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# PHYSIOLOGY OF ANIMALS

## STUDY OF AQUARIUM BUSINESS. TYPES OF AQUARIUM FISH, THEIR FEATURES

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### Abstract

The aquarium has long been one of the elements of the interior of a person's home. In addition to a purely utilitarian purpose, the aquarium has one of the leading places in the system of naturalistic, environmental work and research work, which is held in secondary and higher educational institutions. All aquarium fish are divided into families, and there are only 7: carp, catfish, cichlids, labyrinthine, iridescent, live-bearing and characin. Aquarium - is an object that allows you to comprehensively study living organisms, their development, relationships and connection with the environment. Biologically the complex of a modern aquarium is a complex ecosystem that makes it possible to get acquainted with the cycle of substances in nature, promotes the formation of aesthetic feelings and ecological thinking, it's not just a unique decoration for anyone interior, but also an important component of health and energy support potential and mental balance of the person, both in the conditions of the apartment and in offices.

**Keywords:** Carp, vitamins, aquarium, breeding, food, size, color.

### Actuality of theme.

Aquarium fish is a method of improving health that improves health and earns money. Some specialists deal with expensive exclusive fish species.

### Analysis of recent research and publications.

Aquariums also play an important role in research. It is much easier for researchers to observe its inhabitants in the aquarium than in the wild, to determine the characteristics of their behavior, color, nutrition and spawning. American scientist J. Cowtes, observing electric eels in the aquariums of the New York Museum, first discovered group communication signals in electric fish, which was later confirmed by special experiments of other scientists.

In 1841, the first aquarium in the modern sense of the word appeared. The English scientist Nezeville Ward (1791–1868) settled goldfish in a glass vessel together with the plant valisneria, and so accidentally became one of the ancestors of the modern aquarium.

### Carp



### Representatives of carp fish species

The richest family of species among other families of fish that live mainly in freshwater (some of them can withstand salinity). In the modern world fauna there are about 2420 species of carp fish, which belong to 220 genera. The modern fauna of bony fish of Ukraine includes about 58 species of 31 genera of carp.

Features of structure: Carp do not have jaw teeth, but they have so-called pharyngeal teeth, which are located on the lower pharyngeal bones. With their help,

food is crushed and sometimes ground. The body of carp is almost always covered with scales, there are no scales on the head. Dorsal fin one. Some species have tendrils, but no more than two pairs. The swimming bladder is divided into two parts: the front - smaller and the rear - larger.

Family members are distinguished by body shape, structure and number of pharyngeal teeth, shape and location of fins.

Carp are an extremely diverse group of fish. Some of them live only in cold, well-oxygenated waters, but many fish prefer warm waters with low oxygen content. Carp fish do not migrate long distances. Females lay a large number of eggs and after its fertilization do not show any concern for it.

Among the carp are many species that do not reach significant sizes, so they have no industrial significance.

The most common species of carp in aquariums are: goldfish, barbs, zebrafish, cardinals and labeos.

All members of the carp family never show aggression towards other fish and are best suited for beginners because they are not picky about different parameters.

### Goldfish

Goldfish definitely have the longest history of all aquarium fish. It is said that the first mention of goldfish appeared in China in the VI century BC. It was then that the ancestors of the modern goldfish became decorative pets. Goldfish definitely have the longest history of all aquarium fish. It is said that the first mention of goldfish appeared in China in the VI century BC. It was then that the ancestors of the modern goldfish became decorative pets [5].

Goldfish have pharyngeal teeth. They have no stomach, the digestive tract is located at the beginning. The fish has become universal, eats almost everything. They can even eat snails by spitting out the sink.

They eat a lot and willingly. Both live and plant foods should be included in their diet. Goldfish need

less protein than tropical aquarium fish but more carbohydrates. Adult fish are fed once or twice a day. Feed is given as much as they can eat in ten to twenty minutes, and leftover food should be removed. Here, as never before, we must follow the golden rule - it is better to malnourish fish than to overfeed. Since a large part of the diet of goldfish is plant food, live plants will not last long in your aquarium. For gold - it's food. But you can use artificial plants and decorations

Long-lived goldfish are durable, under good conditions the fish can live up to 30 - 35 years, short-bodied - up to 15 years.

Goldfish are undemanding to the characteristics of water, for example, the temperature can range from 18 to 30 ° C. Optimal should be considered in the spring-summer period 18 - 23 ° C, in winter - 15 - 18 ° C. And the critical temperatures for them range from 35 degrees to 0 degrees. However, the temperature can not be changed dramatically. The speed of metabolic processes also depends on temperatures. At lower temperatures you can feed once a day [3].

Water hardness 8 - 25 °, acidity 6-8. If fish do not feel well, you can add salt to the water - 5-7 g / l. Fish tolerate salinity of 12-15%. Regular water changes and good filtration - mechanical and biological - are required.



*Comet*

At 25 ° C, the incubation period lasts four days. At this time it is necessary to remove dead and whitened eggs. They are covered with a fungus that can spread to the living. Varieties of goldfish There are approximately 130 varieties of gold. Among the most famous breeding fish are the following: comet (small, slightly smaller than other goldfish, and thinner); oranda or red cap (has growths on the head); voile tail (has a long tail consisting of several fused fins, creating folds and hanging like

Gold needs large volumes - ideally up to 50 liters per individual. For 5 fish you need an aquarium of 200-300 liters.

