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LECTURE NOTES

Nature Reserve



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PREFACE

Nature conservation is one of the most important components of environmental sciences and environmental protection activities. It plays an important role in the development of theoretical foundations and practical solutions to the problems of conserving biological and landscape diversity, maintaining ecological balance in nature, and shaping the worldview of individuals, communities, and society. The special environmental, social and economic importance of nature conservation was emphasized by the decisions of the UN conferences in Rio de Janeiro (1992) and Johannesburg (2002), where its development was defined as one of the ways to achieve sustainable development.

Studying the basics of nature conservation is important in the training of specialists whose field of activity is related to the protection and rational use of the environment. Relevant knowledge of the scientific principles of nature conservation, its legal framework in Ukraine and the world, organizational, managerial and other fundamentals of nature conservation is necessary for future specialists to competently address the complex issues that they will face in their professional activities. The main purpose of this textbook is to present and analyze the foundations on which the nature reserve system in Ukraine is based, its scientific, legal, organizational, economic, social, and management principles. The materials are presented to the extent defined by the curriculum of the course "Nature Reserve Management in Ukraine".

The methodological recommendations consider nature conservation as an academic discipline that synthesizes theoretical and practical issues of conservation and restoration of natural complexes and their components in the territories and objects of the nature reserve fund. Accordingly, it is important to study this discipline not only to master the theoretical material, but also to know the mechanism of its application. A proper place is given to the analysis of practical issues of organization of protected areas of various categories, ensuring their

protection regime, methods and practice of conducting scientific, recreational, educational and other activities within the nature reserve fund of Ukraine.

The bibliography of nature reserve management includes thousands of articles and hundreds of monographic publications, and its volume is increasing every year. This is a testament to the social significance of nature conservation and the growing awareness of the role of protected areas.

These guidelines are based on an analysis of scientific, regulatory, legal, and statistical sources and a generalization of the authors' own research and practical experience. The authors consider it necessary to include general issues of theory, methodology and practice of protected area management in Ukraine. These issues are considered in the context of international experience and current trends in the development of nature reserves in the world.

Lecture 1.

Stages of the historical development of nature reserves. Issues of creation, expansion and protection of the nature reserve fund in the environmental policy of Ukraine

Outline

- 1.1. The role and importance of protected areas and objects in the life of the biosphere and society.
- 1.2. The content, definition and objects of the protected area.
- 1.3. Historical milestones of the reserve management in Ukraine.

1.1. The role and importance of protected areas and objects in the life of the biosphere and society.

Everyone who visits our Ukrainian land is struck by its unique beauty, picturesque landscapes, emerald forests, and diversity of fauna and flora. And most importantly, Ukraine's natural conditions, fertility of its land, and richness of its subsoil contribute to the development of the agricultural and industrial sectors of the economy. Therefore, the problem of rational use of natural resources, preservation of our country's environment, its unique territories and objects is of great practical importance.

One of the most effective forms of protection of valuable natural objects and territories is their reservation - placement under state protection. The creation of protected areas is necessary to preserve valuable species of flora and fauna, unique landscapes, geological and paleontological sites, etc. At the same time, the rational, sustainable use of natural resources is impossible without the existence and study of its permanent standards of protected areas and territories. This makes it possible to identify the changes that humans make to the environment, to compare pristine nature with a cultivated landscape, and, ultimately, to develop a strategy for environmentally balanced natural resource management. In other words, the protection of territories and natural objects through their conservation is aimed not

only at preserving them in an intact state. The tasks are much broader and more responsible - scientific, recreational, environmental, educational and upbringing.

Focusing on the role and significance of protected areas and objects in the life of the biosphere and society, seven main aspects should be highlighted in this regard. First of all, all protected areas and objects are the basis of the ecological network of both regions and Ukraine as a whole, which ensures their ecological balance. The ecological network includes nature reserves, which are its core, protected areas such as forests of the first group, green areas of cities, as well as natural vegetation used by humans, such as regulated and exploited forests, meadows, pastures, etc.

The idea of an ecological network is one of the most fundamental ideas of recent decades in the field of theoretical and applied ecology.

It is a kind of reaction to the consequences caused by the chaotic and consumerist development of society, an attempt to at least partially compensate for losses in the natural environment. Its essence is to create a network of interconnected areas of natural territories. The network includes "ecological cores" (protected areas), "living ecological corridors" - valuable natural areas that connect the cores, and "buffer zones" - areas that protect the eco-cores and eco-corridors from external impacts. The creation of an ecological network makes it possible to ensure the conservation of biodiversity and ecosystems in general, as well as coenotic fullness, population components, and the preservation of the gene pool of valuable representatives of fauna and flora in particular. This ensures regional conservation of biodiversity and supports the framework of "ecological corridors" on the European scale. The creation of the Ukrainian ecological network is a key element of the practical implementation of the ecological system of nature management. The ecological network is based on forest, forest-steppe, and steppe areas, valleys of rivers of the first magnitude, and certain azonal and indigenous natural formations, including centers of endemism (Carpathians, Crimea, Podillia) and relics. The list of such natural formations includes forests, peatlands, steppe and forest-steppe massifs, and individual natural complexes, i.e. all those territories with landscape and natural features. Of great importance in the formation of Ukraine's ecological network is its

transboundary context, where the environmental interests of neighboring states, international importance and impact on the life of the biosphere as a whole are decisive. For example, beech virgin forests on the border with Romania, Poland, and Slovakia, marshlands of the Pripyat Valley on the border with Belarus, forests with Russia, steppe forests on the border with Moldova, and the valleys of the Dniester, Danube, Dnipro, Prut, Syan, Western Bug, and Siverskyi Donets ensure the continuity of eco-corridors and the integrity of complexes on a European scale.

Protected areas and sites also serve as a gene bank for flora and fauna.

Sustainable use of the biosphere in the future depends on preserving the entire genetic diversity of the planet, as well as its individual regions, for future generations, and ensuring conditions for the evolutionary development of species. Protected areas play a special role in solving this problem because they are created primarily in areas characterized by the richness of flora and fauna and their diversity. According to international and domestic practice, the following are important for selecting the territory of nature reserves: optimal habitat or habitat for one or more endangered species; areas with maximum diversity of fauna and flora; areas with maximum endemism; areas where biodiversity is preserved as long as possible.

The need to preserve all species of animals and plants that exist on the planet, i.e. to preserve the gene pool that has arisen in the course of the multi-million-year evolution of the organic world, is beyond doubt today. After all, intensive human economic activity leads to a great burden on the natural environment. Under the influence of anthropogenic factors, landscapes are changing, flora and fauna are being depleted. In this regard, the question may arise: is it possible to preserve all the diversity of wildlife in the future? There can be only one answer to this - it is necessary to preserve and can be preserved, and the main role in this is assigned, first of all, to the further development of nature conservation, expansion of the network of natural protected areas under special state protection.

For example, various types of nature reserves not only preserve rare, endangered, or scarce species of plants and animals. They also preserve the natural gene pool of plants and animals, which is a treasure trove of nature. Past and present

generations have bred domestic animals and cultivated plants from wild animals and plants. Who today can predict what needs humanity will have in the future? What species of animals and plants will be included in the economic cycle? Therefore, it is our duty to preserve not only rare species, but all species of plants, animals, and microorganisms for posterity.

Reasonable human activity in the field of environmental protection has averted the threat of extinction of many representatives of fauna and flora in different parts of our planet. For example, it is known that the joint efforts of a number of countries have saved the European bison from extinction. The European bison ceased to exist in the wild, but it was reproduced in zoos. Today, the total number of these animals, which are distributed in various protected areas, exceeds two thousand individuals. In particular, there are 168 of them in the Zubrovytsia Nature Reserve in Chernivtsi Oblast alone, 48 in the Skole Beskydy National Nature Park, and so on.

In general, in cases where the number of any animal species decreases to catastrophic proportions, measures are taken to protect and reproduce them in the wild, as well as to ensure their survival and reproduction in captivity with subsequent reacclimatization in their former habitats. For example, in the twentieth century, the European beaver, white rhinoceros, Bengal tiger, Przewalski's horse, etc. were preserved as species.

For almost hundreds of years, various species of plants have been successfully reproduced and propagated in botanical gardens in many countries. The Central Botanical Garden of the National Academy of Sciences of Ukraine was one of the first in Ukraine to start and successfully carry out work on the reproduction of species that have almost disappeared in nature. Over the past decades, its scientists have transferred a number of valuable plants into culture and then distributed them in their natural habitats. An example is the restoration by sowing seeds collected from plants cultivated in the botanical garden: the Southern Bug broom on granites along the banks of the Southern Bug River, woolly-flowered astragalus on the left bank of the Kyiv region, etc. Therefore, the task of botanical gardens is to study in

depth the biology of various species of rare, endangered, endemic, relict, and useful wild plants; to develop effective methods of their reproduction, and to determine optimal conservation regimes for them. For this purpose, in addition to natural undisturbed areas, specially created breeding grounds can be used, as well as artificial plant communities with the participation of these species, modeled after natural ones or arranged according to the targeted plan of scientists.

Botanical gardens care not only about preserving the gene pool of cultivated plants, enriching their range through acclimatization and breeding new varieties, but also about preserving the unique gene pool of local natural flora, which is especially true for the Botanical Garden of Chernivtsi National University.

The country's zoological parks play a similar role, with the task of comprehensively studying the biology of wild animals, collecting and preserving endangered species.

The vegetation of protected areas is a benchmark in a number of respects, including the structure of biogroups, floristic composition, and productivity in specific environmental conditions. Therefore, it is necessary to preserve areas with the maximum diversity of environmental conditions and flora and fauna species. This significantly increases the ecological role of protected areas. After all, each species, being unique, has scientific value both now and in the future. And now it is impossible to determine the direction of their future use by humans and in the national economy.

A testing ground for scientific monitoring of the environment is an important role of the nature reserve fund's territories. They make it possible to analyze and predict changes in the environment. Changes in nature are of a dual nature: some are caused by natural factors that do not depend on humans, occurred before they appeared on Earth and are still happening today; others- man-made - are a direct result of human activity. With the development of science and technology, they are becoming more and more noticeable, turning into a global force. Therefore, the impact of anthropogenic and natural factors on ecosystems is studied in the protected

areas of our country, and special studies are conducted in accordance with the environmental monitoring program, which aims to:

- ◆ observation of the variability of the natural environment with a focus on changes caused by anthropogenic factors
- ◆ assessment of the state of the environment and anthropogenic factors affecting it
- ◆ forecasting changes in the state of the environment under the influence of human economic activity.

In the network of protected areas, biosphere reserves are the most effective in fulfilling these functions. The Biosphere Reserve Development Program has provided opportunities for international cooperation in three important areas: 1) conservation of biological diversity, 2) organization of a system for collecting basic biological data, and 3) integration of human impact on biological systems. Experience confirms that monitoring in biosphere reserves will enable humans to improve biosphere management, and its results will be widely used in various areas of human activity. After all, the modern understanding of the concept of a biosphere reserve includes, as components, elements of ecosystem protection, a reference for comparison and the ability to observe such methods of land use that identify the best combinations of these components in the interests of society and the environment.

The task of scientific monitoring carried out in protected areas is to develop methods of accounting, reproduction and rational use of plant and animal resources in the economic sector of different geographical areas; measures to protect and restore the number of rare and endangered species of fauna and flora; measures aimed at preserving natural complexes in protected areas; biological methods of controlling harmful animals and plants; determining the effectiveness and consequences of the use of natural.

The development of recreational activities and the creation of favorable environmental conditions for human health are inextricably linked to the development of nature conservation. After all, recreational resources and resort areas are an integral part of national natural parks, regional landscape parks, and parks that

are monuments of landscape art. It has been proven that, for example, the value of ecological and recreational functions of forests, as well as the growth rate of the importance of these functions, is much higher than their raw materials. It is indisputable that protected areas have significant benefits directly or indirectly for the local and national economies, form a balanced resource conservation, and contribute to the improvement of the environment and human health. This can be seen in the functioning of health facilities, such as recreational resources and resort areas of sanatoriums, resorts, recreation centers, boarding houses and camps, as well as separate nature protection and recreational areas. The main positive factors of protected areas that contribute to human health protection include:

- ◆ air purification, absorption of pollutants, ensuring the purity and fullness of water resources;

- ◆ organization of healthcare facilities on the territory of the nature reserve fund and buffer zone aimed at physical rehabilitation of the population

- ◆ use of certain wildlife products used in local diets and alternative medicine, preservation of the genetic bank for new and known medicines;

Recreation in unspoiled nature, observation of natural objects enrich and beautify human life, relieve stress, and increase efficiency in work;

- ◆ the ability to integrate nature conservation projects of protected areas with projects of balanced rural and agricultural development, which will result in high-quality agricultural production and production of environmentally friendly products.

The nature reserve fund is the basis for environmental education.

The implementation of environmental education and environmental protection education, as well as the preservation of the gene pool, standards of natural ecosystems and the maintenance of ecological balance, are among the main tasks of protected areas and objects. The main objectives of environmental education are:

- ◆ to explain the uniqueness and importance of the territories and objects of the nature reserve fund for their conservation and support in the regions and the country

- ◆ to inform the public about the actual environmental situation in the territories and objects of the nature reserve fund;

- ◆ to form a favorable attitude of the population to the nature reserve business.

Thus, the role of the nature reserve fund in the life of the biosphere and society is extremely important and multifaceted. Therefore, it is necessary to carry out constant work on its protection and expansion.

1.2. The content, definition and objects of the protected area

The content and definition of the protected area. "Conservation" is a widely used and generally accepted term. However, there is no consensus among professionals involved in this field on the content and scope of this concept. Consequently, no single definition has yet been developed. The main differences in views are that some specialists consider reserve management as a field of practical activity aimed at creating protected areas and ensuring that they fulfill the necessary functions. Of course, this activity has a theoretical basis and is based on certain theoretical and methodological principles. However, according to this "pragmatic" interpretation of protected area management, these principles are considered to be its scientific basis, which is not included in the protected area management itself. Just as commercial business is based on the laws of economics, but they are not directly included in this business, so the conservation case is also based on certain scientific laws, but does not contain, let alone develop them independently.

The basis for this mutual understanding and mutual enrichment of different sciences is a clearly defined goal of nature conservation - to preserve and restore natural complexes or their individual components in specially designated areas. The ways of achieving this goal are different (scientific and practical, economic and environmental, in situ and ex situ, etc.), but their focus on achieving a common goal determines that nature conservation is a holistic area of human activity. It includes both scientific research and practical measures. Thus, *nature conservation can be defined as the theory and practice of conservation and restoration of natural*

complexes and their components, as well as their rational use within the territories and objects of the nature reserve fund.

From the definition of conservation it is clear that it consists of two parts: theoretical (scientific) and practical.

Currently, in scientific terms, nature reserve management is not a separate science or scientific field, but a complex of sciences whose laws, regularities, concepts and other provisions and methods are used to address issues important for nature protection in the territories and objects of the nature reserve fund. It is not nature conservation itself that seeks and formulates new scientific laws or concepts; it only uses the scientific provisions of other sciences. In addition, by setting tasks for these sciences that are necessary for the development of nature conservation, it stimulates them to look for new patterns, develop new research methods, etc. Thus, the "science" of nature conservation is not only in the fact that it has a strong scientific basis, but also in the fact that it encourages the development of new scientific fields. In biology, for example, such a direction is called "conservation biology".

The second component of the protected area management, referred to in the above definition as "practice," is no less extensive than its theoretical part. Although some experts complain that the term "conservation" is not entirely appropriate, we believe that it clearly indicates that environmental protection is a practice, not just knowledge, theory, or a call to action. Within the framework of conservation, theory is closely intertwined with concrete actions. They are diverse (from the preparation of legislative documents to the protection of a particular population directly at the place of its growth), carried out at different management levels (from national to local), take different time (from long-term planning to urgent actions), but in their totality they constitute an integral complex. This complex is complex and multilevel. It does not exist autonomously from other areas of social activity (e.g., territorial planning, recreation and leisure development, etc.), but has close ties with them. Ideally, it should be organically integrated into the overall structure of the national economic complex both at the level of the state and its individual regions.

In Ukraine, nature conservation as an independent academic discipline was recognized de facto and de jure with the introduction of a course of the same name into the curricula of leading higher education institutions. Its purpose is to provide students with the basics of knowledge in nature conservation, including its scientific, legal, organizational, managerial and other foundations.

The first structural part of the reserve case, which can be conditionally called "essential", deals with the problem of the very essence of the reserve case, its interpretation, definition, objects, etc.

The scientific foundations of the reserve case constitute its second part. It should be emphasized that the numbering of these and other parts of the reserve management is in no way related to the ranking of the relevant subsections by their importance, weight, or priority, but only reflects the logic and sequence of their presentation within the course. The scientific foundations of reserve management, in turn, can be conditionally divided into two parts: 1 - scientific foundations of the reserve management itself, and 2 - scientific research within the territories and objects of the NRF, among which the scientific support of the Chronicle of Nature is of particular importance.

The organizational and legal framework of reserve management is its third major part. It covers such groups of issues as the legislative framework of protected areas, the legal regime of protected areas and objects, and the categories of protected areas in Ukraine and the world. An important component of this part is the consideration of the principles on which international cooperation in the field of protected areas is based.

The knowledge of the scientific foundations and organizational and legal framework of nature conservation allows us to consider its next part, namely **the creation and design of protected areas**. In this area of nature conservation, three groups of issues can be distinguished, the scientific basis and legal framework of which has certain peculiarities. These issues are as follows: 1 - creation of protected areas of Ukraine, 2 - creation of transboundary protected areas, 3 - development of the national ecological network of Ukraine on the basis of protected areas.

After the creation of protected areas, relevant activities are carried out in them. Therefore, the next part of the study of protected areas is a group of issues related to environmental **protection activities in the territories and objects of protected areas**. This part covers such diverse issues as protection regimes, the procedure for the use and control of protected areas, recreational, scientific, educational and other activities within protected areas.

Finally, considering protected area management as an academic discipline, its important component should also include knowledge about the protected areas owned by the nation. Thus, **the structure and zonal and regional features of the nature reserve fund of Ukraine** are considered as an important part of the reserve management.

1.3. Historical milestones of the reserve management in Ukraine.

Natural protected areas have existed at all times and among all peoples. With the emergence of religions, they were dedicated to gods and had sacred significance. The Eastern Slavs "settled" their gods on the tops of mountains (Beskydy, Lysa Mountain in Kyiv), caves, and groves - places that were quiet, wild, and far from housing. Natural objects of extraordinary beauty, such as healing springs, waterfalls, individual stones, and rocks, were protected by gods and folk traditions. Many places became sacred because of the myths associated with them. For example, the Greeks who lived on the coasts of the Azov and Black Seas considered the islands of Tendra and Dzharylgach sacred. They dedicated the island of Tendra to Achilles, and it was called Achilles' heath. Temples were built on the island and a statue of the hero was erected. Some natural objects were bequeathed as sacred in connection with historical events. For example, the burial places of noble ancestors were of sacred significance.

During the times of Kievan Rus, groves, lakes, rivers, and keys were bequeathed as sacred and were ruled as temples: gaibog, bozhnytsia, sviatibor, and Bug. There were also "reserved groves" located near settlements, mostly on elevated ground. In Kyiv, the Shuliavskiyi (Kadetskiyi) grove on the banks of the Lybid River

was considered sacred. It was cut down during the Civil War. Now only one 400-year-old oak tree remains of this grove. In the sacred oak groves, the oldest trees were fenced off, and only priests could enter. Some Slavs called sacred groves paradise. Professor E. Anichkov believed that many years ago a sacred grove, the abode of the Kyivan gods, rustled with leaves on the site where the Kyiv Cave Monastery is now located.

Forests of monasteries that were closely guarded can also be considered proto-reserves. For example, near the Okhtyrka Monastery there is a forest on the Vorskla River, and near the Sviatohirsk Monastery there is a tract of chalk pine. The forest tract of Kitayevo, Holosiivskyi forest, and Koncha Zaspa near Kyiv have also been preserved thanks to the monks. Later, in 1921, the Koncha Zaspa tract became a nature reserve, and the Holy Mountains became a national park in 1997. Another type of proto-reserve was the clear-cut forests near the southern and southeastern borders of Muscovy, in the Dnipro and Don rivers, in the territory of the modern Kharkiv and Belgorod regions. These forests were strictly protected. To protect them, the tsars issued special decrees. The system of clear-cut forests existed until the end of the seventeenth century. Some modern nature reserves were created on the site of former clear-cut forests.

Thus, in ancient times, natural objects were protected as sacred in connection with myths, for moral, political, and historical reasons. In addition, those territories that were especially "pleasing" to the gods due to their special natural properties became protected sacred places.

In the princely era, communities had their own hunting grounds, which they protected. There were agreements between the princes of Kievan Rus and between individual communities on hunting grounds and methods of hunting. Those who violated them were severely punished. For example, it is known that in 970 Prince Oleg killed the son of the voivode Sveneld, having met him in a place forbidden for hunting. Of course, the first Russian legal documents regulate the use of lands or certain species not for conservation purposes, but from the standpoint of ownership. "Grand Duke Yaroslav Volodymyrovych's "Statute of the Courts" had a

separate section on beavers and defined the punishment for unauthorized hunting of this animal. According to *Ruska Pravda*, a fine of 3 hryvnias was imposed for taking a hawk or falcon from someone else's property without permission, and 12 hryvnias for a beaver from a hole. If traces of illegal fishing were found in someone else's property, such as nets or dug up earth, the community had to extradite the thief or pay a 12-hryvnia fine.

Kyivan princes began to create protected areas for utilitarian purposes. Thus, at the end of the 11th century, Volodymyr Monomakh had several tracts near Kyiv that were protected for princely hunting: Sokolynyi Rih and Zvirynets. The Bortnytsia lands were also protected. In the 12th century, Volodymyr Volynskyi protected the Bialowieza Forest, which became the first officially documented nature reserve, in order to protect bison.

The very first nature reserve in Ukraine, in the close to modern sense of the word, was organized in the late 19th century by Count Volodymyr Dzedushytskyi, a patron of science, ornithologist, and great lover of nature. The Penyatska Monument Reserve was created for scientific and aesthetic purposes in a beech forest on an area of 20 hectares near the village of Penyaki near Brody. Unfortunately, the forest was largely cut down during the troubles of the World Wars. The protected status of the Penyatska Monument was restored in February 1997.

The most famous ancient nature reserve in Ukraine is, of course, Askania-Nova, created by F.E. Falz-Fein. As early as 1883, he fenced off 8 acres of **Askania-Nova** land where he kept steppe animals. Friedrich Faltz-Fein began to protect the first plot of virgin land in the area of the Kroli tract after graduating from the university in 1889. This date can be considered the beginning of the creation of the first reserve in the Russian Empire. Initially, when his father's estate was divided, Friedrich got the Dorenburg estate, and his brother Volodymyr got Askania. However, seeing Friedrich's disappointment with this division of the inheritance, his brother exchanged estates with him.

In 1893, Kyiv fish breeder I.N. Faleev established the Kyiv branch of the Russian Society of Fisheries and Fisheries, and in the same year he succeeded in getting the Society to protect a well-known spawning ground, Lake Koncha near Kyiv. This site became the fourth protected area on the territory of modern Ukraine. In 1895, I.N. Faleev published his study "Dnipro Fishing" in three issues of the Fisheries Industry Bulletin, in which he first raised the issue of creating fish reserves in Ukraine: "In my opinion, such places, if chosen well, would give a huge increase in fishery resources. The vines and, in general, the vegetation surrounding the protected lakes or bays should be untouched."

