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УПРАВЛЕНИЕ ДИСТАНЦИОННОГО ОБУЧЕНИЯ И ПОВЫШЕНИЯ
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«Водные биоресурсы и аквакультуры»
по дисциплине

**«Иностранный язык в
профессиональной сфере
(английский)»**



Авторы
Грицай И. П.,
Водяницкая Л. А.,
Горгадзе Л. Н.

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Аннотация

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Предложены задания на развитие навыков изучающего и ознакомительного чтения, а также формирование коммуникативной компетенции в сфере профессионального общения.

Авторы

ст. преподаватель кафедры «Научно-технический перевод и профессиональная коммуникация»

Грицай И.П.,

преподаватель кафедры «Научно-технический перевод и профессиональная коммуникация»

Водяницкая Л.А.,

преподаватель кафедры «Научно-технический перевод и профессиональная коммуникация»

Горгадзе Л.Н.



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UNIT 1

FISH FARMING: BASIC PRINCIPLES

Exercise 1. Read and remember the words and phrases:

- Sonar equipment – гидроакустическое оборудование
- The removal of unwanted plants and animals – удаление нежелательных растений и животных
- Worldwide decrease – общемировое снижение
- Cross-breeding and selection – скрещивание и отбор
- High quality animal protein – высококачественный животный белок
- To create additional income – создать дополнительный доход

Exercise 2. Read and translate the text given below:

Fish farming: basic principles

In many parts of the world, fish have provided an important part of people's diets for centuries. During the last hundred years, fish catches have increased rapidly due to technological improvements including more powerful engines and sonar equipment. Despite the fact that growth in fish catches stopped some 15 years ago, overfishing had already caused the worldwide decrease in stocks to become a real problem. The need to increase fish production by fish farming is urgent. The term 'aquaculture' involves all forms of culture of aquatic animals and plants in fresh-, brackish- and saltwater. Aquaculture has the same objective as agriculture: to increase the production of food above the level which would be produced naturally. As in agriculture, fish farming techniques include the removal of unwanted plants and animals, their replacement by desirable species, the improvement of these species by cross-breeding and selection, and the improvement of food availability by the use of fertilizers. Fish farming can be combined with agriculture, animal husbandry and irrigation practices which can lead to a better utilization of local resources and ultimately to higher production and net profits. This practice is called 'integrated fish farming'.

Advantages of fish farming

1. Fish is a high quality animal protein provider for human consumption.
2. A farmer can often integrate aquaculture into the existing farm to create additional income and improve water management on the farm.
3. Fish growth in ponds can be controlled: the fish species raised are the ones the farmer selected.

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4. The fish produced in a pond are the owner's property; they are secure and can be harvested at will. Fish in wild waters are free for all and make an individual share in the common catch uncertain.
5. Fish in a pond are usually close at hand.
6. Effective land use: effective use of marginal land e.g. land that is too poor, or too costly to drain for agriculture can be profitably devoted to fish farming if it is suitably prepared.

Exercise 3. Answer the following questions:

1. Why have fish catches increased rapidly during the last hundred years?
2. What is called 'integrated fish farming'?
3. What is the aquaculture objective?
4. What are the main advantages of fish farming?

Exercise 4. Find the equivalents of the following words and expressions in the text:

Эффективное использование земли, удобрения, несмотря на факт, та же цель, местные ресурсы, замена, преимущества, чрезмерный отлов рыбы, малоплодородные земли, пресная вода, увеличить производство пищевых продуктов, животноводство, скрещивание и отбор, высококачественный животный белок.

Exercise 5. Translate the following words and expressions into Russian:

Wild water, too costly, effective land use, to drain for agriculture, quality animal protein provider for human consumption, close at hand, due to technological improvements, effective use of marginal land, fish farming techniques, too costly to drain for agriculture.

Exercise 6. Summarize the text, make use of the following phrases:

The text under review ...

The subject of the text is ...

At the beginning of the text the author describes ... (explains, touches upon, analyses, comments ...)

Then (after that, further on) the author passes to ..., gives a detailed analyses of ...)

To finish with, the author describes ...

In conclusion, the author ...

Exercise 7. Remember the Infinitive forms, and translate the following sentences:

Infinitive	Active	Passive
------------	--------	---------

Indefinite	to ask	to be asked
Continuous	to be asked	---
Perfect	to have asked	to have been asked
Perfect Continuous	to have been asking	---

1. It will be possible to build a series of ponds by shifted sowing, which allows for regular harvests thought the year. 2. Building terraces makes it possible to have a large surface area, and water will be retained better. 3. Water will be available to fill the ponds again or to limit loss during the dry season. 4. After the villages and pond installation sites have been chosen, the next step is to set up the ponds. 5. The ponds must be inexpensive to build, easy to maintain, and tidy to ensure that the water and the fish are managed well. 6. The best way to increase the pH-value of the water again to neutral is to add lime to the pond. 7. Researchers began to focus on identifying other species with high potential for aquacultural production. 8. The goal of fish farming is, above all, to expand access to animal protein at a low cost and within a short time. 9. Water pollution has many different causes and this is one of the reasons why it is such a difficult problem to solve. 10. Lake Baikal is currently a test area to determine the extent of the spread of manmade pollutants. 11. The need to increase fish production by fish farming is urgent. 12. It is better to select fish species which can be easily reproduced by yourself. 13. It is essential that the speed of the current in the canal does not cause the walls to erode. 14. For the bigger ponds (more than 4 ares, or 400 square meters), it is useful to install drainage ditches around the drain. 15. To ensure complete drainage, it is best to use a network of shallow drainage ditches with a slope of 0.2 %, rather than try to create one slope across the entire pond bottom. 16. A square or circle frame made of bamboo or light wood and attach to a stake inserted into the ground will facilitate feeding and observation. 17. Overfishing had already caused the worldwide decrease in stocks to become a real problem. 18. To measure water transparency, lower the disc into the water at a depth at which it just disappears from sight.

UNIT 2

WATER QUALITY

Exercise 1. Read and remember the words and phrases:

Oxygen supply – снабжение кислородом

Turbidity – мутность

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Alkalinity – щелочность

Inhibit fish growth – тормозить рост рыбы

pH-value of water – pH фактор воды

To add lime to the pond – добавить в пруд известь

Water soluble salts – растворимые соли

Decrease fish production – уменьшить производство рыбы

Exercise 2. Read and translate the text given below:

Evaluation of Water Quality

Fish farmers should have some means of evaluating water quality in order to be aware of the health of the fish culture system. Water quality analysis kits are popular for this purpose because they are relatively inexpensive. Also, they provide cookbook-like directions, so little knowledge of chemistry is required. Test kits provide an adequate level of accuracy and reliability for most fish culture. Because it is necessary to replace the reagents in these kits as they are used, it may be more economical to purchase a meter when a large number of measurements are to be taken. Initially, meters are more expensive, but they are fast and convenient.

Water Quality Parameters

Temperature One of the primary factors affecting fish growth is the temperature of the water in which they are cultured. For each species of fish, there is a wide temperature range which they tolerate and a smaller temperature range for their optimum growth. In order to achieve the fastest and most efficient conversion of fish food to fish weight, the water temperature must be kept as close to this optimum value as possible. Commercial aquaculture operations, because they use large quantities of water, must restrict their species choice to fish which will grow well at the temperature naturally occurring in their location. For instance, only operations with an abundant source of cool water grow trout. Catfish farmers (using outdoor ponds) are confined to geographic areas where the water remains warm enough for an adequate season of growth. With recirculating tank culture (as in the Mini Fish Farm), temperature control is much more plausible. Recirculating culture systems reduce the quantity of heat (or cold) needed, as the heat can be conserved with insulation and very little new water is needed. We recommend that the system be placed indoors where water temperature can be maintained more easily. Outdoors, season length is determined by the geographic location and the use of a cover. Solar energy can be collected to extend warm-water culture. A water chiller may be used to cool the water.