#### Breeding goldfish

Distinguish females from males can only be during spawning: males have a white "rash" on the gills and pectoral fins, and females belly is rounded.

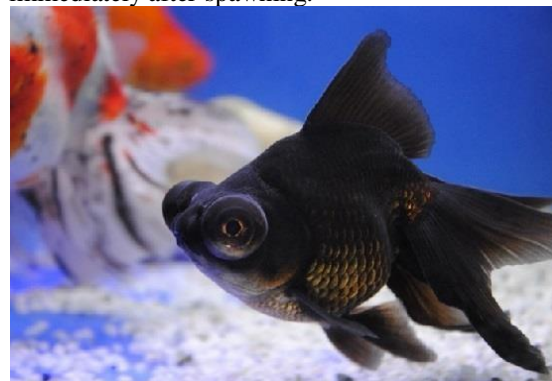
Puberty in goldfish occurs after a year, but full development, maximum brightness and splendor of the fins occurs only after two or four years. Therefore, it is desirable to breed fish at the same age.

Aquariums from 20 to 50 liters can be used for spawning. And the water level should be no more than 20 cm. Water needs to be fresh, defended.

The spawning ground should have bright light and strong aeration.

At the bottom you need a plastic mesh, and in one of the corners put a special substrate or nylon washcloth. The temperature is gradually raised by 2-4 ° C. In order for the eggs to be fully fertilized and spawning to be guaranteed, two or three males are taken per female.

In 2-5 hours the female has time to sweep two or three thousand eggs. The eggs are glued to the washcloth or fall under the net. The parents are removed immediately after spawning.



*Telescope*

a veil); telescope (has an ovoid or rounded body, convex eyes, size 1-2 cm).

Danio-rerio. Live in a game of 6-10 individuals. The most popular form is the veil. Reach 5-7cm, tilo vuzke. The cherevets and the anal swimmer are covered with tats. The Danish species is multiplying. Spawning when the temperature of the drive is adjusted, or often by the cold water. The female of this species will grow out of the male with a round cherevets.



*Danio-rerio*

Danio-erio non-vibrating ribs. The optimum water temperature is 22-26° C. Danio like a temperature from 15-17 to 30 C. Decrease, or increased specified temperature is not required.

#### Cardinals.



*Cardinals*

There are a lot of small ribs to help special minds. Reach 5cm. Live at temperatures 15-30° C. I live with dry food. Swim with rails.

#### LABYRINTHS

**Labyrinth** - (Anabantiformes) - a series of bony ribs, which are seen on the cob of the 19th century under the name Labyrinthiformes.

There is a lot of freshwater ribs, widen also in the stagnant waters of Africa, Pivdennoy and Pivdenno-Shidnoy Asia. The stench is good enough to endure anoxia and cleanse it without prescription.

The range includes 3 rows of 7 homelands:

Anabantoidei:

Homeland of Anabasovi (Anabantidae) - 4 births, 33 species;

Homeland of Helostomatidae - 1 child, 1 species;

Homeland of osphronemids (Osphronemidae) - 14 genera, 133 species;

Pidryad zmiogolovidni (Channoidei):

Homeland of the snakehead (Channidae) - 2 genera, 42 species;

Nandoidei:

Homeland Badidae - 2 genera, 30 species;

Homeland of Nandovi (Nandidae) - 3 genera, 9 species;

Homeland of Pristolepididae - 1 birth, 8 species.

In total 27 genera and 256 species. All the stench in the last was covered up to a number of perch-like, ale phylogenetic preliminaries brought their okremiy status in systematic bony ribs.

Features: Labyrinths do not require special minds, for all of them - it's not necessary to serve sourness, because the stinks of this labyrinthine apparatus can smell dreadful atmospheric dinners. Nayvidomishim representatives e pivnik, gurami, macropod, lalius.

Through its popularity and characteristic behavior - all one of the most beautiful watercolor ribbons. Male reache 7cm and ma dovgi swimtsi. , i e large for the female. Denmark is a kind of red, blue, yellow, white, black, green colorahs, also e vidi from the days of cich colorevs. Pivniks e labyrinthine ribs, more stench to smell atmospheric tint, then the stench is poured onto the surface hour by hour.



*Pivnik*

Pivniki of Peaceful fish. The stench can show aggression to deprive oneself of an open space.

The spawning of pivniks takes place quite well. Much will be male from the growing material on the surface of the water. I will eat the female in the ring, see the eggs, and then pick at the nests. The male doesn't form the larvae.



*Gurami*

Gurami. Bigger guramas with quiet and peaceful ribs, which can be trimmed in a spilny aquarelle. Susidami cannot be active aggressive fish, such as, for example, barbs. It is also impossible to trim at once spore vid and osfronemovyh, even the stench compete with oneself.

Osfronemovi - the most tropical freshwater fish. Stirring in the middle of a dense line of water near stagnant waters, or on small windows, a rychook from a cold flow. The fish are periodically flushed to the surface, scooped up the atmosphere of the atmosphere. Most species are all common [8].

