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ECOLOGY, MIGRATION AND ECONOMIC SIGNIFICANCE OF FISH

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Abstract
In the fauna of animals living in nature, vertebrates, although systematically classified as chordates, are much less numerous than invertebrates, and differ sharply from them in their large body size, complex and diverse structure of individuals, and the diversity of physiological and ecological characteristics. Therefore, chordates are of incomparably great importance in human life and livelihoods, and are hunted for their meat, skin, fur, eggs and oil.
Therefore, the preservation of rare and endangered vertebrate fish species through ecology, developmental characteristics, reproduction, migration, protection and breeding technologies is one of the most urgent issues, and fish are not only a reliable source of food for humans, but also a valuable raw material.

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Keywords: Nature, animal world, zoology, chordate type, natural resources, animals, invertebrates and vertebrates, systematics, evolutionary theory, habitat, domestication, individual, fish species, geographical distribution, developmental features, ecological groups, life stages, evolutionary development, distribution, structure, vital activity, ecology, genetics, morphology, anatomy, physiology, biogeography, biological and physiological processes, migration, distribution, Red Book, national economy, economic significance.

BALIQLARNING EKOLOGIYASI, MIGRATSIYASI VA IQTISODIY AHAMIYATI

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Annotatsiya:
Tabiatda yashaydigan hayvonlar faunasida zoologiyasi sistematik jihatdan umurtqali hayvonlar xordalilar tipiga mansub hisolansada, umurtqasiz hayvonlarga nisbatan ancha kam bo'lib, gavdasinig yirik bo'lishi, individlarning murakkab va xilma-xil tuzilganligi, fiziologik va ekologik xususiyatlarining turli-tumanligi bilan ulardan keskin farq qiladi.Shu bois, xordalilar inson hayoti va yashash

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faoliyatida beqiyos katta ahamiyatga ega bo‘lib, ularning go‘shti, terisi, mo‘ynasi, tuxumi va yog‘i uchun ovlanadi.
Shuning uchun noyob va yo‘qolib borayotgan umurtqali hayvonlardan baliqlarning turlarini ekologiyasi, rivojlanish xususiyatlari, ko‘payishi, migratsiyasi, muhofaza qilish va yetishtirish texnologiyalari orqali ularni saqlab qolish eng dolzarb masalalardan bo‘lib, baliqlar insonlar uchun tansiq oziq-ovqat manbai bo‘lishi bilan birga qimmatli xomashyo ham hisoblanadi.

Kalit so‘zlar: Tabiat, hayvonot dunyosi, zoologiya, xordalilar tipi, tabiiy resurslar, hayvonlar, umurtqasiz va umuurtqalilar, sistematika, evolyusion nazariya, yashash muhiti, xonakilashtirish, individ, baliq turlari, geografik tarqalishi, rivojlanish xususiyatlari, ekologiya guruhlari, hayotiy bosqichlari, evolyusion taraqqiyoti, tarqalishi, tuzilishi hayotiy faoliyati, ekologiyasi, genetikasi, morfologiya, anatomiya, fiziologiya, biogeografiya, biologik va fiziologik jarayonlar, migratsiya, tarqalish, qizil kitob, xalq xo‘jaligi, iqtisodiy ahamiyati.

INTRODUCTION

After achieving national independence, Uzbekistan pays great attention to organizing education in line with world standards through a fundamental revision and transformation. The first important steps in this regard are the adoption of the new Law "On Education" and the "National Program for Personnel Training". Accordingly, the new generation of textbooks and teaching aids that prepare professors and teachers who are performing worthy work in ensuring the implementation of the tasks set in the higher education system are proof of our opinion that the most advanced examples of national pride, spirit, thinking and ideology are reflected in every field.
Therefore, in the field of natural sciences, including educational literature, it is a requirement of the time to create a new generation of textbooks and teaching aids in zoology (invertebrates and vertebrates) that are suitable for local and national conditions. Therefore, although vertebrate zoology systematically considers vertebrates to be members of the chordate type, they are much smaller than

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invertebrates and differ sharply from them in terms of their large body size, complex and diverse structure of individuals, and the diversity of physiological and ecological characteristics. Therefore, chordates are of incomparably great importance in human life and livelihoods, and are hunted for their meat, skin, fur, eggs, and oil. In addition, they are used in selection to improve domestic animal breeds and breed productive animal breeds, rather than wild vertebrates. Therefore, it is no exaggeration to say that the preservation of rare and endangered vertebrate species through ecology, migration and protection is one of the most urgent issues. Accordingly, domesticated animals are not only a source of high-quality food for humans, but also a valuable raw material.