Oxygen Oxygen is as necessary to fish as it is to us. However, oxygen is not as abundant in water as it is in air. The air we

breathe is about 20 percent oxygen. The air in the water that fish breathe is only about .0001 percent oxygen. Very often, oxygen availability is one of the limiting factors to fish growth and survival. Dissolved oxygen (D.O.) enters the water in various ways, depending on the body of water involved. In natural systems such as lakes and rivers, oxygen is provided mostly by absorption of oxygen from the air. Oxygen can also be added in significant amounts by plants and algae through photosynthesis. During nighttime hours, however, algae and plants will consume oxygen. As the total weight of the fish increases, so does the amount of oxygen needed to sustain them. Without continual replenishment, the D.O. level becomes depleted, possibly causing a high degree of stress or even asphyxiation of the fish.

Algae Crystal clear water does not necessarily constitute good water quality. Some species prefer and may even require water green with algae. Trout production systems require clear water, but most outdoor fish culture systems are more likely to contain green water. Algae can have both positive and negative effects, but when properly managed a healthy algae population can offer some advantages. The Mini Fish Farm will operate equally as well with both clear water and green water. On a sunny day, algae is capable of producing a large quantity of oxygen (through photosynthesis) while consuming carbon dioxide ammonia. Algae consume both ammonia and nitrate as food, so algae growth improves the water quality for the fish. When algae are eaten by fish (such as tilapia) these waste products become fish food. If not managed, however, algae can be dangerous. With high levels of nutrients in a recirculating system, the algae population can become very thick (sometimes called an algae bloom). A "die-off" of such a large population of algae is where the problem comes in. Dead algae are fed upon by bacteria, which consume large quantities of oxygen while producing ammonia. This additional ammonia can overload the biofilter, as it had been acclimated to low ammonia levels when the algae were alive. The Mini Fish Farm provides good control of the algal community through mixing, aeration and clarification.

Exercise 3. Answer the following questions:

1. Why is it important to evaluate water quality?
2. What kits do fish farmers use to evaluate water quality?
3. What are the primary factors which affect fish growth?
4. Is oxygen necessary to fish?
5. Does crystal clear water constitute good water quality?
6. Do algae have positive or negative effect on fish growth?
7. Is it important to control the algal community?

Exercise 4. Translate into Russian:

Fresh water, the amount of dissolved oxygen, agricultural lime, to investigate any existing sources of water pollution, dissolved suspended dirt, to clear muddy water, real long-term solution, a degree of acidity, the acid-binding of the water, water hardness, water quality measurements, low alkalinity, vicinity of the pond, fish predators, oxygen shortage, the algal community.

Exercise 5. Summarize the text in 7-8 sentences. Make use of the following phrases:

- The text under discussion reports on ...
- The main objective (purpose, aim) of the text is ...
- The text discusses (considers, deals, analyses, emphasize) ...
- Much attention is given to ...

Exercise 6. Remember the Passive Voice forms, and translate the following sentences:

	Present	Past	Future	Future in-the-Past
Indefinite	am is V ₃ are	was V ₃ were	shall be V ₃ will	should be V ₃ would
Continuous	am is being V ₃ are	was being V ₃ were	X	X
Perfect	have been V ₃ has	had been V ₃	shall have been V ₃ will	should have V ₃ would

Exercise 7. Complete the sentences using the Present Simple Passive:

1. Diversion pond, which are derived from bypass ponds, (to build) on the slopes of a valley and (to compose) of three dams.
2. They (to characterize) by their degree of intensification, which (to define) by feeding practices.
3. An alternative classification of fish production systems (to base) on differentiation between the sources of food for fish.
4. Water Quality Parameters Temperature One of the primary factors affecting fish growth is the temperature of the water in which they

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- (to culture).
5. Dip nets (to use) on fish farms to handle and transfer small quantities of fish.
 6. When the pond is equipped with a monk, fish can (to collect) in two ways.
 7. The activity.... (to undertake) for the different water transparencies is given in table 3.

Exercise 8. Complete the sentences using the Past Simple Passive:

1. For a long time it (to believe) that fish farming for production required only low-tech methods, compared to systems that depended on external food supplies.
2. The first tests (to conduct) on species, such as *Tilapia zillii*, *Tilapia rendalli* and *Oreochromis macrochir*, that since (to abandon) because of poor yields under intensive farming conditions.
3. Last season the carp species(to inject) with hormones to induce spawning artificially.
4. A lot of fertilizer(to use) to increase pond fertility last year.
5. The vast majority of freshwater fish(to rise) in these ponds in 2018.

Exercise 9. Complete the sentences using different forms of the Passive Voice:

1. A small river can (to block) so that water retained by the dam makes a pond.
2. If the water supply (to control), ponds will be easier to manage when you are, for example, fertilizing the water or feeding the fish.
3. The principle characteristic will be that they can (to drain), and have running water available year-round.
4. The evolution from extensive systems to intensive systems (to link) to increasing global investment.
5. Next year fish (to cultivate) in basins or medium or medium to large ponds.
6. It (to show) that pollution at any level is detrimental.
7. Some of the plants and animals can.... (to date) to prehistoric times.
8. Fish must (to keep) in good condition at all times by using water with plenty of oxygen, with the correct pH and with a low ammonia content.

Exercise 10. Read the text for additional reading and say what people can do to save the Baikal:

Water pollution affects the entire biosphere – plants and organisms living in these bodies of water. In almost all cases the effect is damaging not only to individual species and population, but also to

the natural biological communities.

Most water pollution doesn't begin in the water itself. Take the oceans: around 80 percent of ocean pollution enters our seas from the land. Virtually any human activity can have an effect on the quality of our water environment. When farmers fertilize the fields, the chemicals they use are gradually washed by rain into the groundwater or surface waters nearby. Sometimes the causes of water pollution are quite surprising. Water pollution has many different causes and this is one of the reasons why it is such a difficult problem to solve. Lake Baikal is the world's oldest and deepest lake. It lies in southern Siberia, its watershed extending over the Mongolian border. The lake is revered by the Russian people as a source of beauty and power. Mill at Baikalsk has polluted the surrounding region and threatens the pristine conditions that have existed for centuries. The paper mill produces bleached cellulose that is used in clothing manufacture. The process, however, produces chemicals and effluent that threaten the more than 1,500 species unique to the lake. In addition, the economic and political difficulties currently facing Russia pose their own threat – that efforts to preserve the lake may not be instituted due to lack of funding or inability to form a consensus.

By the end of this century, the climate of the Baikal region will be warmer and wetter, particularly in winter. As the climate changes, ice cover and transparency, water temperature, wind dynamics and mixing, and nutrient levels are the key abiotic variables that will shift, thus eliciting many biotic responses. Among the abiotic variables, changes in ice cover will quite likely alter food-web structure and function most because of the diverse ways in which ice affects the lake's dominant primary producers, the top predator, and other abiotic variables.