A spawning ground for the osfroneme may be a small aquarelle. Wash it 3/4 with old aquarelle water and 1/4 with soft fresh water. level of water 7-15 cm for small species of fish and 20 cm - for great ones. With dib-leaved plants, create a grasp for the female. If everything is ready, before the spawning grounds, you should drink a couple of ribs and increase the water temperature by 2-3 ° C. Immediately after the end of spawning, the female should go from the spawning grounds, and the male will continue to feed and be killed.

#### Macropod.

Macropod may be mint, vivid, egg-like in shape, in front of a trocha, and on the caudal stem, squeeze tightly from the sides. Dovgi spinny and anal floats in the male sharpened and end with strings. These are the most virulent ones on the lyropodic tail boat. Males can virostaty up to 10-11 cm of the dwarf, females of the male - up to 9 cm.

**Macropod**

In the dorsal fin 13-17 hard and 5-8 soft rays, in the anal 15-22 hard and 8-15 soft, in the abdominal 1 hard and 5 soft, in the pectoral fins 11 rays (all m 'which). In the lateral line 29-32 scales. Vertebrae 25-29.

This is a pretty colorful fish. The main color of fish can vary greatly, can be orange, red, reddish-brown, brownish, olive-brown, greenish-brown, greenish-gray or just gray. The back is darker, the abdomen is light. The most characteristic color detail is 7-12 pairs of wide vertical red or brown-red and blue-green, blue or green stripes, alternating with each other. All strips are approximately the same width, sometimes they branch, sometimes interrupted. Gill covers are red or orange with a characteristic large blue to black spot. A dark stripe, crossing the eyes, connects this spot with the tip of the snout.

The red-blue striped pattern appears on the dorsal and anal fins. The caudal fin is red or reddish-brown, covered with blue dots and lines, has a shiny blue border. Dorsal fin blue, with the same lines as on the tail, on the edge it has a white border. The anal fin is blue in front, red behind, and also has a white border. Abdominal fins are bright red with white tips, pectoral are transparent and practically not painted.

Males are noticeably larger than females, have a brighter color, their fins are larger and have longer "threads". The color of females is yellowish-brown with inconspicuous transverse stripes.

The color intensity of macropods can vary significantly depending on the sex, age and condition of the fish. It is highest in excited males during spawning and during fights. Instead, the frightened fish look completely light and pale. Depressed males, occupying the lowest rank in the hierarchy, are almost indistinguishable in color from females. In young specimens, the vertical stripes are indistinct, may be completely absent, and the color is uniform, pale yellow-brown; males and females are almost indistinguishable from each other.

**Lalius****Lalius**

Unpretentious to the conditions of detention. It was first brought to Europe in 1874. The species is widespread in the freshwaters of northern India, as well as in Pakistan and Bangladesh.

Occurs in reservoirs with slow currents and dense vegetation: in ponds, swamps, ditches, rice fields and irrigation canals. The body of Lalius is oval in shape, tall, short and strongly flattened on the sides. Dorsal and anal fins are low, but have a long base, begin immediately behind the gill covers and extend almost to the caudal fin.

Abdominal fins are transformed into long and thin tendrils, they are in front relative to the pectoral fins. In the dorsal fin 15-17 hard and 7-10 soft rays, in the anal 17-18 hard and 13-17 soft, in the thoracic 10 soft, in the abdominal 1 soft, in the tail - 14 soft rays. In the lateral line 27-28 scales. [4].

Maximum fish in nature reach a length of 8.8 cm, but in the aquarium it rarely exceeds 6 cm, males are slightly larger than females.

The color of Lyalius is simple, but extremely spectacular. However, this applies only to males, females in these fish are not very expressive. The whole body of the male is covered with oblique transverse stripes of bright red and blue-green colors, which alternate with each other. The stripes consist of bright dots of the appropriate color and almost glow in side lighting. The color of the dorsal, anal and caudal fins is one with the color of the body and consists of red and blue-green dots. Dorsal, anal and abdominal fins have a red border. The area near the throat is indigo.

The female is painted much easier. Her body is a faint golden-brown color with barely noticeable blue-green stripes, much paler than in males. The fins are transparent, mostly colorless. In addition to the fact that males in Lyalius are larger and brighter in color, the ends of the dorsal and anal fins are slightly elongated and pointed, in the straightened state, these fins connect with the tail and form a very beautiful border around the body. Females are slightly thicker than males, and the ends of the dorsal and anal fins are rounded. The lifespan of Lyalius in the aquarium - 2-3 years.

Several variants of coloring of Lyalius are deduced. They are known by various trade names: red Lyalius, blue Lyalius, cobalt Lyalius, coral Lyalius, neon Lyalius, Flame Dwarf Gourami, Sunset Dwarf Gourami, Powder Blue Dwarf Gourami, Cobalt Blue Dwarf Gourami, Coral Blue Dwarf Gourami, Coral Blue Dwarf etc. Almost all of these breeds were bred on specialized farms in Singapore.

Lalius is a peaceful and calm fish, it can be kept both in the species and in a shared aquarium with other peaceful fish. When kept in pairs, these fish are often timid. During the spawning period and during the care of the nest, the males become very aggressive and attack all the fish that approach their possessions.

