of the offspring survives. This very often happens in freshly set-up tanks. These aquariums are still lacking bacterial growth and micro organisms so the juvenile shrimps starve. In this case it is advisable to feed the micro powder food sera micron additionally daily in small amounts. The little shrimps readily accept it as an alternative food source.

We wish good success to all aquarists who wish to become involved in shrimp breeding.

Now we achieved the next quality step, SS grade (double hinomaru), the covering white is already very good

The final goal is almost achieved, SS grade quality with excellent covering white from the tip to the tail fan

Original bee shrimp

Further development into a Black Bee, S grade

Part 6

Organic pollution

Organic water pollution is an often overlooked and underestimated water quality factor. It is, however, the source for a major part of inorganic pollutants such as nitrite, nitrate or phosphate. Consequences can be severe and, among others, may express themselves in excess oxygen consumption and increased risk of diseases.

by Dr. Bodo Schnell

There are many sources for organic substances in pond water. A large part originates directly (if it is not eaten and processed entirely) or indirectly (due to being digested by the fish) from the food. Leaves and fruit of plants as well as bird waste or a dead animal lying unnoticedly in the pond add to this. However, unlike many other water parameters it is not possible to measure them directly with pond or aquarium test kits.

Importance and detection

The majority of organic pollutants is broken down oxidatively by bacteria and other micro organisms. This requires plenty of oxygen (please see sera VIVO 1/2013, page 10), which is then missing in other places such as for fish respiration. High amounts of organic substances in the water lead to mass multiplication of micro organisms. This increases the risk of disease outbreaks in two ways: On the one hand by weakening the immune system of the fish, on the other hand – at least in case of facultatively pathogenic organisms multiplying – also directly by an increased load of pathogenic organisms.

In extreme cases, intense oxygen consumption may lead to virtually entire lack of oxygen. However, further breakdown processes take place even then. The expression "turned over" has become common for this state – including the death of all higher life as well as an intense, unpleasant stench.

However, there are sufficient warning signals before it comes to this. Unpleasant odor is, at least partially, almost always due to volatile nitrogen or sulfur compounds. It indicates in any case that anaerobic – or, more correctly, anoxic – processes take place. Danger is imminent due to the underlying lack of oxygen, on the other hand at least some of the unpleasantly smelling substances are also toxic.

Foam forming at the surface is another warning sign. Organic substances – among them proteins – are precipitated at the boundary surface between air and water here, and stabilize the foam. This effect is, for instance, used in protein skimmers in marine aquariums, but also the head on beer is based on it.

Enhanced formation of slimy organic sludge is another indicator for organic pollution. Unlike flocculent inorganic sludge (it may appear unsightly, but provides valuable contributions to biological filtration), organic sludge indicates excess pollution with organic nutrients.

Finally, increased organic pollution can also be recognized by regular water analysis. A constantly low oxygen level, which is the result of the above mentioned causes, is the clearest sign. Regular measurements with the sera oxygen-Test kit are therefore an important preventive measure.

Measures

Good pond hygiene and efficient filtration through sera siporax pond are the most important preventive measures against enrichment of organic pollutants. This includes moderate fish stock and feeding as well as precautions against leaves falling into the pond, etc. An escape possibility for animals that have fallen into the pond (e.g. mice) should by all means be present.

Sludge deposited at the bottom should be siphoned off in autumn, possibly even several times a year. It is advisable to use sera pond filter biostart additionally as to accelerate the breakdown of organic sludge.

A powerful filter system appropriate for the pond size and the fish stock is indispensable. It ensures the biological breakdown of organic waste products, agitates the water and enriches it with oxygen either directly or indirectly via improved surface agitation. sera O_2 plus is added as an immediate measure in severe cases.

by Elena Rathgeber

Part 2

Mute, deaf and simple?

The eyes of Four Eyes living at the surface are divided, as to provide information from the air and the water simultaneously.

Fish are sensitive creatures whose experiences – simply due to their entirely different living environment – differ strongly from ours (please refer to part 1, sera VIVO 1/2013). Fish also detect stimuli from their environment, e.g. for protecting themselves against predators, for selecting suitable living conditions or for finding food and a partner. As we know, their sensory organs are perfectly adapted to life in water and reveal truly astonishing performance.