Although Lake Baikal has 336 tributaries, most are minor. The lake has only one major inlet and one major outlet to carry most of its water. The inlet is the heavily-polluted Selenga River which flows in from northern Mongolia. It brings in almost one-half of Baikal's water. Lake Baikal is a self-contained aquatic system; it is an isolated ecosystem, home to more than 1,500 endemic species found nowhere else on earth. Among these unique flora and fauna are the Baikal seal (believed to be a relative of the Arctic ringed seal, 3,220 kilometers away), and the omul, a fish considered to be a delicacy in the region. Some of the plants and animals can be dated to prehistoric times. As a result, Baikal is a huge natural laboratory. Lake Baikal resides on one of the two deepest land depressions on Earth. The rift is over nine kilometers in depth. Little is understood

about this huge fault zone. Hydrothermic vents below the surface cause heavy tectonic activity, with the result of minor earthquakes every few hours. Plans for the paper mill at Baikalsk began in 1954. The public was informed in 1957; protests were held, and ignored. The plant was built on the belief that heating Baikal's mineral-free waters, then spraying them over the pulp of the Siberian pines, would produce "super" cellulose that could be used to make durable jet tires for Soviet Air Force planes. This was done during the Cold War under Nikita Khrushchev on the intelligence report that the U.S. was using the same procedure in Foley, Florida. The plant, however, continues to produce, polluting 200 square kilometers of the lake. This pollution affects the bottom-dwellers of the lake as well, for Lake Baikal's waters are thoroughly mixed, with oxygen found even at the lowest depths. In addition, the Angara carries some of this pollution westward. Lake Baikal is currently a test area to determine the extent of the spread of manmade pollutants. Considering the levels of pollution, Lake Baikal remains in fairly pristine condition.

Recent analyses of the muscle of several fish specimens and the muscle, liver and fat of the Baikal seal show low levels of heavy metals and organ chlorine compounds. Present and past observations suggest that despite land-based sources of pollution, the general health status of the lake is good. However, because of increasing local air pollution, the long-range transport of pollutants emitted elsewhere and the expected increase in pollutants reaching the lake via rivers, extremely careful control measures in the hydrographic basin and continuous monitoring of the lake water are essential. Baikal has become a symbol of environmental dangers. The similarities of Lake Baikal to other bodies of water indicate these dangers and the urgency of conservation. The Great Lakes, although now on a rebound, were in terrible condition. Sewage is another good example of how pollution can affect us all. Sewage discharged into coastal waters can wash up on beaches and cause a health hazard. People who bathe or surf in the water can fall ill if they swallow polluted water—yet sewage can have other harmful effects too: it can poison shellfish (such as cockles and mussels) that grow near the shore. People who eat poisoned shellfish risk suffering from an acute—and sometimes fatal—illness called paralytic shellfish poisoning. Shellfish is no longer caught along many shores because it is simply too polluted with sewage or toxic chemical wastes that have discharged from the land nearby. Pollution matters because it harms the environment on which people

depend. The environment is not something distant and separate from our lives. It's not a pretty shoreline hundreds of miles from our homes or a wilderness landscape that we see only on TV. The environment is everything that surrounds us that gives us life and health. Destroying the environment ultimately reduces the quality of our own lives—and that, most selfishly, is why pollution should matter to all of us.

UNIT 3

THE TYPES OF AQUACULTURE FARMS

Exercise 1. *Read and remember the words and phrases:*

Fish farming may range from large scale industrial enterprises to 'backyard' subsistence ponds. Farming systems can be distinguished in terms of input levels. In extensive fish farming, (economic) inputs are usually low. Natural food production plays a very important role, and pond productivity is relatively low. Fertilizer may be used to increase pond fertility and thus fish production. In semi-intensive fish farming a moderate level of inputs is used and fish production is increased by the use of fertilizer and/or supplementary feeding. This means higher labour and food costs but higher fish yields more than compensate for this usually. In intensive fish farming a high level of inputs is used and the ponds are stocked with as many fish as possible. The fish are fed supplementary food, and natural food production plays a minor role. In this system the high feeding costs and risks, due to high fish stocking densities and thus increased susceptibility to diseases and dissolved oxygen

The vast majority of freshwater fish are raised in ponds. Water is taken from a lake, bay, well or other natural source and is directed into the pond. The water either passes through the pond once, and is discharged or it may be partially replaced so that a certain percentage of the total water in a system is retained and recirculated. However, the pond systems yielding the highest fish production, only replace water evaporation and seepage losses and do not flow through. In general, water flowing reduces the production of pond systems in the tropics. Fish farming ponds range in size from a few hundred square meters to several hectares. In general, small ponds are used for spawning and fingerling production. Production ponds larger than 10 ha become difficult to manage and are not very popular with most producers. The ponds presented here are only examples and the kind of pond a farmer will build depends very much on local resources, equipment and conditions. Ponds are usually located on land with a gentle slope. They are rectangular or square shaped, have well fin-

ished dikes and bottom slopes

Depending on the site different fish ponds might be constructed: diversion or barrage ponds. **Diversion ponds** are made by bringing water from another source to the pond. There are different types of diversion ponds. **Embankment ponds:** The dikes of an embankment pond are built above ground level. A disadvantage of this type of pond is that you may need a pump to fill the pond. **Excavated ponds:** An excavated pond is dug out of the soil. The disadvantage of this type is that you need a pump to drain the pond. **Partially excavated ponds with low dikes:** Soil from digging out the pond is used to build the low dikes of the pond. The ideal site has a slight slope (1-2%) so the water supply channel can be constructed slightly above and the discharge channel slightly pump is needed.

Barrage ponds are made by building a dike across a natural stream. The ponds are therefore like small conservation dams. The advantage is below the pond water level. Since natural gravity is used to fill and drain the ponds no of a barrage pond is that it is easy to construct. However, it is very difficult to control this system: it is difficult to keep planning the site and type of fish farm and a lot of food added to the pond will be lost because of the current.

Exercise 3. Answer the following questions:

1. What are the main types of the ponds?
2. What is the disadvantage of excavated ponds?
3. Are inputs in extensive fish farming, (economic) low or high?
4. What is the usual size of production ponds?
6. How are barrage ponds made?

Exercise 4. Translate into Russian:

Barrage ponds, a dike across a natural stream, extensive fish farming, natural food production, partially excavated ponds with low dikes, discharge channel slightly pump, to increase pond fertility, water evaporation, local resources, a gentle slope, relatively low, small conservation dams.

Exercise 5. Remember the Gerund forms, and translate the following sentences:

	Active	Passive
Present	using	being used

Perfect	having used	having been used
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1. Destroying the environment ultimately reduces the quality of our own lives—and that, most selfishly, is why pollution should matter to all of us.

2. Evaluation of Water Quality Fish farmers should have some means of evaluating water quality in order to be aware of the health of the fish culture system.

3. Liming of ponds is not always necessary.

4. Soil from digging out the pond is used to build the low dikes of the pond.

5. His having built this pond helped him to develop his business.

6. Cleaning ponds is necessary for fish farming.

7. Their business is pond building.

8. After cleaning the water in the pond he put fish into it.

9. Detecting the level of oxygen in the water is very important.

10. These kits are widely used for controlling water quality.

11. Monitoring and adjusting the oxygen level is one of the most important tasks.

12. His having measured the pH of water will enable him to make the proper conditions for fish producing.

Exercise 6. Read and remember the definitions given below:

The following terms are used to describe the size of a fish stock:

Initial fish stock is the number and weight of fish stocked in the pond at the beginning of the production cycle.