A 20-liter aquarium is enough for a pair of lyalius, but for greater comfort of fish, the volume of the room should be increased to 50 liters. Dark soil and bright lighting emphasize the color of the fish. The aquarium should be densely planted with plants, including those that float on the surface. It is recommended to cover the aquarium with a lid so that lyalius, which breathes atmospheric air, does not catch a cold when the room temperature is cool. Also, given the way lyalius breathes, there must be areas free of plants on the surface of the water.

Lalius love warm, clean and clear water.

Water parameters:

Temperature - 22-27 C, Hardness - from 2 to 18 ° dH, is not essential, but it is better that the water was soft.

Acidity - pH 6.0-7.5. In nature, fish prefer acidic water.

The fish is omnivorous, suitable for any live, vegetable or compound feed, as well as dry food. Prefers live food. Lalius can spit water,

Lively

All live-bearing animals (swordfish, guppies, molinesia, petzilia) belong to the petilia family. They are very easy to reproduce because they do not lay eggs, but give birth to fry, which immediately feed on their own. That is why they are called - live-bearing [7].

### **Guppy**

Guppy is the most popular and unpretentious aquarium fish. It is not large, about 5-6cm. The decoration is varied. Consumes dry and frozen food. The male differs from the female by the caudal and anal fins, as well as the size of the abdomen. Easily tolerate temperature changes.

Guppies reproduce very easily, it can give birth to fry even in a glass jar. Gives birth to fry, which immediately eat small food. It is worth knowing that the more expensive the guppy, the more demanding it is, and less tenacious. You also need to consider the neighbors for this species, because their velvet fins can pinch other species. It is not recommended to strengthen to a group of voile tails, barbs, predatory and cyclic fishes. This fish is best suited for breeding. This species is the enemy of the spread of malaria, mosquitoes, biplanes, mosquitoes.

### **Petzilia.**



*Petzilia*

Popular aquarium fish with yellow, black and red colors, 4-5cm long. The male differs from the female by a sharp anal fin and a smaller size. This fish breeds easily, is live-bearing, quickly and easily gets along with peaceful aquarium fish. There are two forms of petioles: sail and disc.

Favorable temperature for the petiole is 23-25° C, at higher temperatures fungal diseases can appear. Petioles feed on plants, can also eat dry and live food. It is desirable to live in aquariums with a large number of algae.

### **Swordsmen.**



*Swordsmen*

The female petiole can change her sex, even after giving birth. They can also interbreed with swordsmen.

Adult fish of this species reaches 10 cm without a sword. It is the sword that distinguishes the male from the female. Female swordfish can reach 15 cm, and the color in them is cloudy.3 Swordsmen come in different colors, but the most common swordfish are red. There are two forms of this aquarium fish veil and sailing. In the veil form, both females and males have swords, so they can be distinguished only by the anal fin. They reproduce by giving birth to formed fry. They eat live or dry food, and do not give up green algae.



*Molinesia black*

**Molinesia black.** From the name it is clear that this is an aquarium fish of black color, which was derived from the natural form of gray molinesia. This fish reaches 4-8 cm. Demanding of living conditions. Reacts very sharply to lower temperatures. Fish can die from low water temperatures. Males are smaller than females.

This aquarium fish has two types of fins: triangular, round. You also need to pay attention to sailing molinesia, they are more demanding of water. Molinesia feeds on plant-based food. Molinesia black is live-bearing, gives birth to up to 350 children.

Cichlids are the most colorful members of the Ostariophysan family among freshwater fish worldwide. They are mainly distributed in Africa and South America. There are at least 1,600 species in Africa. An impressive number are found in Central America, from Panama to the Mexican part of North America (120). Asia does not have cichlids, with the exception of four species in the Jordan Valley, one in Iran and three in India and Sri Lanka, and three species in Cuba.

The cichlid family has a large number of different species of fish, about 1900, making it one of the three largest rows of vertebrates [12].

Representatives: aulonocara, pseutotrofeus, haplachromis, iodotropeus, labeotrofeus, yulidochromis, cynotilyapia, astronotus, apistogram, scalar. They differ in their range of colors, behavior, size and body shape.

Interestingly, cichlids are excellent parents, many species hatch in their mouths. During childbearing, the fish does not eat for several weeks. And when the eggs have already formed fry, he periodically walks them:

opens his mouth and a flock of small fish follows for a walk, I as soon as the mother fish felt some danger, she opens her mouth again and all the children swim back.

Among the cichlids are herbivores that feed on algae (eg Petrochromis) and plants (eg Etroplus suratensis) and small animals, including invertebrates. Some cichlids are saprotrophs and eat all types of organic matter. This species includes tilapia of the genera Oreochromis, Sarotherodon and Tilapia, are predators that feed on large numbers of small animals, including other fish and insects (eg Pterophyllum).

Trematocranus eats snakes, while Pungu maclareni feeds on sponges. Certain cichlids feed in whole or in part on other fish. Crenicichla is a typical predator that attacks small fish swimming near their hiding places. Rhamphochromis is an open predator that catches up with its prey. Paedophagus, like all

species of Caprichromis eats the eggs or fry of other fish. Among the most unusual diets are Corematodus, Docimodus, evelynae, Plecodus, Perissodus and Genyochromis, which consume the scales of other fish, as well as Nimbochromis and Parachromis, which lie motionless, luring small fish into their traps.