Seeing

Due to the quick reduction of light intensity with increasing water depth, visibility in water is considerably lower than at land. Cloudiness adds to this. A certain shortsightedness therefore makes sense for fish. Their inflexible lens usually allows for seeing sharp within a range of approximately one meter. Many fish species can see colors (some even UV light).

In most fish, the eyes are located at the side of the head. The resulting panoramic view is very advantageous under water, where predators may appear from all directions, in particular because the neckless head cannot be turned independently from the body.

By the way:
Even though fish usually do not have eyelids, they still can sleep completely normally (some of them while floating in the water).

Blind cave tetras with secondarily regressed eyes – they are not required in dark environments.

Hearing

Fish do not have visible external eyes, but they are in no way – as believed for a long time – deaf. Their hearing organs consist of closed, liquid-filled bubbles with vibrating ear stones (simultaneously working as sense of balance). They are similar to the inner ear of humans. The swimming bladder serves as an amplifier in some fish. Sound is directed better and faster in the denser water medium than in air.

While we terrestric vertebrates notice sounds in water only in a dull and distorted way, the ears of the fish are excellently adapted to the conditions in water.

Herrings are able to hear ultrasound. This is an important ability for protection against their enemies, dolphins that use ultrasound for hunting.

"Speaking"

"Mute fish" are proverbial. Unlike this common opinion, there is vivid acoustic exchange under water.

Fish can produce sounds in a directed way by vibrations of the swimbladder or by rubbing skeleton parts against each other. Besides intimidating enemies and searching partners, they can also be used for intraspecific communication. So the acoustic load of waters should be checked according to these new findings and reduced as much as possible. When there are fish in the aquarium, do not knock at the glass panes!

Gurnards produce their growling sounds with their swimbladder.

The sensory perception of fish

The lateral line organ is located in a single or divided line, usually easily visible centric on both sides of the fish body. Many small cavities containing sensory cells register finest current changes.

Touching and "remote touching" – the lateral line organ

Fish perceive mechanical stimuli via the usual receptors in the skin. Special touching organs, such as the barbels of catfish and carps, mainly support food search.

Fish have an additional highly specialized sense ideally adapted to conditions under water – the lateral line organ. This sensitive remote tactile sense locates pressure changes (currents or shattering) in the environment. Therefore a three-dimensional picture of the surroundings is being created by registering size, location and distance of an obstacle. The fish can avoid obstacles, keep distances in a shoal, notice prey or enemies, etc.

Catfish with barbels for food search

Salmon ready to spawn wander thousands of kilometers from the sea back into the river where they hatched from the eggs. Finest odor and taste signals as well as the magnetic field of the Earth show them the way.

Smelling and tasting

Odorous and taste substances distribute very well in water. Unlike at land, both senses may be considered one, as the stimulus triggering substances are always dissolved in water – so they are being tasted by definition.
The nose is composed in a very simple way (only cavities), but it is astonishingly effective. In fish, taste receptors can be distributed not only in the mouth but also over the entire body surface (accumulated on the head and the barbels).

Olfactory and taste sense are predominantly used by fish for detecting food and for orientation. Fish that perform long journeys during their life, such as salmons or eels, find their way via unimaginably fine odor traces. Their sense performance is far superior to that of terrestric vertebrates such as dogs. The olfactory center makes up a large part of the fish brain.

A trout can detect odor and taste one million times finer than humans.

Elephant Fish can perceive their environment and communicate with other members of their species via active electrolocation.

Magnetic sense and electric organ

Besides these impressive sensory abilities, some fish species additionally have a magnetic sense that allows them orientating according to the magnetic field of the Earth. In other fish, muscle cells have developed into an electric organ. It allows them – depending on the specificity – to catch prey, to fend off enemies or to make location and communication in murky waters possible.

The sensual perception of fish may differ strongly from ours – after all we know today it does not seem less differentiated and astonishing than that of humans.

Aquascaping

secret (underwater) gardens

by Elena Rathgeber

Firstly, it is remarkable that many design elements, the so-called "hardscapes" are used, and that plants are a central feature in the tank. The animal stock – if not missing entirely – is normally not chosen for its own sake but is intended to support and complete the harmonic overall impression of the aquascape. Besides this unusual balance, the desire to present a natural impression is another basic difference to conventional aquarium care. This again differs from the formal gardens in so-called Dutch style aquariums.