Fish stock present during the production cycle is the number and weight of fish present in the pond.

Biomass present, which is the total weight of fish present in a pond on a given day.

Final fish stock is the number or weight of fish at the end of the production cycle. **Final biomass** is the total weight of fish present at final harvest.

Output or crop weight is the total weight of fish harvested from the pond. **Production** is the increase in total weight that has taken place during a specified period. It is the difference between the biomass at the beginning and the biomass at the end of the period.

Yield is the production expressed per unit area.

Production rate is the production expressed per unit of time (day, month, year, etc.).

Equivalent production rate is the yield expressed per unit of time, usually per day or per year (365 days). It allows a comparison of productions obtained during various periods.

Survival rate is the percentage of fish still living in the pond at the end of a period of time. It should be as close as possible to

100 percent.

UNIT 4

AQUACULTURE – PROTEIN PROVIDER FOR THE WORLD

Exercise 1. *Read and learn the words:*

In captivity - в неволе

Mussel - мидия

Jellyfish - медуза

Carp - карп

Finfish - плавниковые

Catfish - сом

Shrimp - креветка

Prawn - креветка

Pangasius - пангасиус

Catfish - сом

Juvenile fish - рыбная молодь

Breeding - разведение

Salmon - лосось

Trout - радужная форель

Turbot - тюрбо, большой ромб

Salmonid - лососёвые

Sea bass - морской окунь

Common dentex - зубан обыкновенный

Gilthead seabream - золотистый спар, дорада

Algae - водоросли

Exercise 2. *Read and translate the text:*

During the 1970s aquaculture was a relatively insignificant industry, but today it is almost as productive as the ocean fishing sector. Experts predict that the importance of fish farming will increase even more in the future, because it has clear advantages over beef and pork production.

About 600 aquatic species are now raised in captivity, with different species being preferred for different regions. The species raised include fish, crabs, mussels, amphibians (frogs), aquatic reptiles, sea cucumbers, jellyfish and sea squirts (fleshy organisms which live on the sea floor and filter the water). China farms mussels and carp in

particular, and in terms of the latter, has done so for several thousand years. The carp is also a popular farmed fish throughout the rest of Asia. Finfish are found here, too, along with catfish and shrimps, and prawns which are exported all over the world. For some years now a popular Asian export fish has been the pangasius, of which there are several different species. These catfish are white-fleshed, neutral-tasting and almost bone-free. At first it was necessary to catch juvenile fish in the wild for breeding purposes, but in the early 1990s a French-Vietnamese project succeeded in breeding two types of pangasius in captivity. Only then was it possible to breed the fish in large numbers, allowing its export on a grand scale. Today the export of pangasius is a global winner. In Europe, however, the farming of mainly salmonids is preferred, including salmon and trout along with turbot and mussels. Only small numbers of carp and other finfish are bred in captivity. In the past 10 years production of sea bass, common dentex and gilthead seabream has expanded, particularly in Greece, Italy and Turkey, mostly in net cages in coastal bays.

Salmonids are also the dominant group of farmed fish in South America, mainly in Chile, followed in equal parts by shrimps, prawns and mussels. Shrimps and prawns, catfish, mussels and salmonids are farmed in North America, mainly in Canada. Tilapia, catfish and other finfish are of particular interest in Africa, while shrimps and prawns predominate in Oceania.

The cultivation of algae is less widespread than that of aquatic animals. It is only practised in about 30 countries throughout the world, predominantly in Asia. In most cases cultivation is of large algae such as kombu (*Laminaria japonica*), a Japanese seaweed which is several meters long. It is now farmed mainly in marine water and brackish water along the coast of China. Kombu is often used as a soup ingredient. Although the 19 million tons of algae produced in 2010 was much less than farmed aquatic animals, nonetheless its growth rate has been similarly strong in recent years – an average of 9.5 per cent per annum during the 1990s and 7.4 per cent in the past decade. In 1990 global algae production was 3.8 million tonnes.

The strengths and weaknesses of aquaculture

Aquaculture has come in for some hefty criticism in recent years. For various reasons it still attracts controversy. Food, faecal and metabolic wastes from intensive fish farms can lead to the eutrophication (over-fertilization) of water in rivers and coastal bays. There have also been complaints that fish farmed under intensive conditions for maximum yields are more susceptible to disease than their relatives in the wild. Tremendous amounts of antibiotics and

other medications are used to fight disease, particularly in relation to shrimp on farms in South East Asia – with unforeseeable consequences for surrounding ecosystems and consumer health. In some cases these points are valid, but they should not detract from the fact that aquaculture can be a very efficient and sustainable method of supplying humans with animal proteins – and counteracting over-fishing. The farming of the classic common carp or mirror carp provides a positive example of environmentally-sound aquaculture. Carp are bottom feeders, generally eating small aquatic animals, plants, dead plant matter and waste material which gather on the pond floor. They also sieve the water to extract suspended solids, thus helping to keep the water clean. Carp ponds often have very clear water. Intensive mussel farming also helps to keep the water clean. Mussels filter large amounts of water, sieving out tiny particles of food, thus counteracting the over-fertilization of water and algal blooms.

Exercise 3. Answer the following questions:

1. How many species are raised in captivity now?
2. What did French-Vietnamese project succeed in?
3. What kind of fish is preferably farmed in Europe?
4. What kinds of fish are farmed in Africa?
5. What kinds of fish are farmed in Oceania?
6. Where are algae cultivated?
7. What purposes is Japanese seaweed used for?
8. What can cause eutrophication of water?

Exercise 4. Insert the prepositions:

1. About 600 aquatic species are now raised ____ captivity.
2. China farms mussels and carp ____ particular.
3. At first it was necessary to catch juvenile fish ____ the wild ____ breeding purposes.
4. A French-Vietnamese project succeeded ____ breeding two types ____ pangasius.
5. Wastes ____ intensive fish farms can lead ____ the eutrophication (over-fertilization) ____ water in rivers.
6. Fish farmed ____ intensive conditions ____ maximum yields are more susceptible ____ disease than their relatives ____ the wild.
7. Aquaculture can be a very efficient and sustainable method ____ supplying humans ____ animal proteins.
8. Only then was it possible to breed the fish ____ large numbers, allowing its export ____ a grand scale.

Exercise 5. Match the words with their opposite meanings:

- | | |
|-----------------|------------------|
| 1. Increase | a) marine water |
| 2. Advantage | b) invalid |
| 3. In captivity | c) insignificant |
| 4. Export | d) decline |
| 5. Fresh water | e) in the wild |
| 6. Growth | f) decrease |
| 7. Valid | g) disadvantage |
| 8. Significant | h) import |

Exercise 6. State true or false. Correct false sentences:

1. During the 1970s aquaculture was a significant industry.
2. Experts predict that the importance of fish farming will decrease in the future.
3. The pangasius has been a popular Asian export fish for several years.
4. Catfish are the dominant group of farmed fish in South America.
5. The cultivation of algae is more widespread than that of aquatic organisms.
6. Laminaria japonica is now farmed mainly in marine fresh water along the coast of China.