In addition, since ancient times, people have been afraid of dogs, and have used horses, donkeys, camels, elephants and other mammals as transport and work animals, as well as in sports competitions. In particular, scientific research has been conducted on a number of vertebrates that are extremely important for human life and health, and provides practical assistance in studying and finding solutions to many other problems related to the origin, systematic grouping, evolutionary development, distribution, structure and vital activity of vertebrates, their ecology, genetics, morphology, comparative anatomy, physiology, biogeography and other information.

Object and subject of the research: The study of the extremely diverse, habitat, ecology and general characteristics of animals belonging to the type of chordates. This includes conducting research and comparative analysis on the fact that all bottom-dwelling fish, like chordates, live in water and adapt to various aquatic environments, as well as studying the ecology, migration and economic importance of fish according to the main ecological groups.

Scientific and practical significance and discussion of the research: Fish are considered cold-blooded animals, and their body temperature is not constant, but varies directly depending on the ambient temperature. This, depending on the physiological characteristics of the organism, makes the process of heat generation slow. Therefore, according to the general rule and analysis of the phenomena occurring, when the water temperature rises, fish eat more food and gas exchange

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increases, as a result, the growth rate and maturation of reproductive products accelerates.

In addition, each species of fish has a certain temperature limit, and many fish living in tropical regions can live comfortably when the water temperature is +310C. Some live in hot springs up to +450C, for example, in California, fish belonging to the genus Syprinodon were observed to live comfortably in spring water at +520C. In particular, some species of fish can withstand freezing. This means that fish are eurythermal animals, which can tolerate changes in water temperature and continue their ability to survive. On the contrary, some species of fish die even due to a slight change in water temperature, and these are included in the group of stenothermal animals. For example, the presence of warm-blooded fish (salmon, cod, trout) and cold-blooded fish (salmon, cod, trout) among fish species indicates that they are characteristic of different ecological conditions. In addition, the fact that the amount of oxygen and salt in the aquatic environment varies is also of great practical importance.

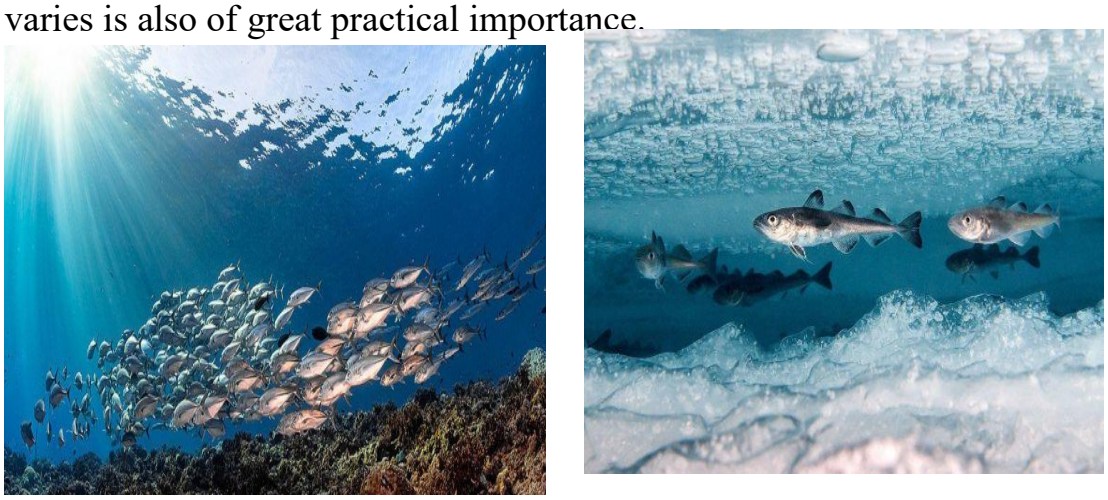

Figure 1: The ability of fish to survive and develop in different ecological aquatic environments.