Intense occupation with certain details of a landscape scenery opens entirely new angles of view and sharpens perception. Everyday impressions – some mossy trees on a forest walk, ferns on rocks in a brook or an austere dune landscape with a crowd of birds – become a source of inspiration for fascinating submerged works of art full of tension and harmony at the same time. However, "nature aquariums" requiring plenty of maintenance must not be confused with low-maintenance "natural aquariums". A real high-tech aquarium ensuring, among others, intense lighting, CO_2 supply and directed nutrient supply is usually required for presenting a natural impression effectively.

The basics

Aquascapes without doubt require a certain amount of dedication and equipment. But do not worry, setting up an aquascape worth looking at does not require delving into Far Eastern secret knowledge or paying huge amounts for accessories. Do not become discouraged if your first tries do not exactly meet your expectations. You will learn from mistakes.

It is advisable for beginners to actualize relatively easy plans at the beginning. Some simple sketches may be useful for this purpose. Do not forget to consider the growth of the plants. The basic preconditions must be correct so the setup itself can be successful. Make sure to use well performing, reliable technical equipment from one source. sera provides you with everything you require for a successful aquascape.

sera Biotop Nano LED Cube 16

Aquascapes are artfully designed underwater realms that bring a calm spot, a place of joyful relaxation and harmony into your living environment.

Underwater ("aqua") landscaping finds more and more followers since Takashi Amano laid out its basics in the 1980's. But how do these esthetic works of art actually differ from entirely normal aquariums?

sera flore CO_2 fertilization system for safe and intense CO_2 supply

Make sure that the hardscapes (roots and rocks) as well as decorative bottom ground (sand and gravel) are suitable (no releases of undesirable substances, no rotting wood). When beginning, choose plants that are easy to keep, and select a modest animal stock. Add a sufficient number of fast growing plants at the beginning, this prevents algae becoming a problem.

Apart from that, let your selections be guided by your esthetic sensitivity. Play with the different structures and colors of the plants and hardscapes. Add highlights, e.g. by small shoal fish or shrimps. »»

sera floredepot – the functional bottom ground for healthy plant growth

sera Professional floreground – for a long lived bottom ground

The setup

There are different possibilities for the composition of the aquascape as such. The all have in common that the **focal point** should not be in the center but slightly shifted to the side. This creates a harmonic and pleasant impression. Colorful elements or eye-catching structures (e.g. a larger rock, a red plant, a branched root) may serve as focal point. Smaller tanks should contain only one eye-catcher. The impression otherwise becomes too uneasy.

Optical creation of **depth** is another basic setup guideline. You can achieve this spatial illusion, among others, by staged planting (small, surface covering plants in the foreground, big solitary plants rather in the background). While dark plants with large leaves should rather be placed at the sides, brighter fine-leaved plants are mainly placed in the center. This enhances the impression of depth and creates balance and tension by playing with contrasts.

Free spaces are another important stylistic element. The tank should not be overloaded with design elements and plants. The "negative" areas that remain free create calmness, depth and width. They are furthermore important for the specific swimming behavior of fish.

Avoid static, straight-lined or strictly symmetrical constructions. They appear unnatural and unbalanced. Rocks and roots should be planted, thus creating a more natural impression.

Maintenance

Using suitable products prevents unnecessary plant damage

After setup, regular and careful maintenance of the tank – gardening – is the key to a successful and long lived aquascape. The versatile stem plants, in particular, need to be cut back frequently (preferably before a partial water change).

The basic requirements of the plants must be fulfilled in a suitable way for getting splendid, intensely colored plants with balanced and strong growth in return. Nutritional requirements of aquariums can be very different. They are, among others, influenced by the species and number of plants, by light intensity and lighting time, temperature and carbon dioxide supply. Optimal growth is only possible if all necessary nutrients are available in sufficient amounts. Plant growth will be affected if just one is missing (according to Liebig's Law of the Minimum), and algae can spread due to lacking competitors. Nutrient intake takes place through the food, the water used for partial water changes, and via the corresponding fertilizers.