Exercise 7. Revise the use of the forms of Participle I and Participle II:

The Participle (Причастие)

Причастие относится к неличным формам глагола и обладает признаками как прилагательного (иногда наречия), так и глагола. Глагольными признаками причастия являются его способность иметь прямое дополнение, определяться наречием и иметь формы времени и залога. Но время, выраженное причастием носит относительный характер, т. е. соотносится с действием глагола-сказуемого предложения и выражает либо одновременность, либо предшествование этому действию. Причастия в английском языке подразделяются на причастие I (Participle I) и причастие II (Participle II).

Participle I

Причастие I образуется путем прибавления суффикса -ing к основе глагола:

У причастия существует 4 формы.

	Active	Passive
Indefinite	Doing (V+ing)	being done (being + V3)
Perfect	having done (having + V3)	having been done (having been +V3)

Причастие I перфектное показывает, что выражаемое им действие произошло ранее действия, выраженного сказуемым предложения; причастие простое указывает на одновременность действий.

В предложении Participle I может быть определением (Attribute), обстоятельством (Adverbial modifier), и частью сказуемого (Predicative).

Participle II

Форма причастия II (Participle II) правильных [глаголов](#) совпадает с формой прошедшего времени этих [глаголов](#), т.е. образуется прибавлением к основе [глагола](#) суффикса -ed с соответствующими орфографическими изменениями: to solve решать - solved решил – solved решенный (-ая, -ое).

Форма причастия II неправильных [глаголов](#) соответствует 3-й форме этих [глаголов](#): to speak - spoke - spoken, to make - made - made, to go - went - gone. В предложении Participle I может быть определением (Attribute), обстоятельством (Adverbial modifier), и частью сказуемого (Predicative).

Exercise 8. Translate the following sentences and say what form Participle I or Participle II they are used in:

1. Salmonids are also the dominant group of farmed fish in South America, mainly in Chile, followed in equal parts by shrimps, prawns and mussels.
2. Approximately 97% of fishermen live in developing countries,

where fishing is extremely important.

3. In sub-Saharan Africa, fish provide nearly 19% of the animal protein consumed by the population.

4. Nations such as Thailand and Vietnam traditionally farm fish in the flooded rice fields; many people catch their lunch or evening meal from the neighbouring rice paddy.

5. Fish farming can provide large amounts of valuable protein for the growing population.

6. Egypt is the trailblazer here, with large numbers of finfish (tilapias, mullets and catfish) being farmed in the Nile Delta.

7. The people living around the Lagos Lagoon have always farmed catfish for their own use.

Exercise 9. Choose the appropriate form of the Participle I or Participle II:

1. Many chemicals (using/used) in animal husbandry and crop cultivation are poisonous to fish.

2. In (periphyton-based/periphyton-basing) fish farming, food availability in the pond is (increasing/increased) in a natural way, thus reducing the need to fertilise the pond or provide the fish with supplementary feed.

3. Turbidity is the term for the amount of (dissolving/dissolved, suspended/suspending) dirt and other particles in the water, which give the water a brown colour. (Dissolved/dissolving, suspending/suspended) solids will also clog filters and injure fish gills.

4. The periphyton mat entraps (suspending/suspended) solids, which improves water transparency and thus the penetration of sunlight into the pond.

5. Little is known about (grazed/grazing) efficiencies of the different fish species, so more trials are needed on this subject.

6. The grazing pressure of the fish (growing/grown) in the pond will affect the regeneration capacity of periphyton.

7. Periphyton can act as an antibiotic against a variety of (disease-causing/disease-caused) bacteria present in ponds, or as a kind of vaccine for fish that feed on it.

UNIT 5

DISEASES OF FISH

Exercise 1. Read and learn the words:

Leech - пиявка

Иностранный язык в профессиональной сфере (английский)

Fluke - трематода (глист)
Protozoa - протозоа, простейшие животные организмы
Cell - клетка
Single-cell - одноклеточный
Copepod - веслоногий рак, копепоид
Crustaceans - ракообразные
Lice - вши
Water fungi (fungus - sing) - водные грибы
Ammonia - аммиак
Hydrogen sulphide - сероводород
Effluent - сточные воды
Sewage effluent - очищенные точные воды
Silt load - твёрдый сток
Gill - жабры
Fin - плавник
Tail - хвост
Ulcer - язва
Blood - кровь
Digestive tract - пищеварительный тракт
Lesion - повреждение

Exercise 2. *Read and translate the text:*

Fish diseases may cause severe losses on fish farms through:

- Reduced fish growth and production;
- Increased vulnerability to predation;
- Increased sensitivity to poor water quality;
- Increased fish mortality.

While it may be difficult to avoid fish diseases completely, it is better to try to prevent them from occurring than to allow diseases to develop and attempt to cure them when they start to cause problems. In some cases surviving fish are so weakened that it is difficult to treat them effectively.

The three main causes of disease are:

Inadequate feeding Nutritional diseases become more frequent as the cultivation system becomes more intensive and the fish are obtaining smaller proportions of their nutrients from natural food organisms.

Exposure to an extreme or toxic condition

- Rough and/or excessive handling, such as during harvest or sorting/grading;
- Overcrowding and/or behavioural stresses, such as in storage or during transport;

Иностранный язык в профессиональной сфере (английский)

- Unsuitable water temperature;
- Lack of dissolved oxygen;
- Changes in pH toward extreme values;
- Presence of toxic gases such as ammonia or hydrogen sulphide;
- Water pollution by agricultural or industrial chemicals, sewage effluents, heavy silt loads.

An attack by **pathogenic organisms**, which will either attack externally on the skin, gills or fins, or internally in the blood, digestive tract, nervous system, etc.

The risk of disease is even greater when fish undergo combined stressors, such as being handled when the water temperature is below normal or being overcrowded in an environment where the dissolved oxygen is low. Other factors that may encourage the propagation of disease, and make it much more difficult to control, include:

The presence of diseased wild fish;

The presence of intermediate hosts such as snails and fish-eating birds, which may provide a necessary link in the disease organism's life cycle;

The introduction of disease organisms through contaminated inputs such as food, trash fish or processing wastes including imported eggs, juveniles, or broodstock, or water from an upstream pond or farm.

Apart from obvious signs such as dead or dying fish, there are many other signs that fish are not healthy. The behavior of your fish becomes unusual:

- Swimming is weak, lazy, erratic,
- Fish are floating in the water with their heads up,
- Fish rub against hard objects,
- Fish are flashing and twisting,
- Fish are darting repeatedly,
- Fish are crowding and gathering in shallow water or where the water flows into the pond,
- Individual fish are isolated from the main group.

Physical signs are present on the fish:

- Gaping mouth,
- Open sores, lesions, bloody areas, loss of scales, bloated belly, or abnormal coloration on the body,
- Gills are pale, eroded, swollen, bloody or brownish,
- Eyes are cloudy or distended,
- Fins are folded or eroded,
- Disease organisms are visible on the skull, gills, or fins.

Иностранный язык в профессиональной сфере (английский)

There are three major groups of living organisms that can cause fish diseases

Viruses Their detection and identification requires highly specialized laboratory techniques. Control of viral diseases is difficult and requires specialized advice.

Bacteria These are minute single-cell organisms (1 to 12 μm), which usually live in colonies. Their detection and identification generally also requires special laboratory techniques. The treatment of bacterial diseases such as tail or fin rot, or skin ulcers, requires experienced, specialized advice.

Parasites Parasites are very small organisms comprised of one or several cells. They develop either inside or outside the body.

- Internal fish parasites are very difficult to control. Although sometimes their effects can be easily identified, detection and identification of the parasites themselves usually requires special skills.