The following local nature reserves were liquidated in Ukraine: Golden Stream, Gomilshansky Forest, Chernechyna, Bilosaray Spit, White Mountain, Shutromyntsi, Galilee, Hawthorns, Vengilsky Forest, Kostopilsky, Artem's Mountains, Yew Forest, Velyko-Burlutsky, Stone Graves, and five republican ones: Horiste, Veseli Bokovenky, Ustynivka, Trostianets, and Seredniodniprovskiyi (Kanivskiyi). 1,000 hectares were taken away from the Black Sea Reserve for the needs of collective farms, and 200 hectares from the Azov-Sivash Reserve. In total, 33 thousand hectares of protected land remained in Ukraine, i.e. 60% of the former area.

Unfortunately, the significant reduction of the reserve network that took place in 1951 continued. As a result, by 1965, there were only 2 reserves in Ukraine with a total area of 11536 hectares. At that time, the reserve system in the Ukrainian SSR had the worst performance during the entire period of Soviet rule. The share of the territory under reserves was only 0.02%.

The Law of Ukraine "On Environmental Protection" (1991) is the same age as our country's independence. It became the basis for the development of a series of legislative acts in the field of environmental law. In 1992, the Law of Ukraine "On the Nature Reserve Fund of Ukraine" was adopted, which defined the modern classification of territories and objects of the nature reserve fund, regulated property issues, and the basic requirements for the regime of protection, use and management of protected areas. In the same year, the Regulation on the Red Data Book of Ukraine

was approved, which defines the legal status of rare and endangered species. The creation of protected areas is defined as one of the measures for the protection and reproduction of "Red Book" species. 126 rare plant communities were included in the Green Book of Ukraine, which became a legal act in 1999. The Regulation on the Green Book of Ukraine provides a legal basis for developing measures to preserve rare coenoses. The development of Ukraine's environmental legislation is based on the basic law - the Constitution of Ukraine, which states the need for nature conservation by both the state (Article 16) and citizens (Article 66). Thus, Ukraine has a fairly good legislative framework for the development of nature conservation.

The specially authorized body of state administration in the field of organization, protection and use of the nature reserve fund is the central executive body in the field of environmental protection, which creates a special unit for operational work. On March 14, 2001, the Cabinet of Ministers of Ukraine issued Resolution No. 239 establishing a governmental body, the State Nature Reserve Service, under the Ministry of Ecology and Natural Resources of Ukraine (now the Ministry of Environmental Protection of Ukraine). This governmental body was created on the basis of the Main Department of National Parks and Nature Reserves of the Ministry of Environmental Protection and Nuclear Safety of Ukraine, which began its activities in 1995.

The nature reserve fund of Ukraine is developing dynamically. *Since 1992, it has almost doubled in size and includes 7,010 territories and objects with a total area of 2,557.8 thousand hectares, which is 4.2% of Ukraine's territory.* The development of the nature reserve fund of Ukraine was the result of the implementation of the Program for the Prospective Development of Nature Reserves in Ukraine "Reserves", approved by the Verkhovna Rada of Ukraine on September 22, 1994. The program defined the strategy for the development of nature reserves in Ukraine until 2005, laid the foundations for the scientific, organizational, material and technical development of nature reserves and optimization of the network of territories and objects of the nature reserve fund.

Since gaining independence, Ukraine has become an active participant in international environmental protection activities. At the World Conference of Heads of State in Rio de Janeiro (1992), with the participation of the Chairman of the Verkhovna Rada of Ukraine, documents crucial for the further development of the world's countries were adopted: Agenda 21 and the Convention on Biological Diversity. The international community set a course to achieve the principles of sustainable development under the main condition of biodiversity conservation. In 1995, in Seville (Spain), UNESCO made adjustments to the formation of the World Network of Biosphere Reserves, which was launched by the UNESCO Man and the Biosphere Program in 1974. The adopted Seville Strategy for the Development of Biosphere Reserves, along with such functions of biosphere reserves as conservation of biological diversity and monitoring of ecosystems, set the function of achieving sustainable (socio-economic) development of the territory. The UNESCO decision granted Ukraine the status of biosphere reserves: Black Sea, Askania-Nova and Carpathian Biosphere Reserves, the Danube Biosphere Reserve as part of the Ukrainian-Romanian Danube Delta Biosphere Reserve, the Uzhansky National Nature Park with the Nadsyansky Regional Landscape Park as part of the Ukrainian-Polish-Slovak Eastern Carpathians Biosphere Reserve, and the Shatsky National Nature Park.

Ukraine is an active participant in the implementation of the European Strategy for the Conservation of Biological and Landscape Diversity, which was approved at the Conference of European Environment Ministers in 1995 in Sofia. The priority area of this strategy is the development of an ecological network as a system for protecting the natural heritage of the European community. This system will ensure, firstly, the creation of a single, integrated system for the preservation, reproduction and improvement of national natural resources throughout the continent and, secondly, the combination of efforts at the national and international levels. In the fall of 2000, the Verkhovna Rada of Ukraine approved the National Program for the Formation of the National Ecological Network of Ukraine for 2000-2015. The goal of the program is to increase the area of the country's lands with

natural landscapes to a level sufficient to preserve their diversity and form a territorially unified system that would ensure the conservation of natural ecosystems, flora and fauna. The National Ecological Network should be integrated into the Pan-European Ecological Network and perform functions related to the conservation of biological diversity. The program envisages almost doubling the percentage of protected areas and objects of the nature reserve fund of Ukraine by 2015.

Questions and tasks for independent work

1. What is the most effective form of protection of valuable natural areas and objects?
2. What are the main aspects of the role and importance of the nature reserve fund in the life of the biosphere and society?
3. What is the basis for creating an ecological network?
4. What is the core of the ecological network?
5. What are the criteria for selecting a territory for the organization of nature reserves?
6. Is it possible to preserve all the diversity of wildlife?
7. What species of animals have been preserved by the method of reacclimatization?
8. What are the tasks of botanical gardens in the field of reproduction and propagation of rare and endangered species of flora?
9. Describe the role of the nature reserve fund in the preservation of rare, typical and picturesque landscapes.
10. Why should geological and karst-speleological natural sites be preserved?

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Lecture 2.

Convention on Biological Diversity, international legal documents - studying international and Ukrainian experience in the field of nature protection

Outline

2.1. Nature protection in the context of international environmental cooperation.

2.2. International Union for Conservation of Nature and the Nature Reserve Fund of Ukraine.

2.1 Nature protection in the context of international environmental cooperation.

The development of international cooperation in the context of the world environmental movement, regardless of national, socio-economic, state and political features, traditions, as well as the peculiarity of natural conditions of different countries, has certain trends and directions. After all, the problems faced by most countries were very similar: criteria for determining species of flora and fauna subject to special protection, the state of the environment, the need to take special measures to protect valuable natural areas, unification of special terminology, improved information, etc. Therefore, since the 1960s, a number of documents have been adopted over the past two decades that have formed the relevant international legal framework and created conditions for solving many problems of biodiversity conservation and protected areas at the global level.

The most important international documents in terms of conservation of biological and landscape diversity are the Convention on Wetlands of International Importance, especially as Waterfowl Habitat (Ramsar, 1971), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (Washington, DC, 1973), Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 1979), Convention on the Protection of Wild Flora

and Fauna and Natural Habitats in Europe (Bern, 1979), and Convention on Biological Diversity (Rio de Janeiro, 1992).

The Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar, Iran, February 2, 1971) consists of 12 articles. The Convention recognizes not only the interdependence of humans and the environment, but also that wetlands are regulators of the water regime, support the existence of characteristic fauna and flora, and are of great scientific, recreational and cultural importance. This clarifies the concept of a wetland - as a rule, these are areas of marshes, bogs, peatlands - and they can be both natural and artificial, permanent or temporary, standing or flowing. These lands also include marine areas whose depth at low tide does not exceed 6 meters. As for the individual Member States of the Ramsar Convention, they, as stated in the relevant article, carry out their planning in such a way as to contribute to the protection of wetlands, and also undertake to use these areas rationally. Each of the Parties shall identify the relevant wetlands and ensure their conservation. States are given the right to both expand the list of such sites and reduce it, taking into account national needs. At the same time, research, data and information exchange, and training are encouraged. During the twenty years of Ukraine's participation in this convention, the area of wetlands in our country has almost doubled and now exceeds 460 thousand hectares.

In March 1973, the Convention on International Trade in Endangered Species of Wild Fauna and Flora was signed in Washington, DC. The 25 articles of the Convention set out the basic principles and provisions of such trade, including with states that have not acceded to the Convention. The Convention includes three appendices, in particular, the first one lists endangered species (regulated as strictly as possible), the second one lists species that are not necessarily endangered at present, but require strict regulation to avoid possible negative consequences, and the third one lists species that any party to the Convention determines should be subject to regulation.

The adoption of this Convention was prompted by the huge volumes of illegal trade in valuable animals and plants taken from the wild, which threatens their

survival. According to international experts, the volume of global trade in wild fauna and flora species, excluding trade in timber and fish products, reaches \$5 billion a year. Every year, about 30,000 monkeys, two million wild orchids, five million birds, ten million snake, rattlesnake and crocodile skins, and fifty million bulbs of valuable wild plants are illegally sold.

In order to combat poaching and trade in the most vulnerable natural resources, the Convention establishes a unified procedure for the export and import of live plants and animals, as well as their parts, products and derivatives. The Convention provides for the prohibition or strict control of international trade or other movements across the customs borders of 14,000 species of wild fauna and flora. Trade in these species is permitted subject to the authorization of a specially designated administrative body and confirmation of the legality of the acquisition of these species.

The Convention on International Trade in Endangered Species of Wild Fauna and Flora aims to provide special regulation on these issues. A differentiated approach is envisaged depending on the level of rarity of the species in question. It defines the conditions and procedure for issuing permits for the export of plant and animal specimens, their import, re-export and introduction from the sea, i.e. the waters not under the jurisdiction of a particular state. To ensure compliance with the requirements of the Convention, its Parties are obliged to introduce liability for illegal trade and possession of relevant plant and animal specimens and provide for the possibility of their confiscation. Each country participating in the Convention determines the administrative body that will issue permits and specialized scientific centers.

The Convention on the Conservation of Migratory Species of Wild Animals was signed in Bonn (Germany) on June 23, 1979 and stipulates that in order to prevent the occurrence of unfavorable conditions for migratory species, appropriate measures should be taken both by individual countries and through their cooperation. The provisions of the Convention emphasize the importance of adequate support for scientific research on these issues. A list of migratory species

that are particularly endangered is defined. States Parties must take immediate measures to protect some species, and with regard to others, they must endeavor to conclude appropriate agreements that would ensure the protection of such species and effective management of these issues. The Convention provides for the protection of areas, restoration measures, where possible, and prevention or minimization of the negative impact of any activity on the living conditions of migratory species. Their removal from the natural environment is prohibited. Exceptions are possible only for the needs of science, artificial breeding or in case of a significant decrease in the number of species, the inability of the species to survive on its own in the natural environment. The Convention provides for the introduction of certain procedures for cooperation in case of emergencies, exchange of information, and broad public involvement in these activities.

The need to adopt this Convention was based on the recognition of migratory species of wild animals as an important part of the world's biological diversity and the belief that any form of use of these animals should be carried out with due regard for the conservation status of certain species throughout their range, taking into account their biological properties.

The Convention on the Conservation of Wild Flora and Fauna and Natural Habitats in Europe, adopted under the auspices of the Council of Europe on September 19, 1979 in Bern (Switzerland), made a significant contribution to the development of nature reserves. The main prerequisite for the adoption of the Convention was that wild fauna and flora, together with their habitats, are the natural heritage of Europeans, their cultural, historical, economic and other assets. The Contracting Parties undertook to include nature conservation measures in their national environmental plans and state development priorities. The main tasks of the participating countries in the field of environmental protection are as follows:

- ◆ establishing an appropriate level of protection for all species of wild flora and fauna;
- ◆ strengthening the protection of endangered species

- ◆ taking measures to preserve the habitats of species of wild flora and fauna, especially those that are endangered;
- ◆ promoting international cooperation of participants in the field of environmental protection.

The Convention includes 34 articles that regulate the procedure and implementation of these tasks and 4 annexes. The first two are lists of endangered species of wild flora and fauna, the

The third includes species whose use is regulated, and the fourth lists prohibited means of taking birds, mammals and fish. The list of endangered plants includes 534 species, and 487 species of animals, including 388 vertebrate species and 101 invertebrate species.

The Convention on the Protection of Wild Flora and Fauna and Natural Habitats in Europe pays special attention to those species and areas whose conservation requires cooperation of several states and international assistance. Each Member State shall take measures to develop national policies for the conservation of wild fauna and flora, paying particular attention to endangered and vulnerable species, especially endemic and threatened species. The requirements for the conservation of wild fauna and flora should be taken into account in planning policies, prevention of degradation of particularly valuable areas, and the fight against environmental pollution. The Convention allows member states to make certain reservations regarding the harvesting of listed species, the area of application of the Convention, and the possibility of using certain prohibited means of harvesting.

Adoption of the Convention on Biological Diversity (Rio de Janeiro, June 5, 1992) is a significant step of the international community in the field of nature conservation. The scope of the Convention covers the entire planet, and almost all countries of the world are its parties. The provisions of the Convention relate to the rights and obligations of countries with respect to biological genetic resources located in their territories, the possibilities of access to them by other states, and the role of international cooperation in ensuring their reliable conservation and

sustainable use. The Convention formulates a compromise provision that recognizes the sovereignty of states over their natural resources and, at the same time, imposes on states the responsibility for the conservation and sustainable use of biodiversity. All countries, based on their sovereignty, have the appropriate authority to determine the conditions of access to resources under their jurisdiction or control. At the same time, states should make efforts to create the necessary conditions for access to their genetic resources by other Parties to the Convention. It is also stipulated that countries, opening access to their natural resources to other countries, in turn, should have greater access to modern technologies possessed by economically developed countries.

Economically developed countries should provide financial resources that would allow developing countries to compensate for the additional costs associated with the implementation of the Convention. It should be noted that for countries in transition to a market economy, participation in the relevant costs is voluntary, while for economically developed countries it is mandatory. The Convention recognizes that developing countries will be able to effectively fulfill their responsibilities only to the extent that economically developed countries provide them with support.

It should be emphasized that the Convention on Biological Diversity was signed as a result of the UN Conference on Environment and Development (Rio de Janeiro, 1992). This important document was the result of the so-called Earth Summit, which took place at the final stage of this UN conference. It should be noted that 179 states were represented at the Conference, and 114 presidents, vice-presidents and prime ministers participated in its work. That is why the Conference reflected the environmental problems of the whole world. The main threat to the future of the Earth, as emphasized in the Convention, is climate change - especially the so-called greenhouse effect, which causes sea level rise and flooding of coastal regions, and the emergence of devastating hurricanes. In addition, climate change also causes aridity in some regions of the world and deforestation.

A significant contribution to the development of nature reserves in Europe is made at the conferences of environmental ministers within the framework of the

Environment for Europe process, where important issues of the current state of the environment are discussed.

For example, in October 1995, in Sofia (Bulgaria), the ministers of environment of 55 countries adopted the Pan-European Strategy for the Conservation of Biological and Landscape Diversity and the Sustainability of the Natural Environment. This strategy combines various measures into one integrated approach and combines the conservation of biological and landscape diversity with social and economic processes. The main priorities for environmental protection for the period up to 2015 are balanced and sustainable use of land resources, increasing forest cover, protecting vulnerable ecosystems, expanding the network of nature reserves, promoting environmentally sound agricultural practices and sustainable regional development, preserving biodiversity of marine and coastal ecosystems, and restoring wetlands.

An important achievement of the Fourth Conference of Ministers of the Environment (Aarhus, Denmark, June 23-25, 1998) "On access to information, public participation in decision-making and access to justice in environmental matters". Ukraine was one of the first countries to sign this Convention on July 6, 1999. The Convention provides citizens with the right to live in a favorable environment, the right to information on the state of the environment and on measures that may affect it, and access to justice when it comes to citizens' rights to a favorable environment. Broad access to environmental information increases the responsibility of managers and executives of all ranks when introducing new technologies and substances, constructing facilities that may affect the environment, and improves the quality of environmental assessments and relevant technical documentation. The Convention provides a list of activities that may affect the environment and for which the public has the right to comprehensive information.

The fifth Conference of Ministers of Environment within the framework of the "Environment for Europe" process was held in Kyiv (May 2003). Among the priority issues considered were promoting further development of the pan-European environmental process, changing the guidelines for socio-economic development

and environmental balance, strengthening the natural component of the European landscape by reserving valuable natural areas and objects, etc. In particular, a special agreement was signed on the conservation and prospects for the protection of the Carpathian region within Europe.

An important factor in the further development of international environmental cooperation and domestic law on the conservation of biological and landscape diversity should be the system of legislation of the European Union, especially in view of the accession of new members. There is a growing need for these countries to harmonize regulations on the regime of protected areas, the use of migratory animals, especially with regard to the timing and prohibition of certain forms of their use, permitted rates of extraction, and the procedure for the transboundary movement of biodiversity. All of this will contribute to the improvement of nature reserve management and the expansion of the network of sites and territories of the nature reserve fund.

2.2 International Union for Conservation of Nature and the Nature Reserve Fund of Ukraine.

The collection of information, its analysis and preparation of proposals on the world practice of conservation is carried out by a reputable international public organization - the International Union for Conservation of Nature (hereinafter - IUCN). Within its framework, the World Commission on Protected Areas operates, which closely cooperates with the International Center for Environmental Monitoring in Cambridge (UK). This center has a database of all protected areas in the world.

The IUCN defines a protected area as "an area of land and/or sea specially designated for the conservation of biodiversity, natural and related cultural resources, the conservation regime within which is ensured by legislative and other effective means" and since 1992 has defined 6 categories of protected areas. These categories are defined depending on the focus of management objectives and are presented in Table 2.2.

Table 2.1. **Categories of IUCN protected areas** (after Davey, 1998)

I		Strict Protection	Територія для збереження дикої природи	
	1 a	Strict Nature Reserve	Природний резерват суворої охорони	management is focused mainly on scientific research
	1b	Wilderness Area	Територія для збереження дикої природи	wildlife is protected without interfering with natural processes
II		National Park	Національний парк	management for ecosystem conservation and recreation purposes
		Natural Monument	Пам'ятка природи	
		Habitat/Species Management Area	Територія для збереження природних середовищ і видів	certain types of natural environments and/or certain species of flora and fauna or their groups are protected certain types of natural environments and/or certain species of flora and fauna or their groups are protected
		Protected Landscape/Seascape	Територія охорони ландшафту / морська акваторія	
		Managed Resource Protected Area	Територія охорони ресурсів	

Let us briefly consider the categories of IUCN protected areas, as it is important to work with some common categories of protected areas for different countries when addressing issues of international cooperation in the field of conservation. In particular, it is important to compare the categories of protected areas in Ukraine with the IUCN categories.

A strictly protected nature reserve (subcategory I a) is defined as an area of land and/or sea containing outstanding or representative ecosystems, geological or physiological features and/or species of interest for scientific research and/or environmental monitoring.

The management objectives of a strictly protected nature reserve are to preserve natural environments, ecosystems, species, landscapes and ecological processes in them undisturbed as far as possible. In particular, by restricting human access to the reserve and minimizing external impacts through careful planning and implementation of research and other authorized activities.

The area of a strictly protected nature reserve must be of sufficient size to guarantee the integrity of its ecosystems and to achieve the management objectives for which the area was set aside. This area must be free from direct anthropogenic impacts both at the time of designation and in the future. Biodiversity conservation is possible here without active management or reconstruction of natural environments (which distinguishes the reserve from category IV).

A wilderness area (subcategory 1 b) is a large unaltered or slightly altered area of land and/or sea where the natural character of the area has been preserved without large settlements and constant human visitation, and whose protection and management are aimed at preserving the area in its natural state.

The overall goal of managing this protected area category is to ensure that future generations of people can enjoy the experience of communicating with nature that has not been significantly disturbed, to maintain its main features over time, and to enable local people to maintain their way of life.

The area for wildlife conservation should be of high natural quality, not subject to significant anthropogenic impact, and include outstanding ecological,

geological, physical, geographical or other objects of scientific, educational, aesthetic, historical and other value. It is also important that this area provides opportunities for solitude for people who can occasionally enjoy the wilderness, using simple, quiet, non-polluting vehicles (meaning non-motorized vehicles). In order to achieve these goals, the area to be protected must be of a sufficiently large size.

A national park (category II) is a natural area designed to protect the ecological integrity of one or more ecosystems, prevent their destruction and exploitation, and serve as a basis for meeting the spiritual, scientific, educational, recreational and tourist needs of the population, compatible with the goals of preserving the natural environment.

The overall goal of national parks management is to protect natural and scenic areas of national and international importance for the realization of spiritual, scientific, educational, recreational or tourist needs, perpetuate representative samples of physical and geographical regions, communities, genetic resources and species in their natural state, and ensure their sustainability and diversity. Visitation to a natural park should be at the level at which its territory is maintained in a natural or close to natural state, but the needs of the local population in the use of natural resources of the park are taken into account to the extent that does not contradict other objectives of its management.

The territory of the national park should include types of landscapes representative of the biogeographical region, where species of plants and animals, ecotopes and geomorphological objects have special spiritual, scientific, educational, recreational and tourist value. The area must also be large enough to include one or more integral ecosystems that have not been significantly altered by human activity.

A natural monument (category III) is an area that contains one or more specific natural or natural-cultural values that are outstanding or unique due to their rarity, typicality, aesthetic qualities or cultural significance.

The purpose of their management is to preserve these values in perpetuity and, where possible, to research and use them for educational purposes and for aesthetic enjoyment. Activities that are recognized as harmful to the purposes of the reserve are excluded and prevented. The territory of a natural monument must include one or more significant values (which, for example, include spectacular waterfalls, caves, craters, outcrops with fossils, sand dunes with unique or representative fauna and flora, etc.). Its size must be sufficient to preserve its values.

A protected area for the conservation of natural environments and species (category IV) is an area of land and/or sea within which measures are taken to ensure the conservation of certain types of natural environments and/or species of flora and fauna. Therefore, the main purpose of managing these areas is to preserve and maintain those features of the natural environment that are necessary for the conservation of important species of flora and fauna and their communities through certain actions and special management. Scientific research and environmental monitoring are recognized as the leading activities, as they are the basis for sustainable management of natural resources. An important activity is also the use of certain natural complexes to educate people, make them aware of the values of natural environments and the need to manage wildlife conservation.

The area for the conservation of natural environments and species should play an important role in the protection of nature and the survival of species, so such an area is often defined as natural complexes that are breeding grounds for animals, wetlands, coral reefs, estuaries, meadows, forests or spawning grounds, including "grazing" fields in the seas. This area must be important for the existence of nationally or locally (regionally) important flora. The protection of these natural environments often depends on active interventions and special measures, which distinguishes this category from subcategory Ia). Its size depends on the needs of the protected species and can range from relatively small to very large in area.