All plants require light for photosynthesis (build-up of organic material from inorganic precursors). Sufficient light intensity is essential. The light color, however, may be varied within certain limits for harmonizing it with the desired impression of the aquascape. We recommend innovative LED technology with particularly low energy consumption for optimal and individually selectable lighting.

Carbon is the basis of all life on Earth. Lacking carbon dioxide is one of the most common reasons for insufficient growth of submerged plants. The sera CO_2 fertilization systems ensure the plants are safely and intensely supplied with this basic nutrient.

Besides carbon, hydrogen and oxygen, the plants require a whole range of other nutrients for their growth and their health. The new and improved sera complete range for balanced plant care allows supplying the aquarium plants with all these substances in a directed and individually balanced way.

The sufficient availability of some parameters can be checked with water test kits (e.g. sera Fe-Test). However, insufficient supply with other nutrients can sometimes only be detected indirectly via damages (e.g. potassium – necroses, small black dots, among others). The most common deficiencies are caused by an insufficient supply with carbon, nitrate, phosphate, potassium, iron and magnesium. Ailing, pale or poorly growing plants, however,

may also be a sign for unsuitable conditions (e.g. wrong temperature or pH value, insufficient light) or for diseases (e.g. fungi and viruses).

The sera basic plant care products (sera florena in case of predominant nutrient uptake through the leaves, and sera florenette in case of predominant nutrient uptake through the roots) ensure – proper dosage provided – the basic supply of your aquatic plants with all important nutrients. Additionally, lighting and basic water parameters must be checked for suitability, and sufficient carbon dioxide supply must be ensured.

The sera system plant care products close specific supply gaps. For instance, you can also fertilize your plants with sera flore 1 carbo as an alternative carbon source instead of a CO_2 fertilization system. Combined use with a fertilization system also makes sense. sera flore 2 ferro helps covering an increased iron demand, e.g. in case of the attractive red plants. Rare trace elements and supporting vitamins from sera flore 3 vital ensure increased disease resistance, in particular in case of fastidious plants.

Low or missing animal stock, but also very strong plant growth (plenty of light and CO_2) often leads to the main nutrients nitrate, phosphate and potassium being insufficient. sera flore 4 plant provides help in this case.

All sera plant care products are characterized by excellent compatibility for invertebrates. They are (of course excluding sera flore 4 plant) furthermore free from phosphate and nitrate. The new iron complex composition used in sera florena and sera flore 2 ferro is very stable even under the influence of strong UV light.

The combination of depot effect and daily fertilization with flexible dosage possibilities allows individual fine-tuning to the requirements of the aquarium and thus supports optimal plant growth and plant health. Algae cannot spread due to the effective growth competition.

All described design strategies and maintenance recommendations are of course also suitable for conventional aquariums without any problems. Why should a common community tank not be enhanced by the esthetic basic aquascaping ideas as well?

01 The sera marin Biotop LED Cube 130 as a complete set for an immediate start into the marine aquarium hobby.

02 First the future little reef is built from coral rock.

03 The bottom is covered with fine sand.

07 + 08 The corals are carefully positioned by hand in a location that meets their light and water current requirements.

09 Immediately after adding the first corals, the protein skimmer begins its work and removes proteins and floating particles from the water.

Bringing **the sea** to your home

The setup of a marine aquarium

Many aquarium beginners are still skeptical when it comes to the "marine aquarium". There is prejudice that marine aquariums cause plenty of work, high costs and complicated maintenance. In an interview, sera retailer Kurt Landen from Mönchengladbach/Germany explains that this need not be the case anymore today, and that there are affordable and easy-to-keep complete systems also for beginners. Furthermore, he shows the startup process of a marine aquarium from the setup to the biological activation phase in the photo story.

sera retailer Kurt Landen from Mönchengladbach

Which requests do your customers have?

Many aquarists, in particular beginners, dream of underwater worlds they know from their summer holidays, for instance with corals, clownfish or cardinal fish. They are fascinated by the splendid colors and would like to bring it into their living room or their office with a marine aquarium.

Which obstacles for beginners were there?

Some time ago, those who wanted to start a marine aquarium required a large tank, its purchase and maintenance were expensive. Also, setup and maintenance required plenty of work. Beginners often could not meet these requirements. Only people who switched to marine aquariums from freshwater tanks had the necessary experience in aquarium care.