- External fish parasites are much easier to detect and identify, and it is usually possible to eliminate them.

Protozoa are very small, single-cell parasites,

Flukes (*Monogenea*) are very small worms that attach themselves to the fish by hooks (0.3 to 1 mm),

Leeches are rather large, segmented worms that attach themselves to fish with sucker on each end (3 to 5 cm),

Copepods (crustaceans), which attach themselves to the fish's body and often have two elongated egg sacs attached,

Fish lice (Crustacea) have a flat, disc-like body covered by a rounded dorsal carapace (6 to 10 mm),

Water fungi (water molds) are made of filaments that usually grow into a cotton-like mass or mat. They can also develop in the gills.

Exercise 3. Answer the following questions:

1. What are the main causes of fish diseases?
2. Why do nutritional diseases become more frequent?
3. What do pathogenic organisms attack?
4. What signs can show you that fish aren't healthy?
5. What living organisms can cause fish diseases?
6. What are leeches?
7. What are water fungi?

Exercise 4. Match the words with their opposite meanings:

Иностранный язык в профессиональной сфере (английский)

- | | |
|-----------------|------------------|
| 1. Single –cell | a) rare |
| 2. Internal | b) increased |
| 3. Reduced | c) partially |
| 4. Completely | d) deep |
| 5. Frequent | e) consequence |
| 6. Surviving | f) multicellular |
| 7. Shallow | g) external |
| 8. Cause | h) dying |

Exercise 5. Complete the following word- forming table:

Verb	Noun
Detect	
Identify	
	elimination
Attach	
Expose	
Develop	
	treatment
Pollute	
Cultivate	
	growth

Exercise 6. Match the words to make collocations:

- | | |
|---------------|---------------|
| 1) Abnormal | a) tract |
| 2) Bloated | b) oxygen |
| 3) Open | c) system |
| 4) Eroded | d) sores |
| 5) Pathogenic | e) mouth |
| 6) Nervous | f) fins |
| 7) Digestive | g) coloration |
| 8) Gaping | h) mortality |
| 9) Skin | i) disease |
| 10) Viral | j) ulcers |
| 11) Dissolved | k) belly |
| 12) Fish | l) organisms |

Exercise 7. Revise the Modal Verbs and translate the following sentences:

Modal Verbs

Модальные глаголы — это небольшая группа особых глаголов, которые не выражают действие или состояние, а отражают отношение говорящего к действию. В русском языке для этого используются обычные глаголы: могу, способен, должен, обязан, разрешаю, необходимо (сделать что-либо, быть где-либо). Само действие выражается обычным глаголом — инфинитивом без частицы «to», который в обязательном порядке используется вместе с модальным глаголом. Эти глаголы являются недостаточными глаголами (*defective verbs*), так как они не имеют всех форм, какие есть у других глаголов. Модальные глаголы никогда не используются без смыслового глагола, который следует после модального глагола в форме инфинитива. При этом глаголы «be to», «ought to», «have to», «have got to» сочетаются с инфинитивом с частицей «to», а остальные глаголы — с базовой формой инфинитива (то есть с инфинитивом без частицы «to»). Модальные глаголы не используются самостоятельно и не обозначают конкретного действия, но отражают отношение говорящего к действию, т.е. модальность. У модальных глаголов есть свои эквиваленты.

Modal Verbs and Their Equivalents		
Модальный глагол	Значение	Эквивалент
can	мочь, уметь, быть в состоянии	be able (to)
may	мочь, иметь разрешение	be allowed to be permitted to

must	быть должным	have to be to
ought to	следует, следовало бы (рекомендация, совет, вероятность, предположение)	should had better
have to	вынужден, приходится	must be to
be to	должен (по плану)	have to must
need	нуждаться (используется, чтобы спросить разрешения, или дать разрешение).	-
should	следует, следовало бы (совет)	ought to be supposed to had better
would	желать; вероятно; бывало	-

shall/will	предложение помощи, сделать что-то/ обещание, намерение, спонтанное решение в момент речи	should had better
dare	смечь (осмеливаться сделать что-либо)	-
used to	описание действия или состояния, регулярно имевшего место в прошлом	-

1. The best soil for pond construction should contain a lot of clay.

2. Feeding should be done in the late morning or early afternoon when dissolved oxygen levels are high.

3. Great care must be taken that no sick fish are introduced when mixing fish from different ponds, or when introducing new fish into the farm.

4. New fish to the farm site should be kept in a separate pond until it is certain that they do not carry a disease.

5. Any change in normal behaviour may be a sign of disease.

6. The fish farmer should focus on the prevention of diseases as the treatment of fish diseases is often difficult, time consuming and expensive.

7. Contamination can come from people, soil, dust, sewage, surface water, manure, or spoiled foods.

UNIT 6

FISH SPECIES

Exercise 1. Read and learn the words:

Filterer - фильтратор

Herbivore - растительнооядное

Omnivore - всеядное

Carnivorous - плотоядный

Freshwater fish - пресноводные рыбы

Иностранный язык в профессиональной сфере (английский)

Marine fish - морские рыбы
Jaw - челюсть
Dorsal fin - спинной плавник
Lateral line - боковая линия
Scales - чешуя
Ray-finned fish - лучепёрые рыбы
Barbels - усики
Cycloid scales - циклоидная чешуя
Adipose fin - жировой плавник
Channel catfish - канальный сомик
Spawn - икра, метать икру
Mouth breeding species - особи вынашивающие оплодотворённую икру во рту

Exercise 2. Read and translate the text:

Of the 292 farmed species listed by FAO (1995) and for which data are available, the first 22 represent 80% of total production. Practically all of these 22 are filterers, herbivores, or omnivores. Only one species, the Atlantic salmon, is carnivorous, and it is clearly a minor species in terms of production volume. The most important group is fresh water fish, which accounts for 12.7 million tons, compared with 1.4 million tons for amphihaline fish and 0.6 million tons for marine fish. Fresh water fish are dominated by Cyprinidae (carp), Cichlidae (tilapia), Siluriformes (catfish)

Tilapia

Tilapia are mostly herbivorous. They are mainly freshwater fish inhabiting shallow streams, ponds, rivers and lakes and less commonly found living in brackish water. Tilapia typically have laterally compressed, deep bodies. The jaws have conical teeth. Typically tilapia have a long dorsal fin, and a lateral line which often breaks towards the end of the dorsal fin, and starts again two or three rows of scales below. Tilapia are also known to be a mouth breeding species. Mouth breeding means they carry the fertilized eggs and young fish in their mouths for several days after the yolk sac is absorbed. Unlike carnivorous fish, tilapia can feed on algae or any plant-based food. This reduces the cost of tilapia farming, reduces fishing pressure on prey species, avoids concentrating toxins that accumulate at higher levels of the food chain and makes tilapia the preferred "aquatic chickens" of the trade. Tilapia are unable to survive in temperate climates because they require warm water. The blue tilapia has the greatest cold tolerance and dies at 45 °F (7 °C), while all other species of tilapia will die at a range of 52 to 62 °F (11 to 17 °C). As a result, they cannot invade temperate habitats and disrupt native ecologies in temperate

zones; however, they have spread widely beyond their points of introduction in many fresh and brackish tropical and subtropical habitats, often disrupting native species significantly.