Landscape protection area / marine area (category V) is an area of land and/or sea where, as a result of long-term interaction between humans and nature, a special area (water area) with significant aesthetic, ecological and/or cultural value

has emerged. It is often characterized by high biological and landscape diversity. Preserving the integrity of the traditional interaction between humans and nature is essential for the protection, maintenance and evolution of such a landscape. Therefore, maintaining this harmonious interaction of natural and cultural components of the landscape through its protection and continuation of traditional land use, construction practices, cultural traditions, lifestyles of local communities, and preservation of their social and cultural system is recognized as the main goal of protected landscape management. At the same time, it is necessary to maintain the diversity of landscapes and natural environments, as well as associated species and ecosystems, and to stop and prevent land use and actions that are incompatible with the goals of landscape conservation. It is important to provide opportunities for recreation and tourism that are consistent with the specifics and scale of the landscape, and to support scientific and educational activities that contribute to the long-term well-being of the local population.

The protected landscape area should include landscapes of high landscape value with a diversity of ecotopes, flora and fauna, as well as examples of traditional or unique land use, local customs and beliefs. This area should provide opportunities for recreation and tourism as part of the daily lifestyle and economic activities of the local population.

The Resource Protection Area (Category VI) consists mainly of unaltered natural complexes, the management of which is aimed at ensuring long-term protection and conservation of biodiversity, and, at the same time, is aimed at sustainable provision of the population with gifts (products) of nature. The territory must meet the general definition of a protected area (see above for the IUCN definition).

The management of such areas includes protection and maintenance of biodiversity and other natural values of the area, along with support for environmentally sound technologies that ensure sustainable production.

At least two thirds of the protected area should be in a natural state both at the present stage and in the future. It may include a number of modified ecosystems and

even large commercial plantations. It should be large enough to withstand resource use without significant damage to the long-term conservation of its natural values.

As can be seen from the above goals for managing protected areas of different IUCN categories, these goals coincide for many categories. However, they have different degrees of importance (priority) for them. Table 2.3 gives an idea of these correlations.

2

3

	<i>Ia</i>	<i>b</i>					
Scientific research							
Wildlife protection							
Conservation of species and genetic diversity							
Maintaining ecological services							
Protection of specific natural/cultural features							
Tourism and recreation							
Education							
Sustainable use of natural ecosystem resources							
Support for cultural/traditional values							

The above-mentioned IUCN categories are a generalization of the world experience in protecting valuable natural or semi-natural areas and a recommendation for countries to use this experience. It is also considered, and recently used, as a basis for unifying the system of protected areas adopted in different countries.

The Ukrainian system of nature reserve fund categories is generally very close to the IUCN categories, although it has its own specifics. Ukraine's protected areas have analogues to all of the first five IUCN categories, as discussed below. As for category VI "Resource Protection Area", there are no analogues in the Ukrainian NRF, although certain parallels can be drawn with other protected areas. The latter

include, first of all, Group I protected forests, part of Group II exploitation forests, which are exploited at a moderate pace (see the Forest Code of Ukraine), as well as territories of water protection zones (according to the Water Code of Ukraine).

Nature reserves in Ukraine correspond to category I "Strictly Protected Area" (simultaneously to both categories Ia "Strictly Protected Nature Reserve" and 16 "Wildlife Conservation Area").

The category of "biosphere reserve", which is distinguished in Ukraine, is absent in the current IUCN classification of protected areas. This is explained by the fact that, according to the Seville Strategy (1995), UNESCO biosphere reserves (reserves) are not considered as protected areas. At the same time, each biosphere reserve has a territory (functional zone) of the natural core that has the status of a protected area. Protected areas of a certain category may also be part of the buffer zone of a biosphere reserve. Thus, a biosphere reserve combines the functions of biodiversity conservation and sustainable socio-economic development, but is not considered by the IUCN as a protected area.

The national nature parks of Ukraine perform the same functions and pursue the same management objectives as IUCN Category II "National Parks". At the same time, the large management areas of Ukrainian NNPs indicate the presence of elements of category V "Protected landscape/marine area", and the fact that each of the Ukrainian NNPs includes a protected area allows us to speak about the presence of the IUCN category I element. It is also worth noting that the functional zoning and functions of our national nature parks make them very similar to UNESCO biosphere reserves.

The criteria for the selection and functions of natural monuments in the Ukrainian NRFs are similar to natural monuments (category III) according to the IUCN classification.

The reserves of both national and local importance, as well as the protected tracts of Ukraine, fully fall under the IUCN category IV "Area for the Conservation of Natural Habitats and The category "regional landscape park" corresponds to the IUCN category V "Landscape/marine protected area".

The above categories of protected areas in Ukraine are classified as natural areas. The same national categories of PAs that are artificially created objects, namely botanical garden, dendrological park, zoological park, park-monument of landscape gardening, can be considered as corresponding to IUCN Category V "Protected landscape/marine area". These grounds are based on the fact that artificially created objects included in the Ukrainian NRF are considered as territories where harmonious relations between humans and the natural environment have developed, these territories are of high aesthetic, cultural and/or environmental value and are therefore subject to protection. This interpretation of artificially created protected areas generally coincides with the IUCN Category V definition (see above).

The Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention, Ramsar, Iran, 1971) was launched on February 2 (now celebrated as International Wetlands Day), 1971 in the Iranian city of Ramsar and thus became known as the Ramsar Convention. By adopting the Law on Ukraine's Participation in the Convention on October 29, 1996, Ukraine renewed its membership in the Convention as part of the USSR of December 26, 1975. By Resolution No. 935 "On Measures for the Protection of Wetlands of International Importance," Ukraine identified 22 potential wetlands of international importance (previously, only 3 Ukrainian wetlands were listed in the List of Wetlands of International Importance), for which it subsequently received international certificates from the Ramsar Office. Most of the wetlands of international importance in Ukraine have already been protected or are prospective for protection (the list and characteristics of these sites are given in the Annex, Table Z) The working body of the Ramsar Convention is the Conference of the Contracting Parties, which meets once every three years to adopt special resolutions and recommendations. In 1996, at the 6th meeting of the Conference of the Contracting Parties to the Convention on Wetlands in Brisbane (Australia), the first ever Strategic Action Plan for 1997-2002 was approved, and since 2003 the Strategic Action Plan for 2003-2008 has been in force, One of the main objectives of the

second Strategic Action Plan is to increase the number of wetlands of international importance to 2000 (at the time of writing this manual there were already more than 1200). Ukraine, with its still fairly well-preserved and valuable wetlands, is well positioned to at least double the number of Ukrainian sites on the List of Wetlands of International Importance.

Between the meetings of the Conference of the Contracting Parties, the Ramsar Convention is governed by the Ramsar Bureau, which has been taken over by IUCN. The Convention works closely with other non-governmental organizations, especially Wetlands International.

In order for a wetland to be designated as a site of international importance, it must meet at least one of the 8 criteria, which are divided into four groups. The content of these criteria and their groups is presented in Table 2.3.

Table 2.3. Criteria for international importance of a wetland

Group of criteria	Content of the criteria
A. Typicality, rarity or uniqueness of the site	1 - to be a typical, rare or unique example of natural or semi-natural (artificial) wetlands for the relevant biogeographic region
B. Species of plants and animals that are threatened with extinction worldwide	3 4
Special criteria for water and wading birds	5 6

Special criteria for fish	7
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In Ukraine, the identification, delineation and submission of materials to the Bureau of the Convention on Wetlands is carried out in accordance with the Procedure for Granting Wetlands the Status of Wetlands of International Importance, approved by the Cabinet of Ministers of Ukraine on August 29, 2002 year № 1287.

For each wetland of international importance, an Information Description is prepared in a special form, which, in addition to information on compliance with the above criteria, provides a wide range of ecological and socio-economic data on the site, natural resource use within it and management for the conservation of its natural values. Wetland conservation is managed through the development and implementation of an appropriate action plan (management plan).

If significant negative changes have occurred within a wetland of international importance, the wetland should be included in the Monterey Protocol (by the name of the city where this procedure was approved) upon the submission of a public organization, the Contracting Party itself or international experts, and the Contracting Party should take appropriate measures to improve the environmental situation. Our wetlands "Karkinit Bay" and "Yahorlytska and Tendrivska bays" (nowadays, respectively, "Dzharylgachska and Karkinitska bays", "Yahorlytska bay", "Tendrivska bay") were also on this "black" list (in 2003 they were removed from the list).

In contrast to the Monterey Protocol, at the last meeting of the Conference of the Parties to the Convention on Wetlands in Valencia, Spain, it was decided to create a list of model wetlands under the San Jose Protocol (the idea was proclaimed

in San Jose at the 7th meeting of the Conference of the Parties to the Convention on Wetlands).

The Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 1979), which entered into force for Ukraine on March 19, 1999, obliges the Contracting Parties to conserve and, if possible and appropriate, restore those habitats that are important for preventing the extinction of migratory species (Article III). This Convention also provides for the conclusion of special international agreements for certain species of migratory animals or their groups (Articles IV and V). The Convention contains Appendix I "Endangered Migratory Species" and Appendix II "Migratory Species that may be subject to Agreements", i.e. a list of species whose status is unfavorable and for the conservation and regulation of their use international agreements are required. While Appendix I contains only the pink and Dalmatian pelicans, the peregrine falcon, the white-tailed eagle, the blackbird and the slender-billed crowned vulture, Appendix II contains almost all other migrants: bats, dolphins, storks, ducks, hawks, falcons, titmouse, woodcock, shepherds, herons, cranes and most migrant species from other groups.

The key agreement within the framework of the Bonn Convention is **the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (1995)**, to which Ukraine acceded in accordance with a special law of Ukraine of July 4, 2002. When the distribution area of a bird species is located on the territory of more than one country, the Parties must cooperate and coordinate their actions (Article PI of the Agreement). The Agreement includes three annexes. Appendix I defines the area of the Agreement (the territory of Ukraine is fully included in this area), Appendix II contains a list of waterbird species covered by the Agreement (almost all migrants from this group), and Appendix III is an action plan aimed at their conservation. An integral part of Appendix III is the table "Status of Migratory Waterbird Populations", which divides bird species into three groups and categories, according to the criteria that determine the degree of threat to their extinction.

The Parties to the Agreement must develop action plans for the conservation of individual species, prohibit the introduction of non-native species of animals and

plants, and try to create protected areas to preserve the habitats of migratory species, as well as establish special protection for wetlands of international importance.

Since May 14, 1999, Ukraine has also been a Contracting Party to another agreement of the Bonn Convention - **the Agreement on the Conservation of Bats in Europe (1991)**. According to it, each Party must prohibit the taking of bats of all species, protect their habitats and take the necessary conservation measures, especially the replacement of highly toxic chemicals used to treat trees with safer alternatives.

Ukraine also intends to accede to the Agreement of the same Convention on the Conservation of Small Cetaceans of the Black Sea, Mediterranean Sea and Adjacent Waters of the Atlantic Ocean (1996).

Under the Bonn Convention, a Memorandum of Understanding on the Conservation of the Slender-billed Kittiwake *Numenius tenuirostris* (found only in passage in Ukraine) has already been signed, and a similar memorandum is being developed to conserve the globally endangered reed warbler *Acrocephalus paludicola*, whose range is concentrated mainly within the Ukrainian and Belarusian Polissya. *Acrocephalus paludicola* is already protected in the Shatsk National Nature Park, Rivne Nature Reserve, Prypiat-Stokhid (Volyn Oblast) and Zamhlaia Regional Nature Parks, and several nature reserves in Ukraine, and it is planned to protect the newly discovered nesting sites.

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, Washington, 1979) is also a legal act of global scope (in force for Ukraine since May 14, 1999). The main reason for the conclusion of the Convention was the recognition of the need for international cooperation to protect a number of species of wild fauna and flora from overexploitation in international trade. The Convention contains three appendices of species of animals and plants. Appendix I includes endangered species whose trade in which causes or is likely to cause adverse impacts on their existence. Appendix II includes species that are not necessarily endangered at present, but may become so if trade in specimens of such species is not strictly regulated. Appendix III includes all species

that are determined by any Party to be subject to regulation within its jurisdiction. Only the following species are listed in Appendix I from those registered in Ukraine: river otter, Przewalski's horse, Dalmatian pelican, red-tailed eagle, white-tailed eagle, peregrine falcon, slender-billed kite, Atlantic sturgeon, while Appendix II includes all felines, cetaceans, falcons, bustards, owls, cranes, black stork, brown bear, osprey, red-breasted goose, marsh turtle and some other species of animals and orchidaceous from plants. The removal from nature and transfer (trade) of species listed in all three appendices of the Convention requires special internationally recognized permits from the central executive authority in the field of the environment of Ukraine.

The Convention Concerning the Protection of the World Cultural and Natural Heritage (Paris, 1972), which is administered by UNESCO, has been in force in Ukraine since October 4, 1988. The National Commission of Ukraine for UNESCO under the Ministry of Foreign Affairs of Ukraine is responsible for the implementation of the Convention in Ukraine, and the Embassy of Ukraine in France is the Mission of Ukraine to UNESCO. Within the framework of this Convention, criteria, application forms, and their approval have been developed, and Lists of the World Natural, Cultural and Natural Heritage, guidelines, etc. have been created. St. Sophia of Kyiv and the Kyiv-Pechersk Lavra, as well as Old Lviv, have already been inscribed on the World Heritage List. The other two lists do not yet include Ukrainian sites. The requirements of the Convention are extremely high and a very serious selection of world heritage sites is underway. In order for a natural heritage site to be recognized worldwide, it must be the most representative example of major periods of Earth's history, or of ecological and biological processes, or represent natural phenomena or picturesque natural landscapes of exceptional aesthetic value, or contain the most representative and important natural environments for biodiversity conservation.

The Convention on the Conservation of European Wildlife and Natural Habitats. Berne Convention is actually the main mechanism for implementing the Convention on Biological Diversity on the continent, although it was launched in

1979 in Bern (Switzerland). Ukraine acceded to the Convention in accordance with the Law of Ukraine "On Accession of Ukraine to the Convention on the Conservation of Wild Flora and Fauna and Natural Habitats in Europe of 1979" of October 29, 1996, with the reservations that Ukraine allows selective regulation of the number of wolves and brown bears in a limited number and under appropriate control in order to prevent negative impact of these species on populations of other species, serious damage to livestock and other property. The hunting of the red deer is also permitted due to its sufficiently large number and distribution in Ukraine. In addition, this Law allows the use of traps and nets for catching animals for scientific purposes and their relocation, as well as traps for catching wolves, common marmots, beavers, black ferrets, forest martens and stone martens.

The main tasks and obligations of the Bern Convention are (Bype, 2000):

- conservation of wild flora and fauna, especially in transboundary regions,
- maintaining populations of wild flora and fauna at a level that is consistent with the ecological, scientific and cultural characteristics of the region,
- development of a national policy on the conservation of flora and fauna, and inclusion of issues related to this conservation in environmental programs,
- special measures for species listed in the Convention,
- prohibition of intentional hunting of animals through the introduction of licenses, restrictions, etc. The Bern Convention includes lists of plant and animal species subject to special protection

The Bern Convention also provides for the creation of a system of "areas of special conservation interest" that will form the Emerald Network of Europe. The criteria for determining areas of special interest are the presence within their boundaries of rare and endangered species of plants and animals selected from Appendices I and II as requiring special conservation measures and included in a special list, and/or rare and endangered habitat types. Among the 80 or so types of rare and endangered habitats are river gravel ecotopes, caves, dunes, beech and oak-hornbeam forests, fir, mountain spruce and mixed forests in gorges and on slopes, acid peat oligotrophic and transitional bogs, and sparse forests in the steppes.

The package of documents on the Emerald Network includes: Emerald Standard Data Form and explanations to it, List of natural and anthropogenic impacts and activities, European Classification of Natural Environment Types, Emerald Network computer program, etc. The Emerald Network of Europe is an analogue of the European Union's NATURA 2000 program, which was developed to implement EU Directive 79/409/EEC on the Conservation of Wild Birds and EU Directive 92/43/EEC on the Conservation of Wild Fauna and Flora. It should be noted that the NATURA 2000 program is mandatory for EU member states and includes a special financial mechanism to ensure appropriate environmental protection measures. Although this document is not binding on Ukraine, its aspirations to join the European Union necessitate that it now closely monitor the implementation of the Bern Convention.

Ukraine's top priority is to include nature reserves and national parks, all of which meet these criteria, in the Emerald Network. This will increase the responsibility for the conservation of certain rare and endangered species of biodiversity and natural environments and allow us to more actively acquire the experience gained in Europe in environmental management. Currently, the Convention operates under the auspices of the Council of Europe, its governing body is the Standing Committee consisting of representatives of all Contracting Parties, which meets annually and adopts resolutions on the interpretation of the Convention's provisions, recommendations for the conservation of certain species (groups of species), methodological guidelines, etc. Every 4 years, the Standing Committee issues reports on the general policy of biodiversity conservation. National and international non-governmental (public) organizations play a significant role in monitoring the implementation of the Convention's objectives. Every year, the Standing Committee of the Convention considers complaints regarding the conservation of a particular species or type of natural environment in European countries (the number of such cases has exceeded 400). More than 20 recommendations and a number of on-site assessments have already been made in

response to the complaints, although the main work on eliminating the grounds for complaints is carried out in the respective countries.

The Pan-European Strategy for the Conservation of Biological and Landscape Diversity was prepared by the Council of Europe in cooperation with the European Center for Nature Conservation (Tilburg, the Netherlands) and approved by the Ministers of Environment of 55 European countries at the Ministerial Conference "Environment for Europe" (Sofia, October 23-25, 1995). The main reason for the development of the strategy was the need for a more coherent and thus more effective use of existing policy tools, initiatives, mechanisms, funds, research and information for the conservation of Europe's biological and landscape diversity. The goals of the Pan-European Strategy are: to significantly reduce threats to Europe's biological and landscape diversity, to enhance its conservation potential, to strengthen the ecological integrity of the whole of Europe and to ensure the full involvement of the public in these matters.

Its tasks include:

- preservation and restoration of the natural state of key ecosystems, habitats (ecotopes), flora and fauna species and landscapes through the creation of the Pan-European Ecological Network and its effective management;
- sustainable management and utilization of the positive potential of Europe's biological and landscape diversity by ensuring the optimal use of social and economic opportunities at the national and regional levels;
- taking into account the objectives of conservation and sustainable (balanced and non-depleting) use of biological and landscape diversity in all sectors that use or affect this diversity;
- Improving public awareness and knowledge of biological and landscape diversity issues, as well as enhancing their participation in activities aimed at preserving and increasing this diversity;
- Ensuring a better understanding of the state of Europe's biological and landscape diversity and the processes that contribute to its sustainability; and

ensuring adequate financial resources for the implementation of the Pan-European Strategy.

The Convention on Biological Diversity defines biological diversity as the variability of living organisms from all sources, including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part. This concept includes diversity within a species, between species and ecosystem diversity. Landscape diversity is defined as a formal expression of the multiple relationships that currently exist between an individual or society and a topographically defined area, and whose outward manifestation is the result of the influence of natural and human factors and their combinations over time.

Other international conventions and agreements also relate to the territories and objects of the Ukrainian NRF in a certain way. For example, the UN Framework Convention on Climate Change (ratified by Ukraine on October 29, 1996) and the Vienna Convention for the Protection of the Ozone Layer (Vienna, 1985, in force for Ukraine since May 20, 1986) may be of interest when it comes to the conservation of peat ecosystems, as they contain large reserves of carbon dioxide, the release of which can affect the climate of the region. The European Convention on the Protection of the Archaeological Heritage (Valletta, 1992) should be taken into account when there are archaeological heritage sites within existing or prospective protected areas and nature reserves. The Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Helsinki, 1992), which has been in force in Ukraine since July 1, 1999, and the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo, 1991) ratified on March 19, 1999, as well as the European Convention on Basic Principles of Transboundary Cooperation between Territorial Communities or Authorities of 1980 (Ukraine acceded to it on July 14, 1993) cannot be ignored by nature reserve institutions in the border regions of Ukraine. The Convention on Cooperation on the Protection and Sustainable Use of the Danube River (ratified by the Law of Ukraine of January 17, 2002) applies to all protected areas in the Danube region. The United Nations Convention to Combat Desertification (Law of Ukraine on Accession of

July 4, 2002) is relevant for the arid regions of Ukraine. The development of the Black Sea Red Data Book and the Biodiversity Protocol makes the Convention on the Protection of the Black Sea from Pollution, which is in force for Ukraine since February 4, 1994, relevant for the Ukrainian nature reserve fund. The European Landscape Convention, which was launched in Florence (Italy) in 2000 and operates under the auspices of the Council of Europe, is also relevant to the problems of protected areas. The Framework Convention on the Protection and Sustainable Development of the Carpathian Mountains was initiated by Ukraine at the Fifth Conference of Ministers of Environment "Environment for Europe" (May 21-23, 2003, Kyiv).

The Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, which was launched in 1998 in Aarhus (Denmark) at the Pan-European Interministerial Conference "Environment for Europe" and ratified by the Verkhovna Rada of Ukraine on June 6, 1999, is particularly relevant to the nature reserve fund. The purpose of the Convention is to promote the protection of the right of everyone of present and future generations to live in an environment conducive to their health and well-being, and each Party shall guarantee the rights of access to information, public participation in decision-making and access to justice in environmental matters.

Interstate cooperation in environmental protection also became mandatory for Ukraine with the conclusion of the Agreement between the Ministry of Environment and Territorial Planning of the Republic of Moldova, the Ministry of Water, Forests and Environmental Protection of Romania and the Ministry of Ecology and Natural Resources of Ukraine on June 5, 2000 in Bucharest (Romania) on cooperation in the area of protected areas in the Danube Delta and the lower reaches of the Prut River, where the Danube Biosphere Reserve is the subject of cooperation. **The Declaration on Cooperation in the Creation of the Lower Danube Green Corridor** (Bulgaria, Romania, Moldova and Ukraine), where Ukraine proposed to include about 50 thousand hectares of existing protected areas, and envisages the creation of new nature reserve sites and the restoration of a number of disturbed ecosystems.

The European Red List of globally threatened species of animals and plants (1991) was approved at an expanded meeting of the United Nations Economic Commission for Europe with the participation of the Ukrainian delegation in Nurmes (Finland) in the summer of 1986 and is mandatory for special protection. The most rare species in Ukraine from this list are included in the Red Data Book of Ukraine, while others are listed in its annexes and are also subject to conservation control. In particular, for the collection, destruction and damage of these species, taxes are determined to calculate the amount of compensation (fines).

Ukraine also has certain interests abroad, in particular in the Antarctic. In 1992, our country became one of the successors of the USSR to the Antarctic Treaty of 1961 (Resolution of the Verkhovna Rada of Ukraine of September 17, 1992), according to which Antarctica can be used only for peaceful purposes. In 2002, Ukraine acceded to the Convention on the **Conservation of Antarctic Marine Living Resources** of 1982, according to which any activity there should follow the following conservation principles: preventing the reduction of commercial species below their reproduction levels, restoring depleted populations, preventing or minimizing the risk of negative changes in the marine environment in order to ensure the sustainable conservation of Antarctic marine living resources.

The list of basic international conventions, agreements and other legal mechanisms on nature conservation, conservation of biological and landscape diversity is given in Table 4 of the Appendices.