In how far has this now changed? How do you approach these problems when counseling customers?

First I try to overcome the fears customers have concerning the requirements of a marine aquarium. I refer to high quality products such as those by sera to do so. I can particularly recommend the complete system of the sera marin Biotop LED Cube 130. It allows beginners to start a marine aquarium – without high costs or maintenance efforts.

04 R/O water and sera marin salt are blended in a large container. The resulting marine water is used for filling the tank later on.

05 The blended marine water can be used right away for filling the tank over the reef.

06 All floating particles are filtered off after 3 – 4 days, and the first corals can be added.

10 + 11 The biological process in the water is supported by adding sera marin bio reefclear. This makes it easier for the corals to accommodate. The liquid biofilter medium causes a milky cloud that deposits after a few hours.

12 The tank at the beginning of the biological activation phase.

Why is the complete system particularly suitable for beginners? What are the advantages?

The tank is really easy to maintain and contains everything required at the beginning: a big 4 chamber internal filter with the high performance filter medium sera siporax Professional, a skimmer, a heater, a UV-C clarifier and a feed pump. The aquarium can be put into operation immediately due to the plug-in complete equipment. The components optimally match each other, maintenance efforts remain low. Weekly cleaning and a water change usually do not take longer than 30 minutes.

Are there also possibilities to not only reduce maintenance requirements but also the costs?

Using LED chips in the lighting unit make sense here. They save a lot of energy and are therefore particularly advisable for marine aquariums, as electricity costs often are slightly higher than with freshwater aquariums. Also, due to the combination of surface movement and LED lighting, the light conditions are close to those in the sea.

How does aquarium setup work?

Basically, the setup of a marine aquarium is much easier than expected by many. I can only recommend the sera guide "Marine aquariums" as a guideline. Setup is quite easy if you follow the steps. We offer it as an additional service for customers who nevertheless do not want to set up their tanks by themselves. When doing so, we can individually consider customer requirements and offer tanks only with live rock, with corals or even set up and stocked completely.

Fragment of a *Acropora* sp. that can be placed in the tank.

When can the first fish be added?

Snails, hermit crabs and shrimps can be added about three weeks after the first corals. These animals eat present algae and do not pollute the water during the activation phase. The first fish can be put into the aquarium at the soonest after four weeks. Species that remain small, such as small demoiselles, clownfish or gobies, are particularly well suited.

In one of the next issues, you will see how the tank has developed and how it can look in its full splendor. You can get the sera guide "Marine aquariums" from your retailer or on the Internet on www.sera.de.

SERA PRIZE GAME

1st prize

sera Biotop Nano LED Cube 16
Complete aquarium with LED lighting and filter system

2nd prize

Plant care kit consisting of
sera florena (250 ml),
sera florenette (24 tablets)
plus 50 ml each of
sera flore 1 carbo,
sera flore 2 ferro,
sera flore 3 vital and
sera flore 4 plant
Plant care system for all requirements

3rd prize

sera siporax Professional (290 g/10.2 oz.) and sera filter biostart 50 ml (1.7 fl.oz.)
High performance filter medium and filter starter for crystal clear water

We took out our magnifiers and extremely enlarged a picture from this issue. Do you find back the selection in the original photo?

The original photo is on page: ( )

Simply write the according page number in the dotted circle and send us your solution to: Redaktion "sera VIVO", Password "2.2013", Postfach 1466, 52518 Heinsberg, Germany or by e-mail to 2.2013@sera.biz, Re.: "sera VIVO". Everybody above 18 years may participate, except sera employees and their relatives. Participation entries must be submitted before April 30th, 2014. Do not forget your name, address, and the password "2.2013". Recourse to legal action is ruled out.

children's page

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choosing was very difficult for us due to the large number of beautiful pictures.
Don't be sad if your picture is not shown here – maybe you'll be successful next time!

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A shopping voucher worth € 100,–
Matúš G. from Bratislava, Slovakia, 12 years

3rd PRIZE
A shopping voucher worth € 25,–
Alex V. from Novelda, Spain, 7 years

2nd PRIZE
A shopping voucher worth € 25,–
Daniel B. from Wuppertal, Germany, 11 years

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