Siluriformes or catfish

Catfish (or Siluriformes) are a diverse group of ray-finned fish. Named for their prominent barbels, which resemble a cat's whiskers, catfish range in size and behavior from the three largest species, the Mekong giant catfish from Southeast Asia, the wels catfish of Eurasia and the piraiba of South America, to detritivores (species that eat dead material on the bottom), and even to a tiny parasitic species commonly called the candiru. Despite their name, not all catfish have prominent barbel. Catfish are of considerable commercial importance; many of the larger species are farmed or fished for food. Many of the smaller species, particularly the genus *Corydoras*, are important in the aquarium hobby. All farmed catfish are freshwater species. Catfish have either a naked skin or their skin is covered with bony plates. This is useful to the farmer as it means that catfish can be handled easily without scales rubbing off which can damage the skin. Their hardy nature and ability to remain alive out of water for long periods of time is of special value in tropical countries where higher water temperatures cause practical problems during transportation. Channel catfish spawn easily in shallow ponds in which the eggs are spawned in a nest and guarded by the male fish.

Cyprinidae (Carp family)

Fish from the carp family are often used in fish farming.

The bodies of fish from the Cyprinidae family are covered with cycloid scales and have a naked head. All rayed fins are well developed, but there is no adipose fin. The mouth protrudes, but lacks teeth. Sometimes one or two pairs of more or less well-developed barbels are present. The lower pharyngeal bones are very well developed, and bear a few teeth which are aligned in 1 to 3 rows.

Farmed carp are divided into three groups: common carp, which is farmed in Europe, Asia and the Far East, Indian carps and Chinese carps. **Common carp includes** carp. **Indian carps include** catla, rohu, calbasu, **and** mrigal. **Chinese carps** grass carp silver carp bighead carp black carp mud carp.

Cyprinidae present a certain number of comparative advantages: they can eat food with limited protein and fish meal content; they can be raised as part of a polyculture system, allowing optimal use of the natural productivity of ponds and pools; and they are a growth market in Asian countries, because of tradition as well as their relatively low price.

Exercise 3. Answer the following questions:

1. What do tilapia feed on?
2. Why are Tilapia unable to survive in temperate climates?
3. What kind of fish has the greatest cold tolerance?
4. Why are Siluriformes also called catfish?
5. Where do catfish spawn?
6. What three groups are carps divided into?
7. What advantages do carps have?

Exercise 4. Match the words with their translations:

- | | |
|---------------------|--------------------------------|
| 1) Food chain | a) мелководное течение |
| 2) Prey-species | b) вид - жертва |
| 3) Shallow stream | c) пища на растительной основе |
| 4) Brackish water | d) конические зубы |
| 5) Conical teeth | e) пищевая цепь |
| 6) Plant-based food | f) соленоватая вода |

Exercise 5. Translate the sentences:

1. Тилапии – пресноводные растительноядные рыбы.
2. В отличие от плотоядных рыб Тилапии питаются водорослями.
3. У тилапий длинный спинной плавник.
4. Тела карпов покрыты циклоидной чешуёй.
5. У карповых отсутствуют жировые плавники.
6. Канальный сомик может метать икру в мелководных прудах.
7. Сомовые – семейство лучепёрых рыб.
8. У сомовых на верхней челюсти имеются 2 усика, на нижней 2 или 4.

Exercise 6. Revise the Conditional Sentences and translate the following sentences. Define their type:

**Types of Conditional Sentences
(Complex Sentences with Subordinate Clauses of Condition)**

Conditional Type	Formation		Example
	Condition	Result	

0	Conditional	If + Present Simple,	Present Simple	If you keep water in ponds clean, fish stay healthy.
	Реальное всегда			
1 st Conditional		If + Present Simple,	Future Simple	If you keep a carp in cold water, it will die.
	Реальное настоящее или будущее			
2 nd Conditional		If + Past Simple,	would + Verb without to	If a catfish didn't have barnacles, it wouldn't get its name.
	Маловероятное настоящее или будущее			
3 rd Conditional		If + Past Perfect,	would have + past participle	If you had put a fence around the pond, it would have protected children from falling into the pond.
	Нереальное прошлое			

1. Effective use of marginal land e.g. land that is too poor, or too costly to drain for agriculture can be profitably devoted to fish farming provided that it is suitably prepared.

2. If small ponds are normally used for spawning and baby fish production, larger ones are used for the grown-out period.

3. The pond can be deeper than this if the pond is used as a water reservoir in the dry season.

4. If your pond were well-built, it could be used for many years.

5. A clay core would not have needed in excavated ponds if the water level there had been below the original ground level.

6. If the trench were filled with good clay, added several centimetres of clay at a time and then compacted well, this would provide a strong foundation upon which the pond dikes can be built.

7. If you had not put the soil on top of the pond dikes they would not have become too high and unstable, and it would not have made working around the pond difficult.

Exercise 7. *Open the brackets using the appropriate verb form:*

1. If the water coming into the pond did not contain a lot of soil

and silt it (not to make) the pond very muddy.

2. A continuous production of natural fish food be ensured if you (to add) fertiliser to the pond water at regular time intervals, preferably each day in the late morning or early afternoon.

3. If you had put a fence around the pond it (to protect) children from falling into the pond and (to help) to keep out thieves and predatory animals.

4. If you want to prevent overflowing, (not to fill) the pond too full.

5. If fish were gulping for oxygen at the water surface, you (can) solve this problem by flowing extra freshwater through the pond.

6. If the water level (to be) still high, the soil is impermeable enough and is suitable for pond construction.

7. If the water has disappeared again, the site (not to be) suitable for fish farming, unless the bottom is first covered with plastic or heavy clays.

Exercise 8. *Render the following article*

THE PROBLEMS OF LAKE KHANSKOYE AND WAYS OF SOLVING THEM.

Being a natural monument Lake Khanskoye is one of the main attractions of Krasnodar region. People from all the parts of our country go there not only to admire its beauty but also to recover from various diseases .At the moment this place is in danger- it is drying out slowly.

Lake Khanskoye is located in the north-western part of Krasnodar region on the coast of Azov sea. This place is in southern part of Eysk peninsula in 60 km from town Eysk and is in 185 km from Krasnodar city.

The Water in Lake Khanskoye is high mineral water, bitter-salty type, sea type. During summer time as a result of evaporation, the area of the lake is reduced with its water becoming 12 times saltier than the one in the Azov sea.

Nowadays the lake is in danger: most of the water area has dried up, the fish and birds being left without food have died or moved to other places.

In this regard, on the basis of the Council of Deputies of the Yeisk District, a commission devoted to the problems of the Lake Khanskoye was established. Besides investigating the causes of the lake`s drying out it was developing the ways for solving this problem.

One of the factors that have a negative impact on the ecosys-

tems of the lake is illegal waste dumps located on the shores of these water bodies .It should be mentioned that this fact is not a secret for the local authorities.

The problem of the lake became known to the public in the summer of 2007 when an ecological catastrophe took place. Because of the heat, the lake was completely dry, which led to the mass death of the pilens, carp, and zander that lived here. Back then specialists counted from 40 to 60 pieces of dead individuals of different species on one square meter.

However, according to the employee of the FGU AZZChERfisher, the reason for this catastrophe is the following : " Too many dams have been built on the Yaseni River. These dams don` t let enough amounts of water get into lake to maintain the water level. "

The same version is also shared by the scientists of the Southern Scientific Center (JRC) of the Russian Academy of Sciences (RAS). They believe that there was no control over the technical side while constructing these dams which led to the catastrophe.