Questions and tasks for independent work

1. What are the most important international documents on the conservation of biological and landscape diversity?
2. Define wetlands according to the Ramsar Convention.
3. What was the reason for the adoption of the Convention on International Trade in Endangered Species of Wild Fauna and Flora?
4. Name the main provisions of the Convention on the conservation of migratory species of wild animals.

5. What are the annexes to the Bern Convention (1979) on the protection of wild flora and fauna and natural environments in Europe?
6. What are the features of the Convention on Biological Diversity, adopted in Rio de Janeiro on June 5, 1992?
7. Where was the fifth Conference of Ministers of Environment held within the framework of the "Environment for Europe" process? What priority issues were considered here?
8. Where and when was the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters adopted?
9. What are the main points of the Regulation on the Green Book of Ukraine, approved by the Cabinet of Ministers of Ukraine on August 29, 2002, № 1286?
11. What are the main objectives of the Berne Convention (1979)?
12. What is the difference between the Monterey Protocol and the San Jose Protocol?
13. What is the relation to the organization of nature reserves in Ukraine have the UN Framework Convention on Climate Change and the Vienna Convention for the Protection of the Ozone Layer of the Atmosphere?

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Lecture 3.

Classification of protected areas and objects: natural areas and objects, artificially created objects

Outline

- 3.1 Concept of territories and objects of special state protection.
- 3.2 Classification of the nature reserve fund of Ukraine.
- 3.3 International classification of protected areas.

The development of protected areas and objects is becoming an integral part of the state environmental policy and one of the conditions for integration into international cooperation in the environmental field. In this regard, it is important to study the peculiarities of the national classification of protected areas and objects and its comparison with international standards.

3.1 Concept of territories and objects of special state protection.

Natural territories and objects of special state protection play a key role on Earth in preserving its natural framework, reproduction of life and biological diversity. Today, about 65% of the planet's communities and ecosystems have been destroyed or severely altered.

Over the past decade, the number of protected areas and their area has more than doubled worldwide: more than 12% of the land surface is now under protection (except for Antarctica, where the regime of strict protection covers 10% of its territory).

Trends in the development of the national network of territories and objects of special state protection, primarily those of the nature reserve fund, during this period were close to the world's. Thus, during the years of independence, the area of the nature reserve fund of Ukraine has more than doubled, but it is insufficient and remains much smaller than in most European countries, where the average percentage of protected areas is 15.3%. The area of protected land per capita in Europe is about 2,220 m², compared to 570 m² in Ukraine.

As of January 1, 2012, the total area of natural and biosphere reserves and national parks (70 institutions) amounted to 1672.0 thousand hectares (48% of the protected areas and 2.8% of the total area of Ukraine).

Compared to 2000, the area of the nature reserve fund increased by 1168.1 thousand hectares, and compared to 2010, it increased by

108.2 thousand hectares, but the growth rate of the protected areas lags behind the objectives of the National Program for the Formation of the National Ecological Network of Ukraine for 2000-2015 (Table 3.1).

Table 3.1 - Territories and objects of the nature reserve fund of Ukraine

National nature parks					
Nature reserves					
Biosphere reserves					
Other categories					
Total					

Throughout the history of environmental protection, the term "*protected area*" has

been and still is the most widely used. The Convention on Biological Diversity

The core of the national unified territorial system of natural territories and objects of special state protection is primarily recognized as the territories and objects of the nature reserve fund (NRF) and some other categories of natural territories and objects.

:
"

The state's designation of territories and objects of special protection with their full or partial withdrawal from economic circulation and granting them a special protection status is an attempt to counteract degradation processes in the environment.

According to the Law of Ukraine "On Environmental Protection" (1991), *"Natural territories and objects subject to special protection form a single territorial system and include territories and objects of the nature reserve fund, resort and health resort, recreational, water protection, field protection and other types of territories and objects determined by the legislation of Ukraine"*.

The "other" territories, i.e., those whose special protection was not yet envisaged at the time of the adoption of the Law of Ukraine "On Environmental Protection", today include, in particular, rare and endangered typical plant communities listed in the Green Book of Ukraine, wetlands of national and international importance.

As a rule, the system of territories and objects of special state protection includes territories (water areas) where almost unchanged or partially changed natural landscapes have been preserved. They are protected as a national treasure and, at the same time, as an integral part of the global system of natural areas and sites under special protection.

Among the types of territories and objects of special legal protection, the central place is occupied by the nature reserve fund of Ukraine.

The nature reserve fund consists of land and water areas, natural complexes and objects that have special environmental, scientific, aesthetic, recreational and other values and are allocated for the purpose of preserving the natural diversity of landscapes, the gene pool of flora and fauna, maintaining the overall ecological balance and ensuring background monitoring of the environment.

According to the law, the nature reserve fund is protected as a national treasure, which is subject to a special regime of protection, reproduction and use. The Fund is considered an integral part of the global system of natural areas and objects under special protection.

3.2 Classification of the nature reserve fund of Ukraine.

The system of nature protection categories began to be formed at the same time as the nature reserve business was born.

The category of nature reserve fund is a form of organization, protection status and type of conservation, restoration and use of territories and objects that are part of the nature reserve fund.

The Law of Ukraine "On the Nature Reserve Fund of Ukraine" (1992) defines the classification structure of the nature reserve fund of Ukraine, which includes eleven categories of territories and objects, namely:

- ✓ nature reserves;
- ✓ biosphere reserves;
- ✓ national natural parks;
- ✓ regional landscape parks;
- ✓ nature reserves;
- ✓ natural monuments;
- ✓ protected tracts;
- ✓ botanical gardens;
- ✓ dendrological parks;
- ✓ zoological parks;
- ✓ parks-monuments of landscape art.

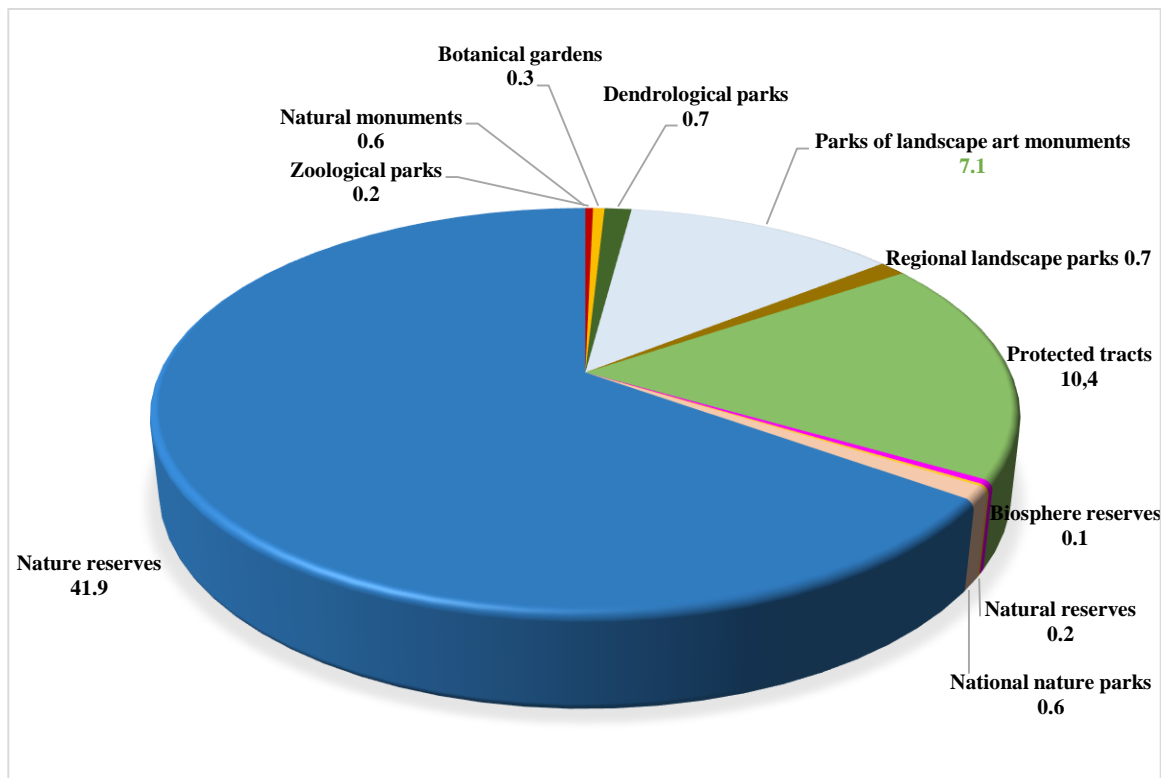
The nature reserve fund of Ukraine includes: *natural territories and objects* (nature reserves, biosphere reserves, national nature parks, regional landscape parks, reserves, natural monuments, protected tracts); *artificially created objects* (botanical gardens, dendrological parks, zoological parks, parks-monuments of landscape art).

The number of territories and objects of the Ukrainian NRF by category as of January 1, 2011 is shown in Figure 3.1.

The functions of each of the listed NRF objects, the purpose of their creation and the tasks set are clearly regulated by national legislation, in particular by the Law of Ukraine "On the Nature Reserve Fund of Ukraine".

Ukrainian legislation establishes a special legal regime for each category of protected areas and objects. The regime of the territories and objects of the nature reserve fund is determined in accordance with the Law of Ukraine "On the Nature Reserve Fund of Ukraine", taking into account their classification and purpose. Specific requirements for the regime of certain protected areas and objects within the limits determined by law may be established by regulations on these areas or objects.

The level of protection regime, which, in turn, is determined by the ecological, scientific, historical and cultural value of the objects, is a feature that distinguishes between the territories of protected areas of *national and local importance*.



Picture 3.1 - Number of protected areas and objects in Ukraine by category (in %)

At the same time, a number of PA categories can be of both national and local significance (this applies to nature reserves, natural monuments, botanical gardens, dendrological parks, zoological parks and parks-monuments of landscape art).

Regional landscape parks and protected tracts are categories of protected areas of local importance, while nature reserves, biosphere reserves and national nature parks are created only at the national level. Biosphere reserves are a category of protected areas of international importance. Their creation and operation requires compliance with not only national but also international procedures. All biosphere reserves are elements of the relevant global network, the general register of which is maintained by the UNESCO Man and the Biosphere Program.

The *legal regime* of certain categories of protected areas is either *unified*, that is, the same for the entire territory or object, or *differentiated* depending on the functional zoning of the territories. For example, the legal regime of nature reserves, protected tracts, natural monuments, and sanctuaries is unified.

A differentiated regime, in accordance with the functional zoning of the territories, is established for biosphere reserves (with the allocation of zones: protected, buffer, anthropogenic landscapes and regulated protected areas), national nature parks (with the allocation of a protected area, a regulated recreation area, a stationary recreation area and an economic area), zoological parks (exhibition, scientific, recreational and economic areas). Zoning can also be carried out on the territories of botanical gardens, dendrological parks, regional landscape parks, parks-monuments of landscape art.

Categories of protected areas can also be classified by *legal status*. Some of them are always legal entities, while others are created (declared) without such status. Thus, nature reserves, biosphere reserves, national nature parks, regional landscape parks, as well as botanical gardens, dendrological parks and zoological parks of national importance always have the status of a legal entity. Objects are declared as reserves, natural monuments or protected tracts without granting them the status of a legal entity. Botanical gardens, dendrological parks, zoological parks of local importance and parks - monuments of landscape art may be recognized as legal entities or declared as the territory of NRF without such status.

Legislation also regulates the type of legal entity that is assigned to the registration of protected areas and objects. For the territories with the highest degree

of protection (nature reserves, biosphere reserves, botanical gardens and dendrological parks of national importance), the status of a research institution is provided. The same status, but in an alternative order, can be granted to botanical gardens and dendrological parks of local importance.

National natural parks combine the status of recreational, cultural, educational and research institutions. Zoological parks of national importance (they are nature conservation, cultural, educational and research institutions) and regional landscape parks (nature conservation and recreational institutions) have a similar legal status.

Thus, the territories and objects of the nature reserve fund of Ukraine can be divided by:

- origin (natural, artificial);
- categorical affiliation (types of categories, subcategories, e.g., nature reserves);
- administrative rank (international, national, local);
- functional value (mono-functional, multifunctional);
- legal status (legal entity, non-legal entity, i.e., the land user is responsible for conservation).

The existing legislation of Ukraine in the field of protected areas, its international obligations, the results of the latest scientific research, as well as current European and global conservation trends indicate the need to bring the national system of nosological categories of protected areas in line with the standards of the International Union for Conservation of Nature.

3.3 International classification of protected areas.

The collection of information and its analysis on the world practice of protecting natural objects is carried out by the international non-governmental organization - the International Union for Conservation of Nature (IUCN), founded in 1948. The main statutory activity of the IUCN is to assist communities of any kind in the conservation of biodiversity and the implementation of environmentally friendly and sustainable methods of using natural resources.

According to the IUCN classification of protected areas (1994), which is the most recognized among other international classifications, protected areas in the world can be divided into six categories.

Category Ia - Strict Nature Reserve - an area of land and/or sea containing outstanding or representative ecosystems, geological or physiological features and/or species of interest for scientific research and/or environmental monitoring.

The objects of conservation are undisturbed natural areas of sufficient size that are permanently free from anthropogenic impact. These sites are protected under a very strict regime.

Category Ib - Wilderness Area - a large unchanged or slightly changed area of land and/or sea, where the natural character of the territory has been preserved without large settlements and constant visits by the population, the protection and management of which is aimed at preserving the territory in its natural state.

Category II - National Park - is a natural area designed to protect the ecological integrity of one or more ecosystems, prevent their destruction and exploitation, and to serve as a basis for meeting the spiritual, scientific, educational, recreational and tourist needs of the population, compatible with the goals of preserving the natural environment.

Category III - Natural Monument - is a small protected area that is allocated for the preservation of nature-related cultural values that are distinctive or unique due to their rarity, typicality, aesthetic qualities or cultural significance.

Category IV - Habitat/Species Management Area - a protected area that is allocated for the purpose of conservation for the special management of individual species populations or their habitats.

Category V - Protected Landscape/Seascape - a protected and rehabilitation area (water area) where, as a result of long-term interaction between humans and nature, a special area (water area) with significant aesthetic, ecological and/or cultural value has emerged.

Category VI - Managed Resource Protected Area - a large protected area that is allocated for long-term protection, traditional and modern balanced, controlled

use and continuous reproduction of natural resources and biodiversity, mainly unchanged ecosystems, as well as for the sustainable use of nature's gifts by the population.

In addition to the above-mentioned IUCN categories, many other international environmental organizations distinguish four additional international categories.

Category VII - Anthropological Reserve - is created to preserve the historical anthropological values of nature, living conditions of populations of unique, rare and endangered indigenous ethnic groups, reproduction of their gene pool, ensuring conditions for their traditional economy, etc.

Category VIII - Multiple Use Management Area - is created as a model for diverse, mostly environmentally balanced, development of the socio-economic sphere in nature management and natural resource use, balanced and sustainable management.

Category IX - Biosphere Reserve. At the request of the state concerned, it is designated by the International Coordinating Council of the UNESCO Man and the Biosphere Program, and is therefore recognized internationally in accordance with the existing statutory framework.

Category X - Natural World Heritage Sites. It is created in accordance with the requirements of the World Heritage Convention.

The first five categories are aimed exclusively at preserving biodiversity. The strictest conservation regime is typical only for the first three categories, although it is possible in certain areas and protected areas of categories IV-X.

Control questions and tasks

1. Identify the main factors that determine the urgent need for the development of territories and objects of special state protection within the territory of Ukraine.
2. What is the difference between the concepts of "protected area", "nature reserve fund", "natural areas and objects subject to special protection"?

3. Define the purpose of the organization of territories and objects of the nature reserve fund.
4. Specify the categories of territories and objects of the nature reserve fund of Ukraine.
5. Reveal the features that distinguish categories of territories and objects of nature reserve fund.
6. Specify the main tools to ensure the preservation of territories and objects of nature reserve fund of Ukraine.
7. Indicate the feature that establishes the level of protection of the nature reserve fund.
8. Explain the categories of nature reserve fund for which a unified/differentiated protection regime is established.
9. Specify the main categories of protected areas according to the IUCN classification.
10. Why do many international environmental organizations distinguish four additional categories of protected areas?

Lecture 4

Formation of a network of protected areas

Outline

4.1 Prerequisites for the formation of a network of protected areas.

4.2 Pan-European ecological network.

4.3 General provisions for the establishment of a national ecological network.

Negative environmental changes caused by a significant anthropogenic load have led to a significant decrease in biodiversity. To preserve it, it is necessary to create a network of protected areas and ensure an effective management system. The creation of a network of protected areas is based on the idea of the integrity of nature, interconnectedness and inseparability of its component systems at all levels.

4.1 Prerequisites for the formation of a network of protected areas territories.

The idea of creating a network of territories and objects of the nature reserve fund arose in the mid-1970s and was caused by the fact that fragmentation of protected areas led to their degradation. Concepts were developed to create unified environmental protection systems, territorial systems of environmental restoration, special environmental management regimes, the theory of natural frameworks, regional systems of protected areas, territorial integrated nature protection schemes, and others. Perhaps, these carefully developed, scientifically based concepts were not implemented because there were no legislative, regulatory, political, administrative, and social mechanisms for their implementation, and nature reserves were formed somewhat chaotically, based on the needs to preserve a particular component of nature. This led to the lack of a comprehensive approach to the development of protected areas and the implementation of environmental protection measures.

Today, these developments are reflected in the concept of forming an ecological network, which at this stage of environmental protection is integrative. It

is a mandatory link that combines all environmental protection concepts and systems into a single whole.

The ecological network is a complex multifunctional natural system whose main functions are to preserve biodiversity, stabilize ecological balance, increase landscape productivity, improve the environment, and ensure sustainable development of the state.

Ecological network development as a specific measure for nature protection has been developed in Europe for more than 15 years. The reason for this was the need to solve the problems associated with the restoration of large herbivores within their historical ranges, namely, to provide long-distance movement and migration routes by creating a network of connected areas of natural areas.

Later, nature conservationists in leading countries became convinced that nature reserves should perform not only the function of preserving and dispersing rare and endangered, scientifically or aesthetically valuable species of biota, important specific areas, ecosystems, or other individual objects, landscapes or other individual natural objects, centers of biodiversity (biotic aspect of the ecological network), but also the function of ensuring the regulation of biosphere processes and maintaining ecological balance, enhancing the ability of the biogeographic cover to self-healing (ecostabilizing aspect of the ecological network).

Further developments in this area have shown that the ecological network is a key element in the practical implementation of the ecological paradigm of nature management and conservation of the natural framework of national territories and the most effective mechanism for fulfilling the objectives of the Convention on Biological Diversity, adopted on June 5, 1992 in Rio de Janeiro. To a certain extent, it took over some of the functions of the Bonn, Bern and Ramsar Conventions, as it proclaimed the preservation of not individual links of nature, but the main levels of organization of its biota.

On the other hand, in the same year, the Council of Europe adopted the concept of the European Ecological Network as the idea of a pan-European system for the protection of the European community's natural heritage. Undoubtedly, this

is the most fundamental idea of recent decades in the field of environmental protection.

The general approaches to the development of the Pan-European Ecological Network include the following:

- *integrity* - any local ecological network is an integral part of the continental ecological network;
- *unity* - implies territorial, species and functional unity;
- *complementarity* - biodiversity, functions, habitats and territories;
- *diversity* - provides for a variety of forms of environmental protection;
- *restoration* - of lost natural values; correspondence - to the nature of biogeographical areas;
- *hierarchy* - consists in building an ecological network of elements of different ranks;
- *subordination* - to the structural forms and functions of biodiversity protection, migration routes and species distribution;
- *traditional forms of management*, maintenance of ecological homeostasis;
- *maximization* - inclusion of the existing nature reserve network into the ecological network to the extent possible;
- *multifunctionality* - inclusion of semi-natural, degraded, and deserving of restoration ecosystems, as well as areas of traditional farming, fishing, hunting, etc. in the ecological network along with natural ecosystems;
- *reliability* - provides for stable and long-term counteraction to negative factors;
- *emergence* - associated with a holistic, holistic approach to the study of any system.

In addition to the above-mentioned approaches, there are scientific principles for organizing a network of environmental objects of different levels and purposes.

Biogeocenotic (evolutionary). The protected area should ensure the preservation of favorable environmental conditions necessary for the development of all existing forms of living organisms in natural landscapes that have arisen in the

course of evolution and are the basis for the normal functioning of ecosystems of all biomes of the planet.

Historical. Protected natural ecosystems and protected landscapes should serve as a kind of benchmark for the historical process of the formation of living and non-living nature both on a regional and broad biogeographic scale. Particular attention should be paid to the protection of ecosystems with relict flora and fauna, unique refugia of vegetation, preservation of phytocoenoses of interest from the point of view of the history of biogeocenotic cover formation, as well as geological outcrops and other objects of inanimate nature valuable for studying the geological past of the Earth.

Zonal and geographical. It is necessary that the ecological network reflects latitudinal and meridional, and in mountainous areas - altitudinal patterns of distribution of natural ecosystems. Ecosystems with endemic species of animals and plants, species at the edge of their range and altitudinal distribution in mountainous areas, as well as biogeographically interesting azonal ecosystems should be protected.

Ecological. The reserve regime should ensure the protection of natural ecosystems that are valuable for science and have been formed in different environmental conditions. In order to ensure the ecological framework of the territories and maintain ecological balance, ecosystems that perform an important ecological function should be covered by the environmental protection regime.

Resource and economic. The NRF should include ecosystems that are of practical importance for the development of forestry, water, fisheries and other sectors of the economy; for example, highly productive forests or artificial forest plantations that are valuable in genetic and breeding terms, phytocoenoses, ecosystems that contribute to the enrichment of the gene pool of ecosystems and cultural landscapes.

Social. The ecological network, through a regulated environmental protection regime, should contribute to the preservation of natural landscapes that are valuable in terms of recreation and balneology to meet the needs of the population, taking

into account demographic development, urbanization and industrialization in the country.

Research. The reserve regime should cover natural landscapes in different zones suitable for conducting field studies of the structural organization of ecosystems of different biomes now and in the future. It is necessary to preserve reference ecosystems for monitoring natural processes, studying the functioning of the biosphere as a result of long-term anthropogenic impact, and developing scientific foundations for its optimization. The eco-network should contribute to the preservation of artificially created protected areas (arboretums, botanical gardens, open-air zoos) that are of scientific and research importance.

The didactic principle is to establish a protective regime on protected natural and anthropogenic objects and territories that have environmental and educational (upbringing) and natural cognitive (educational) significance.

Adherence to the above principles and approaches will allow us to identify spatial elements and form a functionally effective ecological network. After all, the concept of creating an ecological network that uses the above principles and approaches involves the creation of a single, functionally integral and territorially continuous system of natural or quasi-natural areas that would ensure ecological balance, stable existence of the biosphere and balanced development of society.

4.2 Pan-European Ecological Network.

The Pan-European Ecological Network as a physical network of natural or semi-natural areas of European importance is the main direction of implementation of the **European Strategy for the Conservation of Biological and Landscape Diversity**, which was approved at the Conference of European Ministers of the Environment in Sofia in 1995.

The program of its creation provides for:

- development of criteria for the identification of key areas, ecoregions, restoration areas and buffer zones, taking into account the biogeographical zones of Europe;

- selection of ecosystems, habitat types (ecotopes), species and landscapes of European importance;
- identification of specific sites for the conservation, improvement or restoration of ecosystems, habitats, species and their genetic diversity, as well as landscapes of European importance;
- development of guidelines (directives) that will ensure the most consistent and effective implementation of measures to create an ecological network.

The Pan-European Strategy also formulates the main objectives of the ecological network: 1) preservation of the entire complex of ecosystems, habitats, species and their genetic diversity, as well as landscapes of European importance; 2) provision of sufficient space for species conservation; 3) creation of the necessary conditions for species dispersal and migration; 4) ensuring the restoration of components of key ecosystems that have been destroyed; 5) protection of systems from potential negative factors.

The pan-European ecological network is created on the basis of the following basic principles:

- the ecological network model with its key elements in the form of natural cores, ecological (natural) corridors and buffer zones is a natural framework for the conservation and restoration of biodiversity;
- the architecture of the ecological network model should be determined by the natural conditions and administrative circumstances of different countries and regions;
- the ecological network should be multi-level;
- the ecological network model should become a dynamic tool for the development and implementation of wildlife conservation policy;
- the idea of the ecological network should link the development of the system of protected areas with socio-economic development.

The pan-European ecological network will include the following elements:

- *natural cores* or foci (key areas) for the conservation of ecosystems, habitats, plant and animal species, and landscapes of European importance. The natural cores of the Pan-European Ecological Network include only those natural areas that meet the criteria of international (global, European and regional) conventions and agreements and are recognized by them (nature reserves, protected areas of national nature parks and biosphere reserves);
- *ecological corridors* or transition zones to ensure interconnections between natural cores - elements of defragmentation of natural areas and migration routes at the same time. The function of eco-corridors in national nature parks and biosphere reserves is performed by elongated natural elements: rivers and protective forest strips, mountainous strips, etc. in the economic zone and the zone of anthropogenic landscapes, respectively;
- *buffer zones*, which help to strengthen the network and protect it from the impact of negative external factors. Buffer zones include protection zones around nature reserves, recreational zones in national nature parks, and buffer zones in biosphere reserves (reserves).
- *restoration areas*, where there is a need to restore damaged elements of ecosystems, habitats and landscapes of European importance or to completely restore some areas.

The integrity of the network is ensured through the creation of continuous eco-corridors or intermittent "transition zones" that facilitate the dispersal or migration of species between natural areas.

The natural centers of the ecological network include nature protection and nature reserve areas with their buffer zones and eco-corridors.

4.3 General provisions for the establishment of a national ecological network.

The legal basis for the creation of the ecological network in Ukraine was laid down in the Law of Ukraine "On Environmental Protection" (1991), which states that natural areas and objects subject to special protection form a single territorial system and include territories and objects of protected areas, resort and health resort, recreational, water protection, field protection types of territories and objects defined by the legislation of Ukraine.

Relations related to the formation, preservation and use of the ecological network are regulated by the laws of Ukraine: "On the Nature Reserve Fund of Ukraine", "On the Ecological Network of Ukraine", "On Flora", "On Fauna", "On the Red Book of Ukraine", "On Protection of Cultural Heritage", "On Planning and Development of Territories", Land, Water, Forest Codes of Ukraine, the Subsoil Code, and international environmental legislation.

The main provisions on the formation of the ecological network of Ukraine are set out **in the Law of Ukraine "On the National Program for the Formation of the National Ecological Network of Ukraine for 2000-2015"** and **the Law of Ukraine "On the Ecological Network of Ukraine"**. The formation, preservation and use of the ecological network is carried out in accordance with the following basic *principles*:

- ensuring the integrity of ecosystem functions of the components of the ecological network;
- conservation and ecologically balanced use of natural resources on the territory of the ecological network;
- stopping the loss of natural and semi-natural areas (occupied by plant communities of natural origin and complexes altered by human activity), expanding the area of the ecological network;
- providing state support and incentives for business entities to create territories and objects of the nature reserve fund and other areas subject to special protection on their lands, and to develop the ecological network;

- ensuring participation of citizens and their associations in the development of proposals and decision-making on the formation, preservation and use of the ecological network;
- ensuring the connection of the national ecological network with the ecological networks of neighboring countries that are part of the pan-European ecological network, comprehensive development of international cooperation in this area;
- improving the structure of Ukraine's land by ensuring a scientifically sound correlation between different categories of land;
- systematic consideration of environmental, social and economic interests of society.

According to the Law of Ukraine "On the National Program for the Formation of the National Ecological Network of Ukraine for 2000-2015" (2002).), the national ecological network of Ukraine includes territories and objects of the nature reserve fund, forests, water bodies, water protection zones and coastal protection strips of water bodies, other lands of the water fund, wetlands, hayfields, pastures, field protection forest strips, lands of health and recreational purposes, as well as lands of historical and cultural purpose, transport, defense and other lands of particular value for environmental protection, preservation of biological and landscape diversity, primarily species of plants and animals listed in the Red Book of Ukraine, plant communities listed in the Green Book of Ukraine.

The formation of an ecological network involves changes in the structure of the country's land fund by classifying (on the basis of environmental safety and economic feasibility) a portion of the land used for economic purposes as subject to special protection with the reproduction of the inherent diversity of natural landscapes.

In the territories that are part of the national ecological network, special measures should be taken to prevent the destruction or damage of natural landscapes, natural plant communities listed in the Green Book of Ukraine, preserve species of

animals and plants listed in the Red Book of Ukraine, improve their habitats, and create appropriate conditions for the reproduction of rare biota in natural conditions and for their resettlement.

In 2004, the Law of Ukraine "On the Ecological Network" was adopted, which defines the structure, its constituent elements, principles of formation, preservation, use, management, and means of ensuring the ecological network. Special provisions of this law include design, schemes and procedures for the formation, state monitoring and accounting of ecological network territories and objects.

The national ecological network includes territorial structures of national and local importance, which are determined by scientific, legal, technical, organizational, financial and economic criteria.

The structures of the national ecological network of national importance include:

- *natural regions*, where existing and future protected areas are concentrated. First of all, these are the regions of the Carpathians, Crimean Mountains, Donetsk Ridge, Azov Upland, Podillia Upland, Polissya, sources of small rivers, some mouths of large rivers, coastal and sea areas, continental shelf, etc;

- *natural corridors* - the main communication elements of the national ecological network, namely, latitudinal natural corridors that provide natural connections of a zonal nature: Polissia (forest), Galician-Slobozhansky (forest-steppe), South Ukrainian (steppe), as well as meridional natural corridors spatially limited by the valleys of large rivers - Dnipro, Danube, Dniester, Western Bug, Southern Bug, Siverskyi Donets - that unite water and floodplain landscapes, which are the migration routes for numerous species of plants and animals. A separate ecological corridor of international importance is formed by the chain of coastal and marine natural landscapes of the Azov and Black Seas, which surrounds the territory of Ukraine from the south.

The program aims to connect the national ecological network with the ecological networks of neighboring countries that are part of the European

Ecological Network by creating common transboundary ecological network elements.

Thus, the formation of an ecological network is a tool for building a unified territorial system, which is created to improve conditions for the formation and restoration of the environment, increase the natural resource potential of the territory of Ukraine, preserve landscape and biodiversity, habitats and growth of valuable species of flora and fauna, genetic resources, and animal migration routes.

Control questions and tasks

1. Specify the prerequisites for the formation of the concept of ecological boundaries as an integrating measure for the protection and conservation of natural complexes.
2. What document provides for the implementation of the concept of the European Ecological Network?
3. Explain the main tasks of creating an ecological network.
4. What regulatory documents define the legal basis for the creation of a national ecological network?
5. Describe the main measures provided for the implementation of environmental functions of the national ecological network.
6. Specify the main structural elements of the national ecological network.
7. Describe the general approaches to the design process of the ecological network.
8. Specify the factors that affect the functional and planning structure of the ecological network.
9. Describe the socio-economic results that can be obtained within the framework of the concept of forming a national ecological network.
10. Describe the problems that slow down the process of formation and effective functioning of the ecological network.

Lecture 5.

Red Data Books in the system of biodiversity conservation

Outline

5.1 Creation of Red Data Books and their purpose.

5.2 Red Data Book of Ukraine.

5.3 The Green Book of Ukraine.

The problem of conservation of biodiversity is one of those that can be successfully solved only through a combination of efforts at the international, national and local levels. Special documents containing lists of protected biological species are of great importance: The IUCN Red List, the European Red List, and, for Ukraine, the Red Book of Ukraine and the Green Book.

5.1 Creation of Red Data Books and their purpose.

The idea to create the Red Data Book belongs to the English zoologist, Professor Peter Scott. The purpose of the Red Data Book was to improve the protection of rare and endangered species of flora and fauna. The Red Data Book is also the basis for developing further actions aimed at protecting the listed species of animals and plants.

Red Data Books are official documents of non-governmental international and national administrative organizations that contain systematic information about plants and animals of the world or individual regions whose condition is of concern for their future.

The census of endangered species was launched in 1948 by the United Nations Organization (UN) under the International Union for Conservation of Nature. The organization's scientific activities are carried out through six Commissions in various areas: ecology; environmental planning; environmental education; national parks and protected areas; environmental policy, law and administration; and rare and endangered species.

The Commission on the Protection of Rare and Endangered Species was established in 1949 to create annotated lists of rare and endangered species. It was

the "Lists of Rare and Endangered Species" that were initially included in the publication that was later called the "Red Data Book," and the color red was chosen not by chance - it is a symbol of danger, alarm and warning.

The first edition of the International Red List took 14 years to complete. As a result of the Commission's many years of work, the first edition of the book, the so-called register of rare and endangered species of wild plants and animals, was published in 1963; it was called the **Red Data Book**, had the form of a flip calendar and consisted of two volumes. Each species was given a separate page, and the book was printed on red paper, the color of warning. Since then, similar lists of endangered species have been published all over the world.

The species listed in the book were divided into two categories: *rare* and *endangered*.

Rare species are those that are not currently threatened with extinction, but are so few in number or live in such limited areas that they may disappear under unfavorable conditions.

Endangered species are those that are threatened with extinction and whose rescue is not possible without special measures.

The second edition of the International Red Data Book was published in 1966-1971 and developed a new classification of rare species. This edition consisted of three volumes - in addition to information on mammals and birds, it contained information on reptiles and amphibians. The first volume contained (for the first time!) information on rare plants.

At the same time, the Commission for the Protection of Endangered Species approved the creation of the Black List of Species (a list of irretrievable losses, published in 1973), a list of species that are known to be extinct. According to this list, it was stated that since 1600 alone, 118 species (subspecies) of mammals (e.g., the Turk, Steller's cow, wild horse - tarpan), 140 species of birds (wingless loon, Carolina parrot, Labrador eider), and more than 230 species of other vertebrates, amphibians, and reptiles were endangered.

The International Red List has had several more editions. Today, the IUCN Red List exists in the form of electronic databases posted on the Internet. This information is updated annually and reviewed and analyzed every 4-5 years.

Categories of species in the IUCN red list:

I category - endangered species;

II category - extinct in the wild;

III category - a species on the critical edge of existence;

IV category - a species in a state of danger;

V category - vulnerable species;

VI category - a species close to the endangered status;

VII category - species in a state of emerging concern;

VIII category - the species is not well known;

IX category - the species is not sufficiently assessed.

The IUCN Red List for each species contains its scientific name, distribution in the European member states of the Economic Commission for Europe and outside Europe, and the global status of the species according to the IUCN species category classification.

Unlike national Red Data Books, the IUCN Red Data Book is not a regulatory document. That is, no state is obliged to fulfill its requirements. However, thanks to the organization's authority, it is still one of the most important documents in the field of protection of rare and endangered species. Its provisions are taken into account when creating national Red Data Books, which are the basis for many programs to save certain species.

According to the IUCN Species Survival Commission, about 20,000 species of higher plants are in need of protection today, and the World Biodiversity Conservation Monitoring Center estimates that 60,000 plant species and five thousand species of fauna are threatened with extinction, according to the IUCN Red List. In this context, it should be noted that Switzerland was one of the first countries in the world to create the so-called "Blue List", which includes species from the National Red Data Book of rare species of the country, which, as a result of proper

environmental policy and government activities, have stabilized their population composition and are now out of danger.

The IUCN Red List of Ukrainian flora includes mostly species of the seventh category.

European Red List. In 1990, Turkey finalized the draft of the **European Red List** of globally threatened animals and plants, and a year later in Finland, the European Economic Commission finally adopted the European Red List, as well as a number of recommendations to the governments of the member states on the application of this list.

The European Red List is a list of animal and plant taxa found in Europe that are threatened with global extinction.

It uses the following IUCN categories: Endangered, Threatened, Vulnerable, Rare, Uncertain, and Insufficiently Known. Today, it includes 60 species of mammals, 28 of birds, 37 of reptiles, 19 of amphibians, 38 of freshwater fish, 238 of invertebrates, and nearly 4,500 species of vascular plants. According to the Catalog of Rare Biodiversity, 110 species of vascular plants that are listed in the European Red List grow in nature reserves and national parks of Ukraine.

5.2 Red Book of Ukraine.

The Red Data Book of Ukraine is an official state document that contains a list of rare and endangered species of flora and fauna within the territory of Ukraine, its continental shelf and exclusive (maritime) economic zone, as well as generalized information on the current status of these species of flora and fauna and measures for their conservation and reproduction.

The Red Data Book of Ukraine is a document that summarizes information on the current status of rare plants and animals in the country and serves as a basis for developing scientific and practical measures aimed at their protection, reproduction and rational use.

The Red Data Book of Ukraine is the basis for the development and implementation of programs (action plans) aimed at the protection and reproduction of rare and endangered species of flora and fauna listed in it.

The objects of the Red Data Book of Ukraine are rare and endangered species of flora and fauna that permanently or temporarily occur (grow) in natural conditions within the territory of Ukraine, its continental shelf and exclusive (maritime) economic zone.

The Red Data Book has a number of meanings:

- biological - it is intended for specialists and scientists;
- environmental protection - it provides for the development of measures to preserve animals and plants;
- legal - it establishes a special legal status of animal and plant species; determines increased criminal, administrative, material and moral liability.

Occupying less than 6% of Europe's area, Ukraine has approximately 35% of its biodiversity, which is due to the location of Ukraine at the crossroads of many natural zones and migration routes of many species of fauna.

The biota of Ukraine includes more than 70 thousand species, including more than 27 thousand species of flora and more than 45 thousand species of fauna. One of the measures to preserve this diversity of flora and fauna is to maintain the Red Data Book of Ukraine, which lists species that are endangered for various reasons.

When maintaining the Red Data Book of Ukraine, it is mandatory to map the distribution, determine the viability of populations, create national and regional lists, and establish the form and type of conservation regime. In protected areas, the status of populations is monitored, and a passport is issued for each population.

Depending on the status and degree of threat to populations of animal or plant species listed in the Red Data Book of Ukraine, they are divided into the following categories:

1. *Category 0 (endangered)* - species for which there is no information on their presence in Ukraine in nature or in specially created conditions;

2. *Category I (endangered)* - species that are threatened with extinction, the preservation of which is unlikely if the harmful effects of factors affecting their status continue;

3. *Category II (vulnerable)* - species that may be classified as "endangered" in the near future if the impact of factors that negatively affect their condition continues;

4. *Category III (rare)* - species whose populations are small and are not currently classified as endangered or vulnerable, although they are in danger;

5. *Category IV (uncertain)* - species that are known to be endangered, vulnerable or rare, but not yet assigned to any of these categories; including species that are more or less widespread in different regions of Ukraine;

6. *Category V (insufficiently known)* - species that require further research and cannot be assigned to any of the above categories due to the lack of necessary reliable information; including taxonomically critical species;

7. *Category VI (restored)* - species whose populations, due to the measures taken to protect them, are not of concern, but are not subject to use and require constant monitoring.

It should be noted that the categorization adopted in the Red Data Book of Ukraine does not coincide with the international IUCN categorization.

The Red Data Book of Ukraine contains the following information about each of the species of animals and plants listed in it: Ukrainian and Latin names, category, distribution, main habitats, number in nature (including outside Ukraine), its changes, information on reproduction or captive breeding (culture), measures taken and to be taken for their protection, and sources of information. The book also contains distribution maps and photographs (drawings) of the listed species of animals and plants. The protection and reproduction of rare species is carried out by establishing a special legal status, monitoring the state of populations, creating protected areas at the site of plant localities, forming gene pools and special forms of species breeding. At the same time, extensive legal work is underway to clarify the importance of rare species. The collection of rare species is allowed only in

certain cases - for reproduction and cultivation, scientific research, etc. Such requests are possible only from scientific institutions and are authorized by the Ministry of Ecology and Natural Resources of Ukraine.

Persons who violate the rules of protection and conditions for the reproduction of rare species listed in the Red Data Book are held administratively, financially or criminally liable in accordance with the legislation of Ukraine. The amount of compensation for these violations is determined according to the rates approved by the Cabinet of Ministers of Ukraine.

The form for reporting rare species of plants and animals is determined by the National Commission on the Red Data Book of Ukraine. The Commission includes leading scientists from the National Academy of Sciences of Ukraine and other institutions, including the Ministry of Ecology and Natural Resources of Ukraine.

The basis for listing a species in the Red Data Book is information about its number and dynamics in natural communities. All individuals or organizations can submit proposals for the Red Data Book. The National Commission on the Red Data Book of Ukraine carries out the expert review of the proposal, and the relevant decision is made by the Ministry of Ecology and Natural Resources of Ukraine. If the threat of extinction has ceased to threaten the species (for example, as a result of environmental protection measures), the same National Commission on the Red Data Book of Ukraine submits a proposal for its removal from the Red Data Book.

The Ministry of Ecology and Natural Resources of Ukraine is responsible for maintaining the Red Data Book, i.e. monitoring its regular (once every 10 years) reissue. All expenses for the Red Data Book are covered by the state budget of Ukraine.

5.3 The Green Book of Ukraine.

The current pace of denaturalization of natural landscapes has led to an impoverishment of not only species composition but also phytocoenotic diversity. Along with the preservation of the phytogenetic gene pool, the protection of the phytocoenosis as a functional, primarily energy, basis of the biosphere is now a priority. Therefore, it is extremely necessary to change the emphasis in

environmental protection activities from preserving the phylogenetic gene pool to preserving the phytocoenosis. This also follows from the current state of the biosphere, the principal feature of which is that its functional state is deteriorating at a much higher rate than its genetic one. The protection of natural vegetation solves a threefold eco-problem: preservation of the phytocoenosis fund, phylogenetic fund and ecosystems in which phytocoenoses develop.

Thus, thanks to the development of a systemic environmental protection concept, arguments have emerged regarding the need to protect the rare phytocoenosis, which is the purpose of the Green Book of Ukraine. In methodological terms, its principal advantage over the Red Book is its systematic approach, and in practical terms, it preserves both the genetic and functional foundations of the biosphere.

In the current Ukrainian legal framework for the natural environment, the status of the Green Book is determined by the **Law of Ukraine "On Flora" (1999) and the Regulation on the Green Book of Ukraine**, approved by the Cabinet of Ministers of August 29, 2002, № 1286.

The scientific significance of the Green Book of Ukraine is that it contains information on relict, endemic and other rare communities. Thus, it creates prerequisites for the study of historical stages of vegetation development and clarification of the laws of formation of its various types.

By the nature of their distribution, the groups are distributed as follows: most of them (65) have the northern limit of distribution on the territory of Ukraine, 36 are located on the eastern border of the range, 35 - on the southern border, 12 - on the western border. Communities dominated by endemic species that do not occur outside Ukraine are represented by 9 syntaxa.

The Green Book of Ukraine contains information on the current state of rare plant communities and measures for their conservation and scientifically based reproduction. Each article about a community is accompanied by the following information:

1. *The name of the community* (in Ukrainian and Latin);

2. *Synphytosozological index, class, category, status* - indicators of the rarity of the plant community. *According to the status, phytocoenoses are divided into endangered, threatened, vulnerable, rare, uncertain and typical phytocoenoses.* These indicators are decisive in calculating fines for damage to plant communities and establishing a system of protection regimes for them; for example, some endangered communities require absolute protection, and if regulatory measures are appropriate, they must be qualified by scientific justification.

3. *Distribution in Ukraine.* Botanical and geographical or physiographic regions with specified geographical names of specific habitats of rare plant communities are indicated.

4. *Environmental conditions.* The main ecological parameters of the communities' habitats are indicated and their features are noted.

5. *Habitat.* The information on the plant community belonging to the biotope according to the Corine ecosystem classification and the list of habitats according to the Bern Convention is given.

6. *Phytocoenotic significance.* The types of association of populations of dominant species in the phytocoenosis are indicated. A unique type of association is characterized by a combination of dominants that differ from typical zonal dominants by genetic, phenotypic and other characteristics, as well as ecological affiliation. A rare type of association is characterized by a combination of dominants, where one of them is either relict, endemic or a species from the Red Data Book of Ukraine.

7. *Phytosozological significance.* The phytocoenosis is characterized in terms of the presence of dominants that are legally protected at the continental or national levels, or the presence of value (historical, ecological, etc.) of the phytocoenosis as a whole.

8. *Botanical and geographical significance.* The distribution of dominant species of phytocoenosis on the territory of Ukraine is indicated.

9. *The coenotic structure and floristic core.* The characteristic of vertical and horizontal structures of phytocoenoses and floristic core is given, which is

expressed in the main plant species that play a decisive role in the formation of phytocoenosis.

10. *Restoration potential.* The ability of the dominants to recover naturally in specific environmental conditions and depending on their biological characteristics is indicated.

11. *Protection regime.* Depending on the dynamic state of phytocoenoses, ecological conditions, anthropotolerance and the degree of their disturbance, it is proposed to determine a system of sozotechnical measures that would allow to support the functioning of phytocoenoses to the maximum extent.

12. *Motives and provision of protection.* The motives for protection are determined, the territories of the Nature Reserve Fund of Ukraine in which the phytocoenosis is preserved are indicated, or it is noted that the phytocoenosis is not protected or exploited.

13. *Biotechnical and sozotechnical recommendations.* Suggestions for the best conservation of rare phytocoenoses, improvement, reproduction or rational use of them, constant monitoring of their condition, the need for scientific research to develop additional scientific basis for the protection of these phytocoenoses and improvement of their habitats and establishing their legal status are indicated.

14. *Sources of information.* A list of Reference and other bibliographic sources from which information on this rare phytocoenosis can be obtained is given.

15. *Cartographic scheme.* The topographical basis of the territory of Ukraine with different symbols of the rare phytocoenosis distribution is given. The hydrographic network and names of regional centers are shown on this basis.

The Regulation on the Green Data Book of Ukraine defines five categories of plant communities that require protection and inclusion in the Green Data Book of Ukraine, namely:

➤ indigenous plant communities, which are dominated by plant species listed in the Red Book of Ukraine, as well as relict and endemic plant species;

- indigenous plant communities, the composition of which is determined by typical plant species that grow at the limit of their range or high distribution and tend to reduce their vital potential;
- plant communities that are not related to the natural zone (swamps, meadows, water bodies, etc.) and require protection for botanical and geographical reasons;
- plant communities interconnected with endangered species of fauna;
- plant communities formed by plant species that were widespread in the past but have become rare under the influence of anthropogenic or natural factors.

Thus, the Green Book is the basis for developing conservation measures for the conservation, reproduction and use of the listed natural plant communities. The protection of these communities is aimed at preserving their coenotic structure, populations of rare plant species and habitat conditions.

Control questions and tasks

1. Explain the main idea behind the establishment of the Red Book.
2. What is the purpose of the European Red List?
3. Describe the categories of species of the IUCN Red List.
4. Define the concept of "Red Book of Ukraine" and indicate its objects.
5. Explain the criteria for selecting species for inclusion in the Red Data Book of Ukraine.
6. Indicate the differences between the IUCN Red List, the European Red List and the Red Data Book of Ukraine.
7. Explain the prerequisites for the creation of the Green Book of Ukraine.
8. What regulatory documents determine the status and main provisions of the Green Book of Ukraine?
9. On what grounds in the Green Book of Ukraine characterized rare plant communities?
10. What plant communities can be listed in the Green Book of Ukraine?

Lecture 6.

Nature and biosphere reserves

Outline

6.1 Nature reserves: status, tasks and peculiarities of protection.

6.2 Biosphere reserves: status, tasks, territory structure and management features.

6.3 Peculiarities of nature reserves in Ukraine.

Over the years, a network of protected areas has been formed on the territory of Ukraine (Fig. 6.1), which has been reliably based on the fundamental theoretical developments of a whole galaxy of prominent environmental scientists. A large number of scientific papers are devoted to the idea of nature reserves, in particular, thanks to the works of V.V. Dokuchaev, M.F. Reimers, F.R. Stilmark and many other scientists, the basic principles of creation and operation of nature reserves were formed and gradually, based on the vast practical experience gained, the priorities for the development of these territories were determined.

According to scientists, nature should be studied in nature reserves, which is preserved in complete inviolability, to identify its laws, knowledge of which is necessary for the reasonable use of natural resources. This idea has been a "red thread" throughout the history of nature reserves, but at different times, views on the tasks of nature reserves have changed. The latter was due to both the destruction of the country's nature and the change in scientific views on nature protection, including under the influence of ideology and economic policy.

According to the Law of Ukraine "On the Nature Reserve Fund of Ukraine," there are two types of reserves in Ukraine: *natural and biosphere reserves*.

6.1 Nature reserves: status, tasks and peculiarities of protection.

Nature reserves are nature protection, scientific and research institutions of national importance created with the aim of preserving in their natural state typical or unique for a given landscape zone natural complexes with the entirety of their

components, studying natural processes and phenomena occurring in them, developing scientific principles of environmental protection, efficient use of natural resources and environmental safety.

Under current legislation, land and water areas with all natural resources are completely withdrawn from economic use and granted to nature reserves for unlimited (permanent) use.

The main functions of nature reserves are: nature protection (promoting the conservation of biological, ecosystem and landscape diversity) and *scientific* (studying the functioning of ecosystems, conducting scientific observations of natural processes).

The main tasks of nature reserves are to preserve natural complexes and objects on their territory, conduct scientific research and observation of the state of the environment, develop environmental recommendations based on them, disseminate environmental knowledge, and assist in the training of scientific personnel and specialists in the field of environmental protection and nature conservation.

The nature reserves are also responsible for coordinating and conducting scientific research in the territories of nature reserves, natural monuments, and protected tracts in the region.

In order for a nature reserve to be able to fulfill its functions and tasks, its territory must meet certain requirements. Ideal for the creation of nature reserves are natural-territorial complexes that are unaffected by anthropogenic impact and unique in their scientific and natural significance. Such complexes are considered to be the benchmarks of nature. However, due to the global scale of humanity's impact on the Earth's nature, there are virtually no such untouched areas left today. Therefore, in practice, nature reserves preserve ecosystems that meet certain properties: unoccupied by human economic activity or a minimal degree of damage to natural territorial complexes, vulnerability and the possibility of loss (replacement of natural communities by anthropogenic ones), representativeness (typicality), uniqueness,

rarity (presence of rare species, groups), richness and diversity of species, life forms, functional groups, faunal complexes, gene pool, etc.

Nature reserves are organized in areas of exceptional (international and national) environmental and scientific importance. This is determined by the fact that the area is home to habitats of rare species of plants and animals (i.e., the most valuable and rare species, the threat of extinction of which is very high; these are mainly species listed in the Red Book of Ukraine, world and European "red" lists, relict and endemic species, etc.) Today, the importance of areas with typical and rare plant communities listed in the Green Book of Ukraine, as well as other sites of significant scientific importance, such as virgin forests, native steppes, unique marshes, etc. is exceptional.

The territory of a nature reserve should be characterized by representativeness, i.e., it should be typical for a certain region in terms of geological, geomorphological structure, soil cover and reflect the main floristic, faunal, phytocenotic, botanical and geographical features of this region.

The size of the reserve, the configuration of its borders, its location in relation to transport systems and large cities, and the population density in the region are of great importance for the organization and functioning of the reserve. These factors determine the accessibility of the territory for visitors, the threat of invasion and poaching. The nature of the past use of the reserve's territory, the nature of management in the areas surrounding the reserve, and the degree of anthropogenic transformation are also important. It is desirable that the lands on which the reserve is created are included in economic circulation as little as possible (no arable land, mining sites, industrial facilities, recreational areas, etc.) It is also desirable that the territory of the reserve is delineated by natural boundaries (e.g., the coastline of rivers and other water bodies, mountain ranges, gorges, etc.)

Requirements for the protection of natural complexes and objects of nature reserves.

On the territory of nature reserves, it is *prohibited* to carry out any economic and other activities that contradict the purpose of the reserve, disrupt the natural

development of processes and phenomena or pose a threat of harmful impact on its natural complexes and objects, for example:

- construction of structures, roads, linear and other transport and communication facilities not related to the activities of nature reserves, construction of fires, arrangement of recreation areas, parking of vehicles, as well as passage and passage of unauthorized persons, and the driving of domestic animals, movement of motorized vehicles, except for public roads, logging, flying of airplanes and helicopters below 2000 meters above the ground, overcoming the sound barrier over the reserve territory by airplanes and other types of artificial noise impact exceeding the established standards;
- geological exploration, mining, disturbance of soil cover, hydrological and hydrochemical regimes, destruction of geological outcrops, use of chemicals, all types of forestry, as well as harvesting of fodder grasses, medicinal and other plants, flowers, seeds, reeds, grazing, catching and killing of wild animals, violation of their habitat, nesting, and other types of use of flora and fauna that lead to the disturbance of natural complexes;
- hunting, fishing, tourism, introduction of new species of animals and plants, carrying out activities aimed at increasing the number of certain species of animals beyond the permissible scientifically justified capacity of the land, collecting collection and other materials, except for materials necessary for scientific research.

In order to preserve and restore indigenous natural complexes, conduct research and perform other tasks in the nature reserve in accordance with the project of organization of its territory and protection of natural complexes, it is *allowed* to:

- carrying out restoration works on lands with disturbed indigenous natural complexes, as well as taking measures to prevent changes in the natural complexes of the reserve as a result of anthropogenic impact - restoration of the hydrological regime, preservation and restoration of historically developed plant communities, endangered species of plants and animals, etc;

- implementation of firefighting and sanitary measures that do not violate the reserve's regime; construction of buildings and other facilities necessary to fulfill the tasks assigned to the reserve in accordance with the established procedure; collection of collection and other materials, performance of works envisaged by the plans of long-term stationary scientific research, and conducting environmental education and upbringing.

The project of organization of the territory of the nature reserve and protection of its natural complexes may provide for the allocation of land plots to meet the economic needs of the reserve and its employees in hayfields, grazing, gardens and fuel in accordance with the established standards.

In case of urgent need, at the request of the scientific and technical council of the nature reserve, with the permission of the central executive body in the field of environmental protection, measures aimed at protecting natural complexes, eliminating the consequences of accidents, natural disasters and other purposes not provided for in the project of organization of the territory of the nature reserve and protection of its natural complexes may be carried out on the territory of the nature reserve.

In order to eliminate the consequences of accidents and natural disasters that result in a direct threat to human life or destruction of protected natural complexes, particularly urgent measures are taken by decision of the management of the nature reserve.

6.2 Biosphere reserves: status, tasks, territory structure and management features.

The category "biosphere reserve" was added to the structure of the Nature Reserve Fund of Ukraine in 1992 with the adoption of the Law of Ukraine "On the Nature Reserve Fund of Ukraine".

Biosphere reserves are environmental protection, research and development institutions of international importance created to preserve the most typical natural complexes of the biosphere in their natural state, to carry out background

environmental monitoring, to study the environment and its changes under the influence of anthropogenic factors.

The creation of the World Network of Biosphere Reserves on a global scale was initiated in the 1970s by UNESCO and IUCN. The creation of such a network is the goal of UNESCO's international program "Man and the Biosphere" and is associated with the global impact of human activity on the biosphere and the need to create a special system of environmental monitoring of the man-made and natural environment. Today, there are more than 300 biosphere reserves in the world.

Biosphere reserves are created on the basis of nature reserves, national parks with the inclusion of territories and objects of the nature reserve fund of other categories and other lands and are included in the established order in the *World Global Network of Biosphere Reserves*.

Biosphere reserves face important scientific tasks of fundamental and applied nature: environmental, economic and social.

Ecological tasks include preservation of biological and landscape diversity, monitoring of natural processes and anthropogenic impact.

Economic objectives are to develop environmentally sound management methods based on advanced technologies that increase the efficiency of natural resource use with minimal environmental damage. For example, in the steppe zone, such tasks include preserving humus in the soil, preventing secondary salinization, salinity, flooding, and protection against wind erosion. For the landscapes of the broadleaf forest zone, this means increasing the biological sustainability and productivity of forest ecosystems. Improving their water and soil protection functions, promoting natural regeneration.

Social objectives are to preserve the cultural and historical values and cultural heritage of the region as a whole, to promote environmental education and environmental education of the general population, and to improve the skills of specialists in various fields of nature protection.

For biosphere reserves, a differentiated regime of protection, reproduction and use of natural complexes is established in accordance with functional zoning:

protected zone - includes territories intended for the conservation and restoration of the most valuable natural and minimally disturbed by anthropogenic factors natural complexes, the gene pool of flora and fauna; its regime is determined in accordance with the requirements established for nature reserves;

buffer zone - includes territories allocated in order to prevent negative impact on the protected area of economic activity in the adjacent territories; its regime is determined in accordance with the requirements established for the protection zones of nature reserves;

zone of anthropogenic landscapes - includes territories of traditional land use, forestry, water use, places of settlement, recreation and other types of economic activity; hunting is prohibited in it.

Within the territory of biosphere reserves, zones of regulated reserve regime may be allocated, which include regional landscape parks, nature reserves, and protected tracts in compliance with the requirements for their protection established by the Law of Ukraine "On the Nature Reserve Fund of Ukraine".

The zoning of the territory of biosphere reserves is carried out in accordance with the project of organization of the territory of the biosphere reserve and protection of its natural complexes.

The project for the organization of the biosphere reserve territory and protection of its natural complexes defines and justifies measures for environmental protection, research, recreation, and economic activities in accordance with the law and international agreements.

Scientific research, monitoring of the state of the environment and other activities of biosphere reserves are carried out in accordance with international programs.

In Ukraine, biosphere reserves include the F.E. Falz-Fein Askania-Nova, Black Sea, Carpathian, and Danube biosphere reserves.

Table 6.1 presents the structure of the number and area of nature and biosphere reserves in Ukraine, according to the Ministry of Ecology and Natural Resources of Ukraine as of January 1, 2011 year.

Table 6.1 - Structure of the number and area of nature and biosphere reserves in Ukraine reserves of Ukraine

	objects	percentage of the total number		percentage of the total area
natural				
biosphere				

According to the State Statistics Committee of Ukraine, about 3 million people have visited biosphere reserves and national nature parks annually in recent years. Biosphere reserves are visited by more than 200 thousand people a year. The largest number of visitors is recorded in the Askania Nova Biosphere Reserve - about 141 thousand people.

6.3 Peculiarities of nature reserves in Ukraine.

The activity of the reserves was based on the idea of preserving natural standards and the least disturbed ecosystems. However, this approach objectively reflected the state of natural ecosystems only in Russia, where the country's vast territory, extremely low population density, and well-preserved pagan traditions of the indigenous peoples of certain regions allowed for the establishment of full-fledged and self-sufficient nature reserves that fully met the concept of a natural standard. Classic examples of such reserves are the Kronotsky, Altai, and many others. Certain ethnic and cultural traditions also played an important role.

Ukraine belongs to the so-called "anciently developed" territories, where natural ecosystems have been subjected to increasing anthropogenic pressure since the Late Paleolithic era. This process has especially intensified in the last 3 to 5 thousand years, as some historians associate even the decline of the Trypillian culture with extensive nature-destroying agriculture, which led to a deep ecological crisis.

And if we analyze in detail the state of protected areas in Ukraine, practically none of them (perhaps with a few exceptions in certain areas of individual reserves) can be a natural benchmark. For example, in the recent historical past, it was Chapelsky Pid that was the main camp of the Chumaks, as it had the longest preserved lush pastures for oxen and horses. Today it is the territory of the oldest Ukrainian reserve Askania-Nova.

Almost all of Ukraine's nature reserves and a large part of its biosphere reserves can only conditionally be called natural standards, because their territories were transformed by human activity to a greater or lesser extent before they were protected. After these territories were declared protected and direct anthropogenic pressure was removed from them, dramatic changes in existing ecosystems were provoked, which were exacerbated by insecurity from surrounding anthropogenic landscapes, insufficient area for self-regulation, and often insufficient or even absent unifying elements.

By removing large herbivores (mammoth, bison, tarantulas, antelopes) and then large shrews (including marmots), which actively influenced the formation of landscapes, at different historical times, humans not only provoked the degradation of natural ecosystems and a decrease in biodiversity, but also initiated new types of succession that were previously unknown in nature and created a lot of semi-regulated or artificial ecosystems. With few exceptions, such ecosystems became the basis for the creation of nature reserves in Ukraine.

But the century-long experience of nature reserves has provided extremely valuable scientific and practical experience. It has become clear that against the background of global biodiversity depletion, these territories can only serve as temporary refugia for the survival of populations of individual species or species complexes, but are by no means self-sufficient, long-term, full-fledged natural ecosystems. The idea of "restoring indigenous (climax) ecosystems in nature reserves" is equally fantastic. If only because even experts do not have a consensus on what constitutes a natural (indigenous) ecosystem for a particular territory.

The above factors have created a paradoxical situation in many reserves, where certain species, or even species complexes, have disappeared and are disappearing in protected areas, but feel fine in adjacent areas with moderate anthropogenic pressure. At the same time, succession processes lead to further simplification and impoverishment of protected ecosystems, which contradicts the basic concepts of conservation.

That is why the eternal dilemmas for Ukrainian (and most European) nature reserves: to cut - not to cut, to mow - not to mow, to burn - not to burn, to graze - not to graze *have two solutions*.

The first is to develop for each reserve, based on the results of long-term monitoring, a scientifically sound management plan projected for the next 25 to 50 years, which should clearly define compensatory mechanisms for leveling the anthropogenic pressure. In other words, to take over the imitation of the factors that led to the emergence of these ecosystems before the reserve.

The first way involves the artificial conservation of protected ecosystems in order to maintain the existing biodiversity. This is feasible, but quite dangerous, as society is not immune to radical changes in views on the principles of nature protection and conservation in particular. At the same time, no one can predict the level of sustainability of an artificially maintained ecosystem, which, in turn, is a direct threat to the existence of nature reserves.

The second is the development of a management plan, according to which, as succession processes progress, once lost elements (or their analogues) are gradually "built into" protected ecosystems at the level of species or species complexes that can take over certain regulatory functions in the current artificially maintained ecosystems.

The second way is also risky, because it is not always possible to predict the reaction of an established ecosystem to the return of a once-lost species (or complex of species), but it is more natural and allows nature to maximize the use of reproduction mechanisms, and, accordingly, a unique opportunity to study these processes without compromising the maintenance of biodiversity.

As a special public product, nature reserves cannot stay away from the socio-economic and political processes taking place in the post-Soviet space.

For example, in some Central Asian countries, the idea of nature reserves did not find support among the new political elites, which led to the elimination of a number of once beautiful reserves. Most nature reserves in the Baltic states have been integrated into European environmental protection structures and have been granted the status of national nature parks.

The most conservative traditions of conservation, classical in Soviet times, have been preserved in Russia, Kazakhstan, Belarus, and Ukraine, but in these countries, too, public preference has recently been given to the Euro-American environmental model, namely the development of a network of national nature parks.

Thus, we can state the fact that the classical reserve is currently experiencing a serious social and scientific crisis. On the one hand, it is increasingly difficult to explain to the public the importance of the scientific, informational and economic resources of nature reserves, which is the main obstacle to justifying the feasibility of creating new reserves under current legislation. On the other hand, contradictions in the performance of their individual functions are increasingly felt in the reserves themselves.

It is extremely dangerous for nature reserves to blindly copy the Euro-American principle of wildlife protection, the main form of which is a national nature park (NNP), because nature reserves and NNPs differ both in idea and in essence. The creation of any reserve is based on the idea of preserving nature in all its manifestations, while a national nature park is largely a form of wildlife exploitation through recreation.

Since the late 1980s, the world's leading ecologists have been constantly sounding the alarm about the degradation of NNPs caused by overloading the parks with visitors. In other words, the need for recreation (contemplation of wildlife) is growing with population growth and living standards, while the "amount" of wildlife suitable for such "contemplation" is steadily decreasing. And only a few NNPs, for

example, Kruger Park in South Africa, gigantic in size, with a global brand and decades of proven management, are able to earn money for their maintenance without obvious degradation of natural ecosystems.

The development of communication infrastructure and tourism in Ukraine is only a matter of time, and therefore the ill-considered declaration of new territories as national nature parks, especially in remote regions with remnants of wildlife, actually begins the degradation of that nature through increased recreation.

Repeated attempts at the state and legislative levels to revise their status in order to include them in the list of NNPs, as happened in many post-Soviet countries, are extremely dangerous for nature reserves. After all, zoning the territory of small reserves means their complete collapse.

The historical component and development of Ukraine's territory have also left their mark on the size of the reserves. The vast majority of them cover an area not exceeding 10,000 hectares. Thus, populations of large animal species such as bison, bear, elk, wolf, and lynx are not even theoretically capable of surviving for a long time within a protected area. For example, scientists estimate that within the Kaniv Nature Reserve there can live 0.3 wolves.

Even bigger problems exist in cluster-type reserves, where entire species complexes are threatened with extinction. For such nature reserves, ordinary fires or other natural disasters can be a complete collapse, causing complete and often irreversible destruction of ecosystems.

According to scientists, nature reserves need to integrate into new socio-economic processes without losing their basic functions.

This can be done through the implementation of the project "Each region has its own reserve, each reserve is the natural core of the region."

This project involves two stages of implementation. *The first* stage is the expansion of the territory of the reserves to scientifically justified self-sufficient boundaries in the form of cluster-type protected cores. *The second* stage is the creation of a biosphere reserve on the basis of each nature reserve, through further

expansion, where the protected cores should be united by other zones (buffer, traditional management, etc.).

This way allows us to comprehensively solve several problems at once.

1. While maintaining the highest status of protection of protected cores, the possibilities of long-term existence of populations at the expense of adjacent territories are dramatically expanded.

2. Many species have new opportunities to survive in areas of regulated anthropogenic pressure, as the diversity and mosaicism of ecosystems, including artificial ones, actually increases.

3. The strategy of human behavior throughout the entire territory of a biosphere reserve of this type is determined by the needs of exploiting scientific and information and environmental resources, not economic and recreational ones.

4. The existence and functioning of a biosphere reserve determines the strategy of sustainable and sustainable development of the entire region and, in fact, dictates and shapes environmental behavior in this region.

5. Nature reserves will be actively integrated into social processes without losing their core functions.

The existing biosphere reserves in Ukraine can provide invaluable assistance in forming a network of biosphere reserves, as they have extensive practical experience, well-developed management plans, and a large baggage of mistakes that newly created reserves should learn from.

An important component of this transformation of nature reserves is the scientific base formed by their centuries of activity. The implementation of this project requires a clearly articulated idea and strong lobbying of the interests of nature reserves at the legislative level. In this way, the reserves are able to determine the social and economic policy of many regions of Ukraine in the future.

Control questions and tasks

1. Describe the main functions and tasks of nature reserves.

2. Indicate what prerequisites are necessary for a nature reserve to be able to fulfill its functions and tasks?
3. Specify the types of economic activities that are prohibited on the territory of nature reserves.
4. Describe the focus of activities that are allowed in nature reserves in accordance with the project of organization of its territory and protection of natural complexes.
5. Define the concept of "biosphere reserve".
6. Describe the strategic goal of the World Network of Biosphere Reserves.
7. Specify the functional areas of biosphere reserves.
8. What are the fundamental differences between the natural and biosphere reserve?
9. Why the territory of Ukrainian nature reserves can be called natural standards?
10. Describe ways to improve the efficiency of nature reserves in Ukraine.

Lecture 7.

National parks and regional landscape parks, nature reserves, naturel monuments, protected tracts

Outline

7.1. National parks: functions, tasks and main types.

7.2. Selection of the territory for the creation of a national park.

7.3. Functional zoning of national parks.

7.4. Features of the development of regional landscape parks in the world and Ukraine.

Until recently, the most common territorial form of nature protection in Ukraine was nature reserves, which were created with the aim of complete nature protection and used for scientific research, education and outreach. The "closed" nature of nature reserves caused, on the one hand, limited visits by the general public, and, on the other hand, a reduction in their network due to economic unprofitability. For this reason, the reserves were the epicenter of numerous conflicts (both open and perceived), and thus the satisfaction of social needs on their territory was out of the question.

The radical political and economic changes that have taken place in Ukraine in recent years have had a direct impact on changes in the field of nature conservation. The Law on Nature Reserves adopted in 1992 The Law "On the Nature Reserve Fund of Ukraine" envisaged the creation of new types of protected areas for recreational purposes, among which national nature parks (NNPs) occupy a leading place. National parks are the most popular type of protected area in the world. Their creation ensures both effective and stable protection of natural landscapes and the development of tourism and recreation, which is of great importance in solving economic and social problems in the regions.

7.1. National parks: functions, tasks and main types.

Formation of the concept of national parks. The concept of national parks was formed in parallel with the development of environmental thinking. The definition of their main functions was influenced by:

- the formation of complex areas in the natural sciences in the early twentieth century - biogeographical, biogeochemical, ecological, and landscape. This led to a conscious transition from passive protection of individual species of flora and fauna to an understanding of an integrated approach to environmental protection as a necessary condition for preserving the entire species richness of the organic world. This could only be achieved through the organization of a network of large protected areas, among which national parks played a leading role;
- intensive industrial development and urbanization in the early twentieth century in Europe and North America, which caused the need for the general population to improve their health in the bosom of natural landscapes untouched by industrial influence. Therefore, national parks also faced social tasks, such as providing the urban population with the necessary recreational resources;
- the creation of national parks mostly under the auspices of the state, which emphasized the need for a state approach and control in their management and in the field of nature protection in general.

The term "national park" was first introduced into environmental practice by law in 1872, when the U.S. government created the world's first Yellowstone National Park for "the use and enjoyment of the people for all time in the form of a national park."

The unified international environmental definition of national parks was adopted much later - in 1969 in New Delhi at the General Assembly of the International Union for Conservation of Nature (IUCN).

According to the IUCN definition, a national park is a large area that covers one or more ecological systems unchanged or little changed by human exploitation and settlement, characterized by various types of landscapes and richness of flora and fauna, as well as a variety of geomorphological systems that are particularly valuable from scientific, educational, upbringing and recreational points of view, or characterized by natural landscapes of high aesthetic value; where the state authorities of the country take appropriate measures to prevent.

National parks in the world play a major role in the conservation of nature in a broad sense, *so their main tasks* include:

- preservation of ecosystems as representative samples of the main biotic complexes of the planet;
- maintaining the ecological diversity of the natural environment;
- preservation of genetic resources of animals and plants;
- preservation of cultural heritage sites and objects;
- preservation of picturesque corners of nature;
- organization of tourism and recreation.

Main didactic tasks:

- ensuring environmental education of the population;
- conducting scientific research and observations of the natural environment.

Related tasks:

- maintaining ecological balance;
- preservation of ecosystem productivity;
- erosion control, runoff protection, etc.

Main types of national parks. The natural and socio-economic conditions of individual countries, as well as their conservation traditions, have led to the emergence of different types of national parks.

Semi-open national parks of state subordination of the North American type. They are organized to preserve unique natural phenomena, familiarize visitors with them, and provide short-term recreation in the respective recreational area. They

include national parks organized in the United States and modeled after them in Canada, Australia, and some European countries.

Semi-open national parks of state subordination of the African type. They are created for the protection of little-disturbed ecosystems characterized by richness and species diversity of fauna. They are primarily of scientific, natural, environmental, educational, tourist and recreational importance.

Closed national parks of state subordination are of the Swiss-Swiss type. They are organized on the basis of biogeographically valuable state lands to protect unique natural ecosystems for scientific, environmental and educational purposes. Recreational use of park ecosystems is not allowed. Limited visits to the parks are allowed only along specially laid scientific trails to get acquainted with interesting ecosystems and their components.

Open national parks of the English type of recreational purpose. They are created mainly on private lands that are characterized by certain landscape, aesthetic and recreational values, as well as on the basis of state forest and other protected natural lands. In such parks, natural vegetation is protected, large-scale industrial construction is prohibited, but traditional forms of natural resource use by land users are preserved. These include English parks such as the Peak District, private Dutch and Belgian parks, and most English parks.

At the present stage, nature protection in Ukraine is a matter of political importance, and one of its primary tasks is to create a border of protected areas of various categories, among which national nature parks should occupy a leading place.

According to the definition of the Law of Ukraine "On the Nature Reserve Fund of Ukraine", national nature parks are nature protection, recreational, cultural, educational, research institutions of national importance, which are created for the purpose of preserving, reproducing and efficient use of natural complexes and objects of special nature protection, health, historical, cultural, scientific, educational and aesthetic value.

Multifunctionality is more typical for national parks than for other types of protected areas. They should perform the following functions:

- preservation of valuable natural, historical and cultural complexes and objects;
- creation of conditions for organized tourism, recreation and other types of recreational activities in natural conditions in compliance with the regime of protection of protected natural complexes and objects;
- conducting scientific research on natural complexes and their changes in the conditions of recreational use, developing scientific recommendations on environmental protection and efficient use of natural resources;
- conducting environmental education and training.

There is a complete analogy between the tasks faced by national parks at the international level and those that should be fulfilled by the national parks of Ukraine.

7.2. Selection of the territory for the creation of a national park.

The selection of a national park territory is one of the most important issues. The fulfillment of the main functions assigned to the park on a national and international scale and the management strategy depend on the successful solution of this problem. The selection of a territory is a rather complicated process, during which controversial and difficult questions have to be solved: should a national park be created? What territory should be set aside for it? What should its area be? In solving them, one should take into account different views-ecological, economic, and political.

Let's consider the "ecological stage" of selecting a territory for a national park.

When selecting a territory, many methodological problems are solved, among which the main ones can be identified in general terms: 1) what should the national park protect - unique or typical? 2) how to determine the optimal size of the national park area and its configuration?

Problem 1. Although the idea of a national park has multiple functions and diverse goals, nature conservationists face the problem of determining the priority

goal of creating a national park when selecting a territory. The crux of the matter is whether to give preference to the protection of the typical or the unique. Should a national park be a reserve or a model? These issues can be effectively resolved by combining different approaches.

Biogeographical approach. This approach consists in selecting a territory for the creation of a national park that would cover the most typical natural systems (ecosystems or landscapes) of large natural regions. In this approach, the national park is seen as a benchmark.

The selection of territories from the standpoint of typicality or representativeness poses the following tasks

- development of a system for dividing the surface (landscape or biogeographic shell) and identification of natural complexes that should be represented by at least one typical example;
- assessment of the existing fund of national parks and identification of natural complexes that have not yet been represented;
- filling in the gaps by organizing new national parks.

The selection of protected areas, including national parks, is based on the international parks, at the international level is based on the well-known Udvardy biogeographic land zoning system (Udvardy, 1975). It was developed in the 1970s as the basis for IUCN's work in assessing the representativeness of the existing network of protected areas, organizing information on the presence or absence of protected areas of a certain plan, and justifying the network of biosphere reserves. The Udvardi zoning system operates on a two-level system of taxonomic units: the regional level - biogeographic regions (faunal and floral kingdoms) and the typological level - types of biomes. Biogeographic provinces are located at the intersection of regional typological units.

Although the Udvardi scheme is the most prominent global zoning system for nature conservation, its application is limited. It can be used

- to illustrate and compare the state of play in the field of nature conservation;

- to identify states responsible for the conservation of representative geosystems;
- to identify international partner countries in environmental management responsible for the conservation of geosystems in the same regions.

However, it is difficult to use this scheme for the selection of territories at the national and regional levels. For this purpose, more detailed regional and national schemes of biogeographic or landscape zoning are created. They are used to more or less clearly localize the territory of a "potential" park.

The approach of "*species conservation*" (MacKinnon, Child, Thorsell, 1986) is advisable to apply if the priority tasks of the national park are to preserve unique genetic resources and species of flora and fauna. Based on the results of the analysis of regional flora and fauna, the species that require priority protection are selected. These include:

- species that are essential for the full functioning of ecosystems and on which the productivity of other species depends;
- species that stabilize soil structure and fertility;
- species capable of changing their environment;
- species of special endurance in extreme environmental conditions;
- species used by humans for specific purposes - for pharmacology, etc;
- species of animals needed as models for the study of human behavior or psychology, such as great apes;
- wild relatives of cultivated plants and domestic animals, etc.

The selection of the territory based on the criteria of species availability is advisable for the following reasons:

- it is effective for identifying areas that require urgent protection;
- focusing on the main species of flora and fauna provides reliable indicators for determining the effectiveness of management;
- Emphasizing species conservation in site selection is a political point for public support. The local government and local population will be more likely to

understand the need to protect rare species of animals or plants (especially those that are national relics) than the need to protect the typical vegetation of any biogeographic province;

- the list of plant or animal species in need of protection is the basis for the argumentation of the territory selection in the biogeographic approach.

Problem 2. When deciding on the size and design of protected areas, including national parks, the main provisions of the theory of "biogeographic islands" are used (see Theme 4). The theory of island biogeography, which was developed on the basis of the study of island species of fauna and flora, has led to important conclusions that should be taken into account in the strategy of site selection. According to this theory, small protected areas isolated by modified landscapes behave like islands. After such "isolation," they lose some native species until a new "impoverished" equilibrium is restored. The speed of this process depends on the size and biodiversity of the area and the extent to which it is remote from similar locations.

Establishing a link between the number of species and the area of "isolates" or "island" reserves has given rise to an assumption about the relative area where the fullest possible diversity of species in ecosystems can be preserved. According to it, each tenfold reduction in the area of the territory leads to the loss of 30% of the fauna of the isolate, and it is believed that only 50% of local species of flora and fauna can be preserved on 10% of the territory.

The main conclusions that follow from the theory of biogeographic islands and that are important for the selection of national parks and their management are as follows

- It is desirable that protected areas be as large as possible and contain a surplus of flora and fauna species;
- national parks should have biogeographically appropriate boundaries boundaries;
- it is desirable that the territory of national parks be a single one or create an archipelago of closely spaced reserves;

- protected areas should not be completely isolated from other natural areas and should be connected to them by "ecological corridors".

The theory of "biogeographical islands" has caused a lot of debate, which has not been resolved yet. This raised the question: what should be preferred - one large reserve or an archipelago with a total area? It is difficult to make an unequivocal choice - one large or several small ones. A large one loses narrowly-specific species that live outside the reserves; a small one may not cover some species due to fragmented habitats. Both sizes of reserves have their advantages: a large one is more resistant to external influences, while a small one provides a greater diversity of species.

Landscape approach in the selection of the national park territory. Ukrainian geography has a more effective approach for selecting typical natural objects and systems in the creation of national parks, namely, the landscape approach. This approach makes it possible to distinguish natural systems (geosystems) based on internal interconnections and common genesis. Landscape mapping and physical and geographical zoning organize natural diversity by identifying geosystems of different orders, which can more reasonably define the boundaries of what is typical for nature conservation purposes than a simple combination of properties.

The protection of typical natural complexes is carried out by identifying geosystems of a certain rank and ensuring that each is represented in national parks. Thus, the task is reduced to conducting landscape mapping and allocating typological units of relatively homogeneous types of natural complexes with the highest taxon - the natural zone. However, regional differences in such a system are not very pronounced. The combination of landscape division of the country's territory with physical and geographical zoning makes it possible to divide the largest typological units into regional segments. Their homogeneity is manifested in the natural combination of heterogeneous natural complexes. If all types of natural complexes of all regions should be represented in national parks, then by integrating two comprehensive systems of division of the natural sphere - individual zoning and

typological landscape mapping - it is possible to more reasonably select the territory of a national park.

Solving these problems on a national scale depends on the level of geographic, including landscape, research in different regions. The ecological stage in the selection of the territory ends with a clear definition of the location of the national park, its size and shape, and localization of the boundaries.

7.3. Functional zoning of national parks.

The fulfillment of diverse tasks by national parks and the combination of interests in nature protection, recreation and economic use can be achieved through the separation of different types of activities. The spatial ecologically justified delimitation of natural resource use regimes is the basis for the sustainable existence of natural geosystems and communities that need protection and create conditions for a full-fledged outdoor recreation. Successful fulfillment of the tasks of national parks is possible only if they are adequately zoned.

In general, the functional zone or management zone can be defined as a part of the national park territory that has natural or socio-economic boundaries, where a certain regime of nature protection and nature management is established and maintained in accordance with the goals and objectives of the national park.

The national parks of the world differ significantly in terms of the composition of zones, protection regime, size and other features. The type of national park determines the type of zoning, i.e. the structure of management zones. The main features of this structure may include: a set of zones with the appropriate nature of nature use and protection, their area, and mutual placement. The definition of management zones is so diverse that it is very difficult to unite and characterize them.

The International Union for Conservation of Nature has proposed a zoning scheme based on the experience of North American countries and the gradations of organized forms and regimes of protection adopted there. According to the IUCN recommendations, the following zones are distinguished in the national park:

- *a strict protection zone*, in which not only recreational and economic use is prohibited, but also interference with the course of natural processes;
- *a zone of untouched territories*, where the goal is to preserve nature in its original state; recreational visits are possible subject to certain rules of conduct and the development of scattered non-motorized tourism; any activity is prohibited, except for some work that is necessary for the maintenance and control of visitors (design of tourist trails, observation points, etc.). This zone defines the national park itself, both in terms of content and space;
- *the "managed protection" zone*, where recreational activities are limited as required by management objectives that determine the nature of regulatory measures that support the stage of development, the desired landscape appearance, or ensure the conservation of certain communities and species;
- *tourist and administrative zone*, which includes service, recreation and educational expositions.

Most countries zoning national parks is guided by national legislation that defines the concept of protection regimes and forms of their territorial organization.

For example, in the national parks of the United States and Canada, the following management zones are allocated: lands that have preserved their natural character belong to the natural zone (special protection zone) and the zone of untouched areas; areas with cultural, historical or archaeological monuments - to the historical zone; areas with recreational facilities, roads, service facilities - to the service zone, or tourist-administrative zone; all other lands - private or public, used in agriculture or forestry, are a special use zone.

It is recommended that the tourist-administrative zone should not exceed 5% of the area, while the planning structure of the parks is simplified due to the wide spread of the *zone of untouched territories* (it can reach 90-95%).

The zones of national parks in Europe are extremely diverse, but according to the definitions and regimes of nature protection, there are generally 5 types of zones:

Absolutely protected (zone 1), where any use is prohibited and the regime of complete non-interference in the course of natural processes is maintained (on average, it occupies almost 20% of the park's area).

Zone of regulated recreational use (zone 2), which also prohibits interference with the natural dynamics of landscapes, but allows limited controlled recreational use without settlements (45% of the territory).

A restricted land use zone (zone 3), which must meet the goals of nature protection. Some traditional types of nature use are allowed here, as well as measures to be taken to avoid external negative impact (25% of the territory).

Zone of economic land use (Zone 4), where traditional management is preserved (10% of the territory).

Active management zone (zone 5), which includes farming areas of exceptional conservation value resulting from traditional management (e.g., long-term pastures and hayfields with high biodiversity - up to 0.5% of the area).

In accordance with the Law of Ukraine "On the Nature Reserve Fund of Ukraine", the national nature parks of Ukraine include:

- *a protected area* intended for the protection and restoration of the most valuable natural complexes, the regime of which meets the requirements established for nature reserves;
- *a zone of regulated recreation*, within which short-term recreation and health improvement of the population, inspection of especially picturesque and memorable places are carried out; in this zone it is allowed to arrange and equip tourist routes and ecological trails; here it is prohibited to cut down the forest of the main use, commercial fishing and hunting and other activities that may adversely affect the state of natural complexes and objects of the protected zone;
- *stationary recreation zone*, intended for accommodation of hotels, motels, campsites and other facilities for servicing park visitors;

- *economic zone*, within which economic activities aimed at fulfilling the park's objectives are allowed; it includes settlements, municipal facilities, as well as territories of other landowners and land users that are part of the park, where economic activities are carried out in compliance with general requirements for environmental protection.

In connection with the creation of new national parks in Ukraine, there is a need to know some limits of the ratio of areas of different zones, their optimal proportion. It should be noted that there are no regulations, as there is no need for them. After all, zoning is not a mechanical process, but the result of a multi-component inventory of the territory's resources and the economic use of a larger region.

However, in accordance with the Guidelines for Protected Area Management (IUCN, 1994), in order for a national park to be recognized as a category II protected area, the area of the absolutely protected zone together with the area of intact areas (or their analogues in terms of protection regime) must occupy at least 75% of the national park area. If it is less than that, the national park is internationally classified as a category V protected landscape. In Europe, a relatively small number of countries have national parks of category II. For most national parks in Europe, including Ukraine, a transition period is required to transfer national parks from category V to category II (if this is a management task). During this period of time, there is a gradual reduction in the economic use of landscapes and they become fully protected.

The predominant function of nature reserves and national parks is environmental protection. That is why in many industrialized countries there is a need to organize a category of protected areas mainly for recreational purposes - natural parks. Such parks should meet the growing recreational needs of society. The natural park as a separate category of protected areas was allocated at the First World Congress on National Parks held in Seattle (USA) in 1962.

In recent decades, Ukraine has been actively creating regional landscape parks (RLPs), which are objects of category V - protection of landscapes and species

according to the IUCN. This category has existed in the nature reserve fund since the early 1990s and is multifunctional, as it combines nature protection and recreation, preservation of historical and cultural values, and environmental education. The first regional landscape park in Ukraine, the Dniester Canyon, was established in Ternopil Oblast in 1990.

According to the Law of Ukraine "On the Nature Reserve Fund of Ukraine," regional landscape parks are environmental and recreational institutions of local or regional importance that are created to preserve typical or unique natural complexes and objects in their natural state, as well as to provide conditions for organized recreation.

Regional landscape parks are organized with or without withdrawal of land plots, water and other natural objects from their owners or users. If there is a need to withdraw land plots, water and other natural objects for the needs of the regional landscape park, this is done in accordance with the procedure established by the legislation of Ukraine.

The main *functions* of the regional landscape park are: nature protection (preservation of landscape features and beauty, valuable natural complexes and objects); protection of cultural and historical monuments; recreation (organization of recreation and preservation of high recreational qualities of the environment); educational and cognitive (promotion of environmental education, fostering patriotic attitude to native nature, culture and history).

Regional landscape parks are entrusted with the following tasks:

- preservation of valuable natural, historical and cultural complexes and objects;
- creation of conditions for effective tourism, recreation and other types of recreational activities in natural conditions in compliance with the regime of protection of protected natural complexes and objects;
- promoting environmental education and awareness raising.

The suitability of a certain territory for the creation of an regional landscape park is determined by

its functions and tasks and depends on the availability of natural, cultural and historical values, opportunities for environmental education, various types of recreation, and health improvement on their basis. It is desirable that the territory of the regional landscape park should include relatively unchanged natural complexes (typical or unique for a given region), natural ecotopes with valuable flora and fauna. The territory of the park should be "ecologically clean", i.e. characterized by the absence of significant pollution, not contain (and not be affected by) industries whose activities lead to deterioration and reduction of recreational, health and environmental values. The territory of an regional landscape park should contain objects of cultural and historical heritage, and should be attractive and suitable for various types of recreation.

There are significant differences between national natural parks and regional landscape parks, and their networks complement and deepen each other. National nature park are categories of a higher protection rank, they are objects of national importance, have a stricter protection regime and play a greater role in biodiversity conservation. national nature park are also scientific research institutions. Unlike national nature park, as a rule, regional landscape parks are organized without seizing land plots from their owners or users. In addition, regional landscape park are not objects of state, as

National nature park, but rather objects of local subordination and funding. Regional authorities approve a plan for the organization of the territory, protection and further operation of the park.

Unlike national nature parks, regional landscape parks can be created near large cities. It is in these conditions that the social functions of regional landscape park are most fully manifested, in particular, the possibility of meeting the needs of the urban population in places of recreation, the possibility of organizing cognitive and educational forms of recreation, etc. regional landscape park are a promising

organizational form of protection of natural areas in regions with a high degree of economic development of landscapes.

To organize and regulate the use of multifunctional territories, they are zoned. The law clearly defines the functional zones of national nature park and states that zoning of regional landscape park can be carried out taking into account the requirements established for national nature park.

In a national nature park, the territories of the most valuable natural complexes are included in the protected zone, where the reserve regime is established. A regional landscape park, on the other hand, has a zone that includes the most valuable natural areas of the park. It is often called the "protected zone". Often, this zone includes territories of other nature reserve categories: nature reserves, natural monuments, and protected tracts. It is subject to the regime provided for the respective categories. Special ecological excursions are possible within the protected area, although mass excursions and recreation are not advisable. The protected area covers 10-25% of the area of the regional landscape park.

The zone of regulated recreation (excursion zone) is the largest (50-70% of the parks' area), covering routes for regular excursions and ecological tourism. The main requirement for the regime is to preserve the existing landscape and prohibit the construction of large industrial facilities.

The stationary recreation zone is small in area (5-10% of the park's territory) and is intended to accommodate visitor service facilities such as hotels, motels, campsites, etc.

The economic zone includes the territories of settlements that are part of the park's boundaries. Traditional farming is conducted here in compliance with environmental protection requirements, and natural education and environmental awareness work is carried out among the population.

Any activity that leads or may lead to deterioration of the environment and reduction of the recreational value of the park's territory is prohibited in the territories of the regulated recreation, stationary recreation and economic zones.

7.4. Features of the development of regional landscape parks in the world and Ukraine.

Institutions corresponding to regional landscape parks in the world are mostly called nature parks (Russia, Germany, Austria, etc.) or regional parks (Great Britain, Latvia), regional nature parks (France, Italy), and sometimes landscape parks (Poland). In Spain, for example, natural and landscape parks exist as separate categories. At the same time, Spanish landscape parks do not belong to the V (landscape protection area), but to the IV (area for the conservation of species and their habitats) category according to the IUCN. A feature of such parks in some countries is the creation of an additional protective strip around the park. However, landscape parks themselves can surround national parks and biosphere reserves, forming their buffer zone.

It should be noted that category V (landscape protection areas), according to the IUCN classification, to which Ukraine's regional landscape parks belong, is a much broader concept than a park created at the local level. This includes numerous sites in different countries that meet these criteria, such as an Area of Outstanding Natural Beauty or Special Area in the UK, an Ecological Reserve in Canada, and many others.

Also, some national parks and other protected areas in different countries are classified by IUCN as Category V. Although national parks occupy the largest areas in the world, the largest part of protected areas in Europe (56%) is occupied by Category V sites. The leaders here are mostly large European countries: Germany, France, Great Britain, and Spain.

International institutions pay considerable attention to the development of the network of Category V sites, and IUCN has developed a special program to promote their development. In particular, it emphasizes: "previously, protected areas were created against people, now they should be for their sake, for their well-being, and created with their participation." The action plan adopted at the meeting of the World Commission on Protected Areas noted that parks "can be a factor in improving the

situation in conflict zones, binding the actions of both sides to conservation responsibilities in important areas, providing an opportunity for cooperation under international control."

The development of category five sites in Ukraine, including the regional landscape parks, confirms that Ukraine has taken into account European trends in nature conservation. The parks corresponding to the regional landscape parks began to develop rapidly in Europe since the late 1960s.

Parks in the European Union have a well-developed service infrastructure: campsites, parking lots, roads, equipped trails, etc. Many parks have websites. A good example is the information centers on the territory of regional parks. Here you can get booklets with information about the nature of the park, routes and interesting places, and prices. On special areas of the information center, visitors can examine animals living in the park, see typical plants planted in the park with their names, buy local crafts, etc. For the most part, visits to the parks are free. Profit is generated by the use of services. The parks are also aimed at growing organic food, preserving traditional life, and folk crafts.

Italy is the leader in the number of regional parks, with 122 regional nature parks.

Germany stands out in terms of the territory occupied by local parks in the country. German nature parks (Naturparke) are much larger than other categories (in particular, national parks are 9 times larger), and they account for 63% of the nature reserve fund. In addition, parks have a very high percentage of the country's territory: they cover almost 19% of Germany. These are large territories that, according to the law, in addition to supporting environmentally sound recreation that does not harm the landscape, fulfill the tasks of protecting nature and the cultural landscape, and environmental education.

Regional parks also exist on other continents. Canada, for example, has a wide variety of parks, with more than 2,000 parks that correspond to different IUCN categories. The first parks were created in the late nineteenth century on the site of recreational areas. In general, the country's environmental protection system consists

of the sum of these systems in the provinces (states), and each province has its own strategy for the development of protected areas and its own rather different legislation on protected areas. There are up to 75 categories of protected areas and objects, and the names, number, and even the understanding of a category with the same name vary significantly from province to province. The closest thing to European nature parks are Canadian territorial parks.

The formation of the network of RLPs in Ukraine is proceeding rapidly: as of January 1, 2011, there were 58 of them with a total area of 648.1 thousand hectares, and the share of RLPs in the nature reserve fund is 17.3%.

In 1990 (even before the official approval of this category of protected areas), the first RLP "Dniester Canyon" was created in Ternopil region on an area of 169.2 thousand hectares. Currently, there are 36 RLPs in the country, and their number and area are growing every year. The number and area of regional landscape parks within the administrative units of Ukraine is shown in Table 11.1 (according to official data of the Ministry of Ecology and Natural Resources of Ukraine).

The RLPs represent the main natural regions of Ukraine. The parks contain species listed in the Red Data Book of Ukraine and communities from the Green Data Book, and on the other hand, historical monuments and other unique objects. The biotopic diversity of the parks determines the richness and diversity of fauna and flora.

Ukraine's network of RLPs will be developed both in the direction of increasing their number and intensifying their functioning. Unfortunately, most of the parks have not yet started their work due to objective economic factors and lack of funding. Ukraine has not exhausted the potential for creating RLPs and there is a great need for these facilities, as the country is quite densely populated, with a high degree of plowing and low forest cover.

The regions with high recreational potential are the Carpathians, Polissia, and the coastal strip of the Azov and Black Seas. It is necessary to create new RLPs in the central regions of Ukraine, as well as in the eastern regions, which are highly urbanized. In RLPs, it is possible to develop ecotourism, organize sport hunting and

fishing, implement various environmental education activities, grow environmentally friendly products, develop folk crafts, etc. Parks should be created with the consent and for the benefit of the local population, provide new jobs and contribute to the economic development of the region.

Table 7.4- Number and area of regional landscape parks within administrative units of Ukraine

Vinnitsia		
Volyn	—	—
Dnipropetrovska		
Donetsk		
Zhytomyr	—	—
Transcarpathian		
Zaporizhzhya	—	—
Ivano-Frankivsk		
Kyiv		
Kirovograd		
Autonomous Republic of Crimea		
Luhansk		
Lviv		
Mykolaiv		
Odesa		
Poltava		
Rivne		
Sumy		
Ternopil		
Kharkiv		
Kherson	—	—
Khmelnysky		
Cherkasy* region		
Chernivtsi		
Chernihiv		
M. Kyiv		
M. Sevastopol	—	—
Total:		

Notes:

* - Trakhtemyriv RLP - 5148.7 hectares in Kyiv and 2297.3 hectares in Cherkasy regions.

The actual area of the RLP is 647950.1 hectares (since the 137.7 hectares of Lysa Hora RLP is part of the Holosiivskyi RLP).

The fact that parks occupy significant areas in developed countries, have been successfully operating for decades, and their number is increasing annually, testifies to the effectiveness and vitality of this category. In general, regional landscape parks fit well into the economic system, as they take into account the interests of the region, in particular the land user and the local population. Therefore, the integration of regional landscape parks into the modern economy, into the renewed socio-economic system of Ukraine will meet the concept of sustainable development, ensuring the vital needs of the present generation without threatening future generations.

Nature reserves are one of the most widespread categories of nature reserve fund in Ukraine. Nature reserves are declared as natural areas (water areas) for the purpose of preserving and restoring natural complexes or their individual components. The purpose of the reserves is to preserve and restore natural complexes, species or natural resources, and to maintain the overall ecological balance. Customers can be of national or local importance.

Nationally important reserves are those areas with natural complexes and objects whose conservation is of national importance, namely species listed in the Red Data Book of Ukraine, as well as global and European "red" lists; areas with plant communities listed in the Green Data Book of Ukraine, wetlands of international importance; areas of exceptional economic value (water protection, soil protection, forestry, etc.); areas that ensure protection of the gene pool of valuable medicinal plants and reserves of their raw materials, unique caves, balneological resources, etc.

Reserves of local importance are declared in areas where natural complexes and natural resources are mainly of regional or local importance: species of plants and animals subject to special protection in the territories of regions and the

Autonomous Republic of Crimea, plant communities typical and rare for the regions, etc.

Depending on the origin, other features of natural complexes and objects declared as reserves, the purpose and the required protection regime, reserves are divided into types with a specific purpose:

- *landscape* - preservation or restoration of particularly valuable natural complexes (natural landscapes);
- *forest* - preservation or restoration of particularly valuable typical and unique forest plantations for Ukraine and its individual regions, which have environmental, scientific or applied value;
- *botanical* - conservation and restoration of scientifically, economically and culturally valuable, as well as rare and endangered plant species and their communities;
- *general zoological* - conservation and restoration of valuable in scientific, economic and cultural terms, as well as rare and endangered species of animals (subspecies, populations);
- *ornithological* - conservation and restoration of bird species (subspecies, populations) that are valuable in scientific, economic and cultural terms, as well as rare and endangered species, creating favorable conditions for birds during nesting, molting and wintering, and migration;
- *entomological* - conservation and restoration of scientifically, economically and culturally valuable, as well as rare and endangered insect species;
- *ichthyological* - conservation and restoration of scientifically and economically valuable, rare and endangered species, fish (subspecies, populations) in their spawning, feeding and wintering areas;
- *hydrological* - preservation and restoration of valuable water bodies and natural complexes (marsh, lake, river, sea);
- *general geological* - preservation of valuable objects and complexes of inanimate nature (geological outcrops, crystalline rock outcrops, mineral and

other mineral deposits, remarkable landforms and related landscape elements);

- *paleontological* - preservation of places of finds and accumulations of remains or fossilized specimens of fossil flora and fauna of special scientific importance;
- *karst and speleological* - preservation of scientifically and recreationally valuable caves, surface karst and speleological formations of cave flora and fauna.

The assignment of a reserve to one of the above types indicates the main object of protection for which the territory was declared a reserve. This can be the landscape as a whole, or entomofauna, ichthyofauna, a single species, etc. Obviously, to preserve a part of the natural complex, it is necessary to preserve the entire complex.

The declaration of nature reserves is carried out without withdrawal of land plots, water and other natural objects from their owners or users, who are responsible for ensuring the protection and preservation of the territory.

Hunting and activities contrary to the goals and objectives set forth in the reserve's regulations are restricted or prohibited.

Economic, scientific and other activities that do not contradict the goals and objectives of the reserve shall be carried out in compliance with the general requirements for environmental protection.

Owners or users of land plots, water and other natural objects declared as a nature reserve undertake to ensure the regime of their protection and preservation. In this regard, there are certain problems with the protection of nature reserves.

Often the territory of one reserve is under the jurisdiction of several land users. The lands of some reserves (or parts of them) have no permanent users at all, and then the reserve is under the jurisdiction of local councils (city, town, village). Often, fulfillment of the tasks assigned to the reserve requires not only passive protection of the territory, but also the implementation of specific practical environmental

activities. Since these activities require appropriate specialists, the coordination and conduct of scientific research in reserves is entrusted to employees of nature reserves located near the reserve.

It should be emphasized that nature reserves play an important role in the current network of protected areas in Ukraine. Due to their great diversity, number and location in regions with different natural, social and economic conditions, they are actually a support system for nature reserves and national parks, which increases the effect of the latter.

The Nature Reserve Fund of Ukraine (as of January 1, 2011) includes 2,922 reserves, of which 306 are of national and 2,616 are of local importance.

The term "natural monument" was first coined by O. Humbolt in the eighteenth century. During his trip (1799-1804) to South America, he saw giant trees of the mimosa family in Venezuela. In his travel report, he expressed the idea of the need to preserve such objects as "relics of nature" or "natural monuments" and introduced this concept into the environmental Reference.

A natural monument as a category of protected objects is used in many countries.

Certain unique natural formations that have special environmental, scientific, aesthetic, cognitive and cultural significance are declared as natural monuments in order to preserve them in their natural state.

Depending on the origin and other features of natural complexes and objects declared as natural monuments, the purpose and required protection regime, natural monuments are of the following types:

- botanical - the object of conservation are unique populations of rare, relict, endangered, endemic plant species and their communities listed in the Red and Green Books of Ukraine, relevant international documents, samples of forest and artificial stands valuable for science and practice, individual trees, biogroups, groves of special importance, genetic and breeding areas, elements of park facilities;

- geological - the objects of conservation are certain forms of relief, tops of prominent mountains and hills, karst and ancient forms of relief with outcrops of granites, sandstones, shales, limestones, geological and geographical polygons, remains, caves, grottoes, deposit standards, rocks, glacial boulders, old quarries, locations of paleontological objects;
- hydrological - the objects of conservation are the sources of rivers, floodplains, marshes, lakes, ponds, waterfalls, thermal and mineral springs, mud deposits;
- zoological - the object of conservation is the places of stations, hibernations, colonies, populations of rare, endangered, relict, endemic species listed in the Red Book of Ukraine and relevant international documents;
- complex - the object of conservation is picturesque areas, nature's standards, unique natural landscapes with valuable biodiversity, mountain elements, cliffs, gorges, canyons, caves, valleys, moraine and boulder ridges.
- Natural monuments that are unique or typical for the state are declared natural monuments of national importance. A natural object that is unique or typical for a certain region is declared a natural monument of local significance.

Declaration of natural monuments is carried out without withdrawal of land plots, water and other natural objects from their owners or users.

Any activity that threatens the preservation of natural monuments or leads to degradation or change of their original state is prohibited on the territory of natural monuments.

Owners or users of land plots, water and other natural objects declared as natural monuments undertake to ensure their protection and preservation.

Ukrainian legislation does not set any limits on the area that can be covered by territories and objects of this category. However, in practice, natural monuments in Ukraine are mostly small and truly unique territories or unique objects, for which often no area is defined at all (for example, for individual trees or springs). About

70% of natural monuments of national significance have an area of 10 to 100 hectares, most often several tens of hectares. About 10% of natural monuments have an area of less than 1 hectare.

As of January 1, 2011, there are 3,245 natural monuments in Ukraine, of which 132 are of national importance and 3,113 are of local importance.

Protected tracts, along with natural monuments and national parks, are one of the oldest forms of natural object protection that is most widely used in European countries.

Forest, steppe, marsh and other isolated holistic landscapes of important scientific, environmental and aesthetic significance are declared as protected tracts in order to preserve them in their natural state.

The features of protected tracts are defined in the name of this category. A tract is a remarkable (outstanding) area with clearly defined natural boundaries (e.g., a steppe gully, a water body, etc.); figuratively speaking, these are "micro-reserves." A strict nature reserve regime should be established on their territory - any activity that disrupts the natural processes taking place in natural complexes is prohibited.

The functional purpose of protected tracts is to preserve holistic landscapes in their natural state. Similar functions are performed by nature reserves, protected areas of biosphere reserves and national nature parks. However, unlike these categories of protected areas, which are protected areas of national importance, protected tracts are territories of local importance.

The declaration of protected tracts is carried out without the seizure of land, water and other natural objects from their owners or users. In other words, no environmental protection institutions are established on the basis of these territories, and no special administrations are created to manage them.

On the territory of protected tracts, any activity that disrupts the natural processes occurring in the natural complexes included in their composition is prohibited in accordance with the requirements established for nature reserves.

Owners or users of land plots, water and other natural objects declared as protected tracts shall undertake to ensure their protection and preservation.

Specialists of nature reserves located in the region should coordinate and conduct scientific research within protected tracts, develop methodological recommendations and some other activities.

The Ukrainian NRF includes 803 protected tracts (as of January 1, 2011).

The creation of different categories of protected areas and objects is one of the most important means of preserving biodiversity in the face of environmental degradation and increased economic development of Ukraine's natural resources.

Control questions and tasks

1. Explain the prerequisites for the formation of the concept of national parks.
2. Specify the main features of national parks according to the definition of IUCN.
3. Describe the main types of national parks.
4. List and explain the main tasks and functions of national parks.
5. Explain the main approaches used to address the issue of choosing a territory for the creation of a national park.
6. What criteria should be considered when choosing a national park?
7. Explain the purpose of the Udvardi biogeographic zoning scheme.
8. For what purposes is the functional zoning of the territory of national parks?
9. Specify the difference between the functional zoning of the territory of national natural parks of Ukraine and national parks on the recommendations of the IUCN.
10. Explain the reasons why a relatively small number of European countries have national parks of category II.
11. Define the concept of "regional landscape park" and outline the main functions and tasks of this category in the structure of the nature reserve fund of Ukraine.

12. Specify the criteria used for the inclusion of a particular territory in the regional landscape park.
13. Describe the differences between such categories of NRF as a national nature park and a regional landscape park.
14. Specify the main functional areas characteristic of the territory of the regional landscape park.
15. Describe the features of the development of regional landscape parks in the world in comparison with national practice.
16. Outline the prospects for the development of a national network of regional landscape parks.
17. Specify the main types of reserves and their purpose.
18. What is the importance of the reserves in the modern network of nature reserve fund of Ukraine?
19. Define the concept of "natural monument" and indicate their main types.
20. Describe the features of the "protected tract" as a category of nature reserve fund of Ukraine.

Lecture 8.

Artificially created territories and objects of the nature reserve fund of Ukraine.

Outline

- 8.1 Botanical gardens
- 8.2 Dendrological parks
- 8.3 Zoological parks
- 8.4 Parks-monuments of landscape art

Botanical gardens, dendrological parks, zoological parks and parks-monuments of landscape art are among the most widespread categories of the nature reserve fund of Ukraine, reflecting the entire palette of both typical and unique natural objects.

8.1 Botanical gardens

The first botanical gardens on the territory of Ukraine began to be organized in the early nineteenth century. In 1804, a botanical garden was founded at Kharkiv University, in 1806 - at the Higher Volyn Gymnasium in Kremenets, and in 1812 - the Nikitsky Botanical Garden in the Crimea. This category was added to the nature reserve fund in 1983.

Botanical gardens are created for the purpose of preservation, study, acclimatization, reproduction in specially created conditions and effective economic use of rare and typical species of local and world flora by creating, replenishing and preserving botanical collections, conducting scientific, training and educational work.

Botanical gardens may be of national or local importance.

Botanical gardens of national importance are scientific and research environmental protection institutions, while botanical gardens of local importance may be granted the status of a scientific and research institution in accordance with the established procedure.

The plots of land and water space with all natural resources shall be withdrawn from economic use and provided to botanical gardens in accordance with the procedure established by the legislation of Ukraine.

Botanical gardens can be either separate legal entities or part of a research institution or educational institution. To manage them, special administrations are created, which include scientific and technical staff, administrative and economic staff and security service, or they are serviced by

the staff of the body under whose jurisdiction they are located.

Structure of the territory and basic requirements for the regime of botanical gardens

It is prohibited to carry out any activity on the territory of botanical gardens that is not related to the fulfillment of their tasks and threatens the preservation of flora collections.

Within botanical gardens, in order to ensure the necessary regime of protection and efficient use, the following zones may be allocated:

✓ *exposition* - its visit is allowed in accordance with the procedure established by the administration of the botanical garden;

✓ *scientific* - the zone includes collections, experimental plots, etc.; only employees of the botanical garden in connection with their official duties, as well as specialists of other institutions with the permission of the garden administration have the right to visit it;

✓ *protected* - visiting it is prohibited, except when it is related to scientific observations; administrative and economic.

Zoning of the territory of botanical gardens is carried out in accordance with the Regulations on the botanical garden and the Project of organization of the territory of the botanical garden, which is developed by specialized scientific and design institutions and approved by the body under whose jurisdiction the botanical garden is located, in agreement with: the central executive body in the field of environmental protection - for botanical gardens

o Educational and upbringing function of botanical gardens The existing experience of various activities of botanical gardens shows that today it can affect almost all spheres of society. Every day the functions of botanical gardens are expanding. The urgent requirements of the time are active exchange of experience, study of botanical gardens' traditions, and broad discussion of the prospects for the development of various areas of interaction between gardens and society.

The International Botanical Garden Council for Plant Protection (BGCI) proposed the following definition of a botanical garden: "botanical gardens are organizations that have documented collections of living plants and use them for scientific research, biodiversity conservation, demonstration and educational purposes."

Today, there are more than 2,200 botanical gardens in 153 countries,

with collections ranging from hundreds to tens of thousands of taxa.

Today, educational tasks are the most important functions of all botanical gardens in the world, regardless of their state or public status. Moreover, educational activities provide a lot of budgetary funds in such major botanical gardens of the world as the Royal Gardens in Kew (England), the New York Botanical Garden in the Bronx, the Chicago Botanical Garden, the Missouri Botanical Garden (all in the United States), the Royal Botanical Garden in Brussels (Belgium), and others.

Naturally, this activity is the main one for botanical gardens that are part of universities and other professional educational institutions all over the world. Of course, botanical gardens around the world also carry out extensive scientific work.

They preserve and study many rare and endangered plant species brought from all over the world. Botanical gardens are of great importance in the general biological, ecological and public education. They are visited by many hundreds of millions of people every year, and in many gardens around the world, visitors' access to park ensembles and open-air expositions is free or discounted for various categories of visitors (especially schoolchildren and students). Even with such unorganized visits to botanical gardens, visitors have the opportunity to replenish their knowledge, even with regard to the most common plants of the local flora or widely cultivated in the region, since in botanical gardens plants are well labeled, they are scientifically named correctly, and for exotic plants their homeland is often indicated.

Botanical gardens also conduct special excursions to greenhouse complexes, to specialized collections of useful plants: medicinal, spicy-aromatic, cultivated cereals, legumes, vegetables, and floral and decorative plants.

Many botanical gardens around the world have expositions illustrating this or that system of flowering plants, the idea of families of flowering plants in one or another systematized form. There are also often geographically organized expositions where plants from different regions of the Earth are collected in separate areas (both in the open field and in greenhouse complexes).

Botanical gardens are often monuments of human culture. These include the general park ensemble, buildings of certain eras, and magnificent small architectural forms such as gazebos, pavilions, bridges, arches, trellises with

climbing plants. These are also greenhouse complexes, often with magnificent individual structures - large greenhouses, artificial ponds, both open and under glass. Botanical gardens decorated with sculptural compositions, as well as exemplary structures of garden art itself, such as Japanese and Chinese gardens, European park ensembles of various styles, magnificent lawns, flower beds, and rabatki, are quite common.

Botanical gardens often serve as memorials, being in some part monuments to their founders, often very prominent public and scientific figures.

Botanical gardens are of great importance for special education. In higher education institutions, they are, first of all, a base for providing visualization of botanical and environmental courses.

The most frequent forms of educational activity in the scientific work of botanical gardens are the forms of training of students who perform term papers and diploma or bachelor's and master's theses in botanical gardens within the framework of scientific topics or projects under the guidance of botanical garden researchers.

As of January 1, 2011, there are 28 botanical gardens in Ukraine, 18 of which are of national importance and 10 of local importance.

Dendrological parks of national importance are scientific and research environmental protection institutions. Dendrological parks of local significance may be granted the status of a scientific research institution in accordance with the established procedure.

Land plots with all natural resources shall be withdrawn from economic use and provided to dendrological parks in accordance with the procedure established by the legislation of Ukraine.

The main tasks, areas of research work in dendrological parks, as well as the organizational and legal framework for their functioning are the same as for botanical gardens. The main difference is that the purpose of creating dendrological parks is to study and preserve species of trees and shrubs.

To manage arboretums of national importance, special administrations are created, with appropriate specialists, security and economic services. In fact, only the Trostianets, Sofiyivka, Oleksandriia, Veseli Bokovenky, Syretskiyi and other arboretums in Ukraine are managed by various enterprises, institutions and organizations. Most of the dendrological parks were founded in 1950-1970, while others were created on the basis of old parks established in the XVIII-XIX centuries. Modern parks differ from old parks classified as parks-monuments of landscape art mainly in that they are research institutions or serve as a base for conducting research on forestry, dendrology and park construction for forestry enterprises, higher education institutions, etc. As of January 1, 2011, there are 54 dendrological parks in Ukraine, 19 of which are of national importance and 35 of local importance.

Zoological parks of national importance are nature conservation, cultural, educational and research institutions.

In accordance with the procedure established by the Law of Ukraine "On the Nature Reserve Fund of Ukraine" and other acts of Ukrainian legislation, lands with all natural resources are withdrawn from economic use and allocated to zoological parks.

The main tasks of the Zoological Park are:

formation and maintenance of animal collections; preservation and reproduction of animals (primarily rare and endangered species) of domestic and foreign fauna of scientific, economic, cultural and educational importance in artificial conditions; demonstration of rare, exotic and local species to the public; conducting research; keeping primary records of cadastral data; keeping state records of animal collections; study, generalization and implementation of domestic and foreign experience in keeping animals in captivity; conducting scientific and educational work in the field of ecology, zoology and nature protection, hunting; dissemination of environmental and educational knowledge that contributes to the formation of the environmental outlook of the population in the field of ecology; creation of subsidiary farms, nurseries,

laboratories, workshops, youth activity centers, permanent and temporary (stationary and mobile) animal exhibitions, pet shops and other facilities; implementation of various forms of cultural services, creation of conditions for full recreation and leisure of the population, if it does not threaten the preservation of favorable conditions for the life of animals.

On the territory of zoological parks, it is prohibited to carry out activities that are not related to the fulfillment of their tasks and threaten the preservation of favorable conditions for the life of animals in these parks.

In order to ensure the fulfillment of the tasks assigned to them, the following zones are allocated on the territory of zoological parks:

Exposition - intended for stationary keeping of animals and their use for cultural and educational purposes;

scientific - within its boundaries scientific and research work is carried out; visiting the zone is allowed in accordance with the procedure established by the park administration;

recreational - is intended for organization of recreation and servicing of the park visitors;

economic zone - a zone where auxiliary economic facilities are located. The project of organization of the territory of a zoological park shall be developed by specialized scientific and design organizations and approved by the body under which the zoological park is subordinated, in agreement with: the central executive body in the field of environmental protection - for zoological parks of national importance; bodies of the central executive body in the field of environmental protection on the ground, and on the territory of the Autonomous Republic of Crimea - the executive body of the Autonomous Republic of Crimea. Zoological parks may organize mobile exhibitions of animals and have subsidiary farms established to provide animals with food. As of January 1, 2011, there are 12 zoological parks in Ukraine, 7 of which are of

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carried out with or without withdrawal of land plots, water and other natural objects from their owners or users in accordance with the established procedure.

The main purpose of parks-monuments of landscape art is to preserve, maintain and restore park landscape compositions, as well as to conduct excursions and public recreation. Scientific research can also be conducted on the territory of parks-monuments of landscape art. They combine environmental protection functions with historical, cultural and aesthetic functions.

A significant part of the parks-monuments of landscape art in Ukraine are old parks created in the XVII - XIX centuries. The parks were laid out around large estates owned by individual wealthy families. They were created using the natural features of the landscapes, which were enriched with artificial plantings, ponds, architectural structures, and occupied large areas. Nowadays, ancient parks-monuments of landscape art are used as places of mass recreation or as territories of health and medical institutions.

Today, a special administration has been created to manage only three outstanding parks located in the AR of Crimea - Massandra, Miskhorsky and Livadia. Other parks are managed by enterprises, institutions and organizations under whose jurisdiction and on whose lands these parks are located.

As of January 1, 2011, there are 547 parks-monuments of landscape art in Ukraine, of which 88 are of national importance and 459 are of local importance.

Control questions and tasks

1. Describe the purpose of creating and specify the main tasks of botanical night gardens.
2. Describe the structure of the territory and the basic requirements for the regime of botanical gardens.

3. What is the educational function of botanical gardens?
4. Define the concept of "dendrological park" and describe the status of this category of nature reserve fund.
5. Specify the basic requirements for the regime of dendrological parks.
6. Formulate the tasks of zoological parks in the system of nature reserve fund.
7. Explain the structure of the territory and the basic requirements for the regime of zoological parks.
8. Formulate the main purpose and reveal the purpose of parks-monuments of landscape art.
9. Specify the types of activities allowed on the territory of parks