#### **Aulonocara**

Aulonocara - almost all species of fish are peaceful, only males during spawning can be aggressive towards other fish. These fish are predators, so plant foods should make up 80 percent of the total diet. To keep aulonokar you will need a spacious aquarium of at least 100 liters. As soil fine sand with a fraction no more than 2 mm is put. This is due to the natural love of fish to dig the bottom, where they look for their food - small invertebrates. In the aquarium it is necessary to place a large number of shelters made of stones, caves, grottoes - they can hide young or females, which are actively cared for ready to spawn males.

#### **Apistogramma**

The name of the genus Apistogramma literally means "wrong side line". In most species, males are much larger (7 to 9 cm) and brighter than females.



*Apistogramma*

All kinds of apistograms are predators. Their diet consists mainly of insect larvae, fry of other fish and other invertebrates. These fish are quite peaceful and do not attack fish of other species if they do not swim in their territory.

Many types of apistograms are very sensitive to changes in the chemical composition of water. Apistogram is best kept in a species pond with a large number of shelters (in the form of plants and caves).

Despite its popularity, apistograms are not recommended for inexperienced amateurs. Apistograms lay eggs mainly under the protection of leaves and roots, in small caves or under leaves.

Behavior during reproduction is very developed, as in most cichlids. All types of apistograms spawn in caves, usually under rocks or in holes in sunken tree trunks.

Some species of the genus are polygamous, while other species form monogamous pairs. In most cases, during reproduction, females are more active in caring for offspring, while males protect the area from predators. The sex of fry depends on the conditions of detention, water - in warm and soft water there are more males.



### Scalars.



*Scalars*

Scalars live in the basins of the Amazon, Orinoco and Esekibo rivers in South America.

The name *Scalaria* is sometimes used for members of the genus, but in reality the name refers to only one species - *Pterophyllum scalare*. Also sometimes for members of the genus is used the name Fish-angels (translated from English. Angelfish).

The characteristic shape of the scalar body - a very compressed body on the sides, a thin body when viewed from the front, and wide when viewed from the side, with high triangular dorsal and anal fins up to 25 cm tall - is not typical for other cichlids.

It indicates that scalars are found mostly in slow-flowing bodies of water and hide among plants. 15 cm long. Abdominal fins are also very long; with them the fish touches objects and other scalars. The color of the scalars helps them to hide among the plants. The body is silvery-gray, softly shining in the incident light. Across the body are four stripes. Depending on the condition of the fish, the color of the stripes varies from velvety black to grayish [2].

Scalars do not swim fast, but in case of danger they instantly disappear in the thickets. To notice the danger in time, they are kept in flocks of 10-15 fish. In the flock you can see the division into pairs. It is difficult to distinguish a male from a female, but it is not necessary. In the aquarium, the fish themselves will choose a partner from a flock of 6-10 young fish. There are specimens and shapes that differ in color, pattern, length and shape of the fins and so on.

Scalars are predators. In aquariums are relatively unpretentious, feed on artificial food, coexist with all aquarium fish of their size, but prey on smaller fish. They lead a daily life. One of the features of these fish is monogamy - the fish form pairs for life. There are cases when a scalar dies after losing its partner.

Phytophiles - eggs are laid on a leaf of a plant, as well as on a stone or other similar surface, which is previously cleaned. The parents guard the eggs and the fry for some time.



*Yulidochromis*

**Yulidochromis** is the largest representative of its kind. Under natural conditions, grow up to 30 cm in the aquarium females reach a size of 10-13 cm, males - 12-15 cm on the body of light yellow or brown-yellow color are four stripes of black-brown color. On the tail are several rows of bright areas. On the gills - dark spots.

To keep them, the aquarium must be long, and its volume will be at least 200 liters, the number of fish - 5-6 pcs. The bottom is mostly sandy-stony. Relief in the form of gorges, grottoes, between which plants are planted. High-quality aeration of water should be carried out. Lighting should be sufficient. Fish prefer live food (small crustaceans) or quality substitutes. Get along well with other species of cichlids. Within its kind - competition. Fish that have not found a mate in a shared aquarium, it is better to set aside. During the breeding season, the female lays from 50 to 200 eggs. In 10 days fry appear [1].

Life expectancy in the aquarium - 10-12 years. The ability to reproduce offspring persists for the first 4-5 years. Puberty occurs at 8-12 months. To stimulate the reproduction of any type of yulidochromis, it is necessary to raise the water temperature by 4-5 degrees. Marlier's ulidochromes grow up to 13 cm (up to 15 cm in nature). Light milky, cream body background is decorated with a black mesh pattern. The edges of the fins are light blue and decorated with a black border. An adult male develops a subcutaneous fat growth on his head [4].

**Kharacin** (Characidae) – small tropical fish, which are part of a number of character-like, relatives of carp, with which in the past they were the only group that today has given birth. Kharacins have a bright color, they are easy to keep in captivity, so they are popular among aquarists.

Length is usually 4-8 cm, some species - up to 17 cm. Puberty: 1-2 years. Flocks of fish living at medium depths. Life expectancy: 3-4 years. The family consists of almost 850 species living in Central and South America, as well as in Africa. Kharacins are related to the family of cuneiform, lebias, as well as piranhas and nanostomus.

Some members of the caracin family are exclusively herbivores, but most fish are omnivorous. Kharacins eat everything that is available to them in size and is at least a little edible. Characins gather spontaneously in flocks and are kept among underwater plants

in stagnant waters or waters with a slow flow at medium depth. Fish feed on worms, insect larvae and adult insects that accidentally fall to the surface. During the rains, the diet of haracin is supplemented by drowned animals. The greed of these fish is a major problem that aquarists face, as fish sometimes eat their own fry and caviar. Whether cannibalism is a characteristic phenomenon for haracin and in nature, scientists do not know.

**Reproduction:** During spawning of characins in fish there is a general emotional rise. Male ternets circle around females with open fins, then pairs of zigzag movements float in the algae. Females lay eggs on the leaves of aquatic plants, males fertilize it with milk. Many species lay eggs in special capsules that attach to the leaves because they have a sticky surface. After spawning, the female leaves the eggs, not caring about the future of their offspring. After 2-3 days, and in some species even earlier, the fry hatch. They feed on microscopic animals and plants, gradually begin to try adult food. Some species of characin reproduce in an unusual way. Females of the species "Arnold's Chapel", which are also called jumping characters, lay eggs on the underside of the leaves of coastal plants, jumping out of the water several times. Then it is the turn of the male, who fertilizes the eggs laid by the female, but does not leave it, but stays next to the clutch, spraying it with water to prevent drying of the eggs. The male does not leave the guard until all the fry hatch, which fall into the water when they are born [3].

Very popular representatives among them are: neons, cardinals, tetras, ternets. They are very easy to maintain and easily propagated.



*Neon*

**Neon** is a species of freshwater fish of the haracin family. Homeland of these species of fish is - the upper part of the Amazon River basin (shallow water). Popular tropical fish for keeping in aquariums.

Fish up to 4 centimeters long. In the wild, neon is common in tributaries of the Amazon River. Females of neons differ from males by a fuller belly, while the blue shimmering stripe running along the body of the fish is bent, and in males it remains straight. It is not difficult to keep these fish. Neon is not demanding to the quality of feed. The water temperature for keeping fish should be around +21 +23 degrees.

Neons are placed in aquariums, where there are densely planted plants, where they can hide or just swim between them. Plants are planted around the perimeter of the aquarium, leaving free only the wind-shield and center, so that the fish swim and feed, and they could be easily observed. It is desirable to contain

neons in a flock, as in nature they are schooling fish. When the flock moves synchronously and shines with its neon stripes, it is quite an enchanting spectacle.

Neon fish can eat any food, both live and dry, only small. To fully prepare producers for reproduction, it is desirable to first keep them in a spacious aquarium and feed a variety of live food. Then you need a spawning tank for 2 liters, at its bottom should be a lattice. Before pouring water, rinse the spawning tank with soda and rinse several times.

To dilute the neon, heat the water to +22 + 24 degrees, while the carbonate hardness of the water should be minimal. The water should stand for 10-15 days. Then you need to saturate the water with humic acids and tannins, ie you can add an infusion of alder, or peat, the water should become light amber in color. Only a couple of fish, male and female, should be planted in the spawning ground. Light can adversely affect the development of eggs, spawning and further development are carried out in the dark. Usually the female lays 100-150 eggs, the falling eggs fall under the lattice, and the fish can not eat it. When spawning is complete, the fish are landed from the spawning ground. The lattice is removed, and the bad whitish caviar is picked and removed, in the dim light, with a pipette with a melted end. Then the water level is reduced to 5 cm. When the

fry swim, you can start feeding them and slowly add fresh water. In the beginning, the fry feed on rotifers.

As the fish grow, the food enlarges and its number increases. Then the fish are moved to a normal aquarium.

**Cardinal** - agile fish, body shape similar to Danio. They are 4 cm long. The color of the fish is modest. The upper part of the back is yellowish-brown, on the background of this color from the eyes to the tail is silver-blue and golden stripes. It is especially distinguished in young individuals. The back is greenish, the abdomen is white. The fins are lemon yellow, the apex of the dorsal, anal, abdominal and middle caudal fins are red. Dorsal and caudal fins have two main colors: lemon and bright red. If the fish are kept in a fairly overgrown aquarium, on a dark background and in stable conditions, their body acquires a unique purple color. Perhaps this is why the species got its name, because the cardinals wear red clothes.

A school of fish looks especially impressive if it consists of individuals of different ages. The rich silvery-blue color of young individuals in combination with ruby-red fish of older age can not leave anyone indifferent [5].

The veil form of cardinals is not uncommon in tanner aquariums. Artificially derived veil forms of cardinals for their lively character and bright colors are aptly called "meteors".

The water temperature in the natural habitat of the fish fluctuates both during the day and throughout the year. In winter it decreases to 14 ° C heat, in summer it reaches a maximum value - 26 ° C. The temperature range of 20 ° C-25 ° C is best for keeping in an aquarium.

Cardinals can be kept with any peaceful fish, but the best results can be achieved when keeping them with loricaria or ancistrus. Other species, even such as

guppies, can eat fry and larvae of cardinals. Cardinals do not eat their offspring.

The fish is characterized by high resistance to disease, small size, attractiveness, ease of maintenance, reproduction and feeding of fry.

Cardinals are unpretentious to the quality of water and food. They consume small crumbs of milk powder from the surface of the water and washed in cold water semolina, washed and pounded frozen fish, tubers, small moths and any specialized artificial feed.

The surface of the aquarium water should be covered with small-leaved plant species, or those that have a branched root system (navel, ceratopteris, etc.). In the thickets near the surface of the water in aquariums, even small sizes (20-30 liters) multiply in sufficient quantities of microorganisms that are food for young cardinals. A large number of plants and a sufficient number of shelters create favorable conditions for cardinals to reproduce and develop.

In order for the cardinals to reproduce, it is necessary to replace 1/10 of the aquarium water volume with fresh water once a week. In such conditions for 3-4 weeks in a row cardinals lay 5-10 eggs on small-leaved plants.

With the appearance of fry in the aquarium, it is desirable to make feed organisms (rotifers, ciliates), as well as feed them powdered milk, baby feed mixture "Baby", or artificial feed "Tetra".

**Ternetsia.** It was first imported to Europe in 1993. It is silver with three black transverse stripes on the sides, one of which crosses the eyes. Males are smaller than females, almost black, have a more pointed dorsal fin. Fish are peaceful, flock. Floats on all levels [9].

Adult ternets reach a length of 3.5 - 4.5 cm. The body is flat, dark silver color, along the body are three black stripes. One of them passes through the eye, the second - at the end of the gills, the third - from the beginning of the upper fin. The rest of the body - from the third strip, including the upper and anal fins, black, giving the impression of a skirt. The pectoral, caudal and ventral fins are quite transparent. The anal fin resembles a black unfolded fan. These fish are quite energetic, mobile, swim in separate flocks, often attacking each other.

Adult fish retain a dark color only when kept in the dark, in the light the black color turns grayish-silvery. Aquarists derived a veiled form of ternetsia [12].

Ternetsia is a fish that lays eggs, acceptable for its spawning temperature is 25-27 ° C, water hardness 4 °, pH 6.8-7.0. Spawning in ternets is paired (sometimes practiced in flocks). Males and females are placed in a spawning tank, preferably with a capacity of at least 40 liters, at the bottom of which are placed aquarium plants or nylon mesh, which should have holes large enough for falling eggs to pass freely through the cells of the net, and at the same time not large enough for so that the fish can slip between them and get to the caviar.



***Ternetsia***

A pair of ternets can make up to 1000 and sometimes up to 2000 eggs per spawning, after spawning producers are discarded. The incubation period lasts 24-36 hours, after which the larvae appear, after 3-5 days the larvae of ternets turn into fry, begin to swim freely and take food.

**Tetra** - (*Hyphessobrycon eques*) is a species of tropical freshwater fish, which is also sometimes called the red fin with a long fin, or simply minor.

Sickle tetra can grow up to 5 cm.



***Hyphessobrycon eques***

The temperature should be 22-26 ° C, hardness dH 4-9 °, acidity pH 6.5-7.0. Fish love old water, so aquarium water needs to be replaced less often than usual. Fish are fed a variety of live, dry and plant foods.

#### **Rainbow fish**

Rainbows fish are distinguished by their colors and shades. In aquariums reach 8-12 centimeters, depending on the species. They are very active and usually occupy the entire aquarium. Bright representatives are: melanotenia, glasolepis.



***Melanotenia***

**Melanotenia** - Although these irises are called dwarfs because of their small size, they are very active and live in flocks, so it is best to keep them in a spacious aquarium with a volume of 100 liters. Also, the aquarium must be tightly closed, as they are excellent jump-

ers and can die. Love clean, fresh water with parameters: temperature 24-26C, ph: 6.5-8.0, 5-15 dGH. It is desirable to use a powerful filter, and create a flow in which neon irises like to play. They look best in an aquarium that resembles their natural habitat. Sandy substrate, abundantly overgrown plants, and snags as in their native rivers in Borneo. Like most irises, neons feel great among many plants. But, at the same time it is necessary and enough space for free swimming. It is best that the aquarium was with dark soil, and the sun's rays fell on it. This is how neon will look the most beautiful and bright[8].

They look best in an aquarium that resembles their natural habitat. Sandy substrate, abundantly overgrown plants, and snags as in their native rivers in Borneo. Like most irises, neons feel great among many plants.

### **Catfish**

**Catfish** (Siluridae) - a family of fish of a number of catfish (Siluriformes). Contains about 100 species.

The range covers most of Europe and Asia, being the most diverse in Southeast Asia, a little less - in the temperate part of East Asia and India, even less - in Southwest Asia and Europe.

Representatives: ancitrus, gerinohelius, spoilage. They are excellent caretakers in every aquarium. Great neighbors for aggressive and predatory fish, as well as for peaceful and calm. Their body shape and patterns enchant with their beauty.



*Ancitrus*

**Ancitrus.** A popular species of fish, due not to similarity and individuality. At an antistrus the oral cavity in the form of suckers. With these suction cups, it destroys plant plaque.

Eats mainly plant foods, and does not refuse dry food reaches 12-13cm in length.

The male differs from the female by the so-called tendrils. This species still needs to be fed dry food, pumpkin, carrots.

Ancitrus reproduce by laying eggs. The male protects the laid eggs.

### **Exotic aquarium fish**

It is believed that breeding aquarium fish is quite inexpensive and a nice hobby. But this is not always true. Only very wealthy people can afford some inhabitants of the underwater depths. The cost of exclusive fish can reach 400 thousand. dollars, due to their rarity. Having such a fish is considered very prestigious and demonstrates the high status of the owner. Let's get acquainted with information about some of the most exotic aquarium fish.

### **AROVANA**



*Arovana*

It is rightly considered the most expensive fish in the world.

Arovana - dragon fish - one of the most ancient fish that exist on our planet. It reaches a length of 80 cm, is found in rivers of Africa, South America and Asia. In nature, Arovana hunts insects, jumping out of the water, and at home takes food from the hands of the owner.

Thanks to breeders, today there are many varieties of this species. They differ in size, shape of fins, shade of scales. Dragons of gold, platinum, red and purple shades are considered exotic. The cost of such a fish starts from \$ 5,000. And reaches \$ 400,000. for the rarest specimens. The value of this fish is so great that a microchip is placed in it for authentication before reaching sexual maturity. It is necessary to keep such fishes in the big aquarium, not less than 1000 l. The period of their life reaches 50 years.

### **JAPANESE CARP KOY**



*Japanese carp koy*

The colorful color of koi attracts attention and has many different options. The price for them is also a decent range. You can buy such a fish for \$ 100 and \$ 5,000, and the price for exclusivity reaches \$ 200,000.

Japanese carp reaches a length of 50 cm and can live up to 100 years, but requires special care. Breeders preferred the external beauty of the fish than good immunity, so her health is quite poor. Which does not stop fans of exotics, ready to install huge tanks for koi.

**PEARL VILLAG***Pearl village*

Impresses with its beauty - rounded golden spots on a dark background stand out among other underwater inhabitants. Pearl stingray is a native of Brazil, but is very rare in nature. Their catch in the wild is strictly prohibited, and in captivity stingrays reproduce quite poorly. The rarity of the species, small size and unique color provided the pearl stingray with a fairly high cost. Their price reaches \$ 50,000.

**SEA ANGEL***Sea angel*

Is one of the most beautiful inhabitants of the sea depths, which can be found in aquariums. These are deep-sea fish, which are very difficult to catch, and even more difficult to provide them with comfortable housing conditions. The rarest species of angelfish is the mint angel. There are only two such fish in captivity, and their price is 30,000 dollars.

**BASSLET***Gold basslet*

Bladefin basslet lives in the waters of the Caribbean Sea. These are white and orange striped fish of small size with a fin in the form of a blade. They look very impressive in the aquarium, but are rare in nature. Such a fish costs about \$ 10,000.

The gold basslet has a bright golden color. It is found in the Pacific and Atlantic Oceans, preferring to

hide in the rocks at a decent depth. On sale it is very rare, and the price is 8,000 dollars.

**KALAMOIT***Kalamhoit*

This is a amazing fish that can be found in Cameroon. In appearance, it resembles a Chinese dragon or snake, but completely harmless. Such fish existed in the days of the dinosaurs, and have survived to this day due to the ability to adapt and unpretentiousness

**TETRAODON NIGROVIRIDIS***Tetraodon nigroviridis)*

Round body with small fins, cute face with a small mouth, convex eyes and a wide forehead. Adults - a beautiful green color of the back, dark spots on it and a bright white belly. In young people, the color is much less bright. They can reach large sizes up to 17 cm and live up to 10 years [7].

Green tetradons in nature live in brackish water. Young people spend their lives in fresh water, as they are born in the rainy season, young individuals of green tetradon tolerate the change of brackish, fresh and salt water, and adults need brackish water.

**BLAIER'S SNAKEHEAD***Blair's snakehead*

**Blair's snakehead** is a fish with a very attractive color and a rather unusual shape. This is one of the

smallest snakeheads, which are suitable for keeping in an artificial environment, ie home aquariums.

The maximum size of the fish is eighteen centimeters. An aquarium of 100 liters is required for its maintenance. The water temperature should be about thirty degrees Celsius. Filtration and a weekly change of water are also required, which should be renewed by about fifteen percent of its total volume.

This snakehead in the aquarium behaves less aggressively than other subspecies. He will hunt all the fish, the size of which is such that they can easily go into his mouth. Proportionate or large fish snakeheads Blair will not attack. It lives best with peaceful fish

#### **THE ROYAL PANAK**



*The royal panak*

They inhabit Africa, live in the Nile and the Congo River. But, exotic appearance and habits, have made polypterous quite popular among fans of aquarium fish. Still, because this fish is more like a dinosaur, with its long body and elongated and predatory snout. Which is not far from the truth, because over the centuries of its existence, many features have changed little.

It is important to close the aquarium tightly, as they can get out of the aquarium and die. They do this easily, because in nature they can move from reservoir to reservoir by land.

Since the polypterous leads a nocturnal lifestyle, it does not need bright light in the aquarium, and does not

need plants. If you want plants, it is better to use tall species with broad leaves. For example, a nymph or Echinodorus. They will not interfere with his movement and will give abundant shade. It is better to plant in a pot, or cover at the root with snags and coconuts.

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