Meanwhile, some local residents consider the problem to be artificially created. Besides local history sources testify this: during dry years Khanka used to dry up completely , and its bottom was covered with a thin layer of salt, which used to be mined in the past.

There is, however, one more version of the drying out of the lake. In the water area of the Biesug estuary and partly on the Yasenskaya spit there is a large gas field. So some people consider that it might be beneficial to drain Khanka to start producing gas here.

In the Yeysk region, on the night of September 24, 2014 there was a hurricane with the wind reaching speed 40 m / s which led to the forming of waves up to 4 meters high. These waves were flooding the beaches ,roads, houses. But for the Khan lake it had had a positive impact. as water started filling the lake. But we can not rely on catastrophes like this to save the lake.

We have developed two programs to save thelake .

The "maximum" program

- A state decision is needed to restore the natural system of rivers and lakes in the Shcherbinovsky, Yeisk and Kanevsky districts of the Krasnodar Region.

- We urgently need to erect weed vegetation, clear the bottom of the Yaseni River.

- Lake Khanskoye should become the main place of fishing again

- In case of failing of the "maximum" program there should be a minimum program.

Иностранный язык в профессиональной сфере (английский)

- Clear at least some known springs that feed the lake.
- Pay attention to the place at the bridge across the Chelbasskie girlo (in the Yeisk district near the border with Kanevsky).
 - At present, there is no drainage of water from the Biesug Estuary to the Khan lake. This problem can be solved with inclined pipes.

APPENDIX

Additional Vocabulary

- anchovy** – хамса, камса, анчоус, килька
american anchovy – анчовелла
azov anchovy – хамса, азовский анчоус
broad-headed anchovy – сельдевидная анчовия
common anchovy – обыкновенная анчоа, желтоперый анчоус
golden anchovy – пятнистая коилия, золотой анчоус
mustached anchovy – усатая трисса
northern anchovy – калифорнийский анчоус
pacific anchovy – дальневосточный анчоус, японский анчоус
silver anchovy – атлантическая анчоа, серебристый анчоус
- angelfish** – морской ангел, брама, длинноперый морской
 лещ, скалярия
deep angelfish – высокая скалярия
emperor angelfish – императорский помакант
goldtail angelfish – изумрудный ангел
green angelfish – зеленая изабелита
queen angelfish – зеленая изабелита
- roach back** – голавль
smooth back – озерный осётр американский
- bandfish** – целопа
- bango** – ханос
- bar** – лаврак, каменный окунь-ханос
silver bar – дораб
- barb** – барбус, усач, пунтиус
- barbel** – усач, барбус, пунтиус, марена, мирон
atur barbel – конь-губарь
aral barbel – короткоголовый усач, аральский усач
pacific barbel – конь-барбус
rock barbel – каменная косатка
spotted barbel – пестрый конь, пятнистый конь
- bass** – басс (американский окунь),
black bass – форелевый окунь, черный каменный окунь,

ушастый окунь

black sea bass – черный каменный окунь

blue bass – калифорнийская гирелла

butterfly peacock bass – басс-бабочка

chinese bass – ауха, китайский окунь

emerald bass – сине-желтый окунь

common bass – обыкновенный лаврак

japanese sea bass – японский морской судак

largemouth bass – большеротый окунь

mandarin bass – ауха, китайский окунь

mountain bass – кулия

peacock bass – тукунаре, павлиний окунь, басс-павлин

redeye bass – красноглазый каменный окунь

rock bass – американский каменный окунь

smallmouth bass – малоротый окунь

spotted bass – пятнистый окунь

stone bass – бурый каменный окунь, американский по-

липрион

striped bass – полосатый лаврак, полосатый окунь

sun bass – солнечный окунь

threadfin bass – гандио

white sea bass – баррамунди, белый морской окунь, белый

горбыль

wreck bass – бурый каменный окунь

batfish – платакс, нетопырь, рыба-ласточка, ор

blackback – зимняя камбала

blackbelly – летний помолоб, синеспинка

blackfish – даллия, черный каменный окунь, гирелла

bladefish – рыба-нож

cod – (атлантическая) треска

arctic cod – сайка, полярная треска, ледовая треска

bald rock cod – большой широколобик

black cod – синяя нототения, угольная рыба

black rock cod – павлинья гаррупа, буропятнистый групер

blue cod – голубой новозеландский песочник, равара, мра-

морник

brown-spotted rock cod – таувина

buffalo cod – зубатый терпуг

butterfly cod – крылатка-зебра, рыба-зебра, золотистая

скорпена

cloudy-bay cod – конгрио

freshwater cod – налим

Иностранный язык в профессиональной сфере (английский)

greasy cod – черноморский окунь
green cod – серебристая сайда
humped rock cod – зеленая нототения, антарктический бы-
 чок

ling cod – зубастый терпуг, змеезуб
lunartail rock cod – радужная вариола
moray cod – паркетник
morid cod – мора
murray cod – муррейская треска
polar cod – полярная треска, сайка
poor cod – (средиземноморский) капелан
red cod – красная треска, хока
rock cod – группер, черна, мероу
saffron cod – дальневосточная навага, вахня, вачня
violet cod – клюворылая антимора
wachna cod – дальневосточная навага, вахня, вачня
white cod – зубатый терпуг
codling – солилота, мелкая треска
conger – морской угорь
crampfish – электрический скат
cuttlefish – каракатица
eel – (речной) угорь
american eel – американский угорь
barbel eel – угрехвостый сом, морской колючий сом
black conger eel – серый конгер, индийский морской угорь
common eel – европейский угорь
conger eel – морской угорь, конгер, щукорылый угорь
congo eel – пятнистый криворот, американская бельдюга
cuchia eel – кучия
cusk eel – ошибень
electric eel – электрический угорь
europеan eel – (речной) угорь, европейский угорь
giant eel – гигантский угорь
long-finned eel – длинноплавниковый угорь
long-nosed eel – светящийся угорь
moray eel – мурена
esturgeon – осётр
grand esturgeon – белуга
filefish – спинорог
orange filefish
hatchet fish – рыба-топор
jackknife fish – обиспа

javelin fish – полорыл, чешуерыл
 jewel fish – хемихромис, хромис-красавец
 knight fish – рыба-рыцарь, шишечник
 lancet fish – зубатка
 leopard fish – пятнистая зубатка
 mandarin fish – китайский окунь, ауха
 marble fish – мраморник-кеке
 mosquito fish – гамбузия
 paradise fish – макропод, губанчик
 parrot fish – рыба-попугай, ножезуб, лжегубан
 porthole fish – ставрида-тала
 rabbit fish – сиганус
 razor fish – чехонь
 rattail fish – голплихт
 royal fish – шемая
 sargassum fish – морской клоун
 sergeant fish – кобия, нигрита
 sickle fish – пятнистая дрепана
 surgeon fish – рыба-хирург
 tiger fish – (трехполосый) терапон
 walking fish – рыба-ползун
 weather fish – вьюн

APPENDIX 2

Useful phrases for rendering the article

1. The title of the article is....
2. The article is written by....
The author of the article is
3. The article is taken from....
4. The main idea of the article is....
The main aim of the article is
5. The article – stresses that
-emphasizes that....
- points out that
-draws our attention to the fact that
-describes.....
-gives information about....
-informs that....
-touches upon.....

According to the article.....

6. The author of the article – gives definition of....

- believes that....
- considers that....
- explains that....
- states that...
- comes to the conclusion that

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