In this regard, sea water is usually saturated with oxygen, and in some sea waters, oxygen is at a very high level. Therefore, among freshwater fish there are species that need oxygen, but sea water is characterized by the presence of mainly chloride salts, magnesium chloride and magnesium sulfate salts. Therefore, different

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species of fish are adapted to live in different salt waters, and some species of fish can tolerate high salt content in water, while other species of fish die even if the salt content in water is slightly higher. For example, among freshwater fish, barbs and barbs can die in 0.2-0.3% salt water. Many migratory fish are adapted to different levels of water salinity. In order to determine the ecological groups of fish in such processes, one must first know the reaction of fish to the salt content in water and their habitats in water bodies. Despite the different living conditions in the aquatic environment, fish can be studied in three ecological groups: pelagic, abyssal, and littoral. It is known that fish adapt to the color of their environment, through which they protect themselves. However, the color of fish living in littoral areas is diverse, corresponding to the color of different parts of this area (flounder and bullfish). The main color of fish in the pelagic area is considered to be the main color for protecting themselves in this environment, and the back of bottom fish is dark, the sides are dark spots of various colors, and the belly is white. The protective color of deep-water fish is also unique, and is reddish or black.

Figure 2: Features of fish changing color to protect themselves and maintain biological adaptations

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Such colors protect the fish living here from predators. It should also be noted that the color of fish also changes when they move from the seas to rivers to spawn. For example; such a biological phenomenon occurs in salmon fish, and when they return to the sea, they return to their previous color. Many fish resemble their surroundings with their body shapes and various obstacles. These include the sea devil fish, which lives in the seaweed, the Australian sea horse-ragfish, and the mammary antennaria fish living in the Sargasso Sea. Some species of fish can change color overnight. For example: if during the day a straight black line runs along its body, transverse stripes appear on its body.

3-rasm: Baliqlarni turli suv muhitidagi hayotiy davrlari va migratsiya jarayoni.

It is believed that various needles, spines and bright rays found in some fish also play a protective role. Examples of these are the sharp-pointed fin rays of the carp fish, the armored bowl of the body fish, and the spines that protrude from all sides of the body of the stingray fish when it swells like a balloon. The spear-tailed stingray can even injure a person with its large saw-toothed needles located on its tail. The sawfish also uses its rostrum, which is made up of large teeth formed by modified placoid scales, to defend itself and attack its prey. Some fish also have electric organs, which serve to protect and kill its prey.

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Examples of such fish include electric rays, eels, and electric mackerel. On the contrary, some small fish, such as cod and mackerel, use other animals to protect themselves, that is, they enter the jellyfish canopy. Fish feed on almost all living things. The diet of fish varies greatly depending on the conditions of the water body, the season, and the age of the fish. Therefore, fish adapted to feeding on plants include crucian carp, white carp, redfish, and carp.

Horse mackerel, catfish, and carp are predators, feeding on small vertebrates and invertebrates. Most fish do not feed at all in winter and lie dormant. In general, fish are divided into several groups depending on their diet.

1. Herbivorous fish
2. Carnivorous fish
3. Predatory fish

Figure 4: Classification of fish into groups based on their oral apparatus and feeding habits

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Therefore, fish are of great social and economic importance to humans, and in different countries, fish account for 17% to 83%, on average up to 40%, of the animal protein consumed. They are caught as a valuable food product. In addition, vitamins, fish meal, fish oil and other products are also obtained from fish. In response, in recent years, the demand for fish products in Uzbekistan has been increasing day by day. In this regard, intensive fish farming is being developed in the Amu Darya and Syrdarya rivers and in the water bodies of our republic based on foreign experience. Therefore, amir khumboshi, ak amir and other productive breeds of fish are imported from abroad and acclimatized. In addition, several fish farms in Uzbekistan currently breed bream, roach, crucian carp, carp, marinka, roach, roach, roach, perch, pike perch, chub, and other fish.

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Figure 5: Students of fish breeding, cultivation and conservation

So, in order to breed, preserve, increase the number of fish caught in natural conditions, and improve their economic interest, a number of resolutions have been issued by our President, and it is planned to implement measures based on the tasks set, including the following:

1. Protecting fish breeding grounds.
2. Cleaning water bodies from excess waste and aquatic plants.
3. Protecting rivers, lakes, water bodies and ponds from toxic wastewater from industrial waste, chemicals and oil spills.
4. Acclimatizing productive and valuable fish and increasing their economic interest.
5. Protecting fish species whose species are declining and are included in the "Red Book" of Uzbekistan.

Conclusion

As fish grow within the Chordates, their shape and size change. Fish grow rapidly in the summer and stop growing in the winter. Such uneven growth affects their scales and bones. This is due to the fact that the biological conditions in which fish

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live, depending on their ecological groups and systematic positions, change depending on the seasons. Accordingly, in the biological or vital development of fish, the ecological environment, nutrition, wintering and migration processes are the most important life stages and their economic importance in the national economy is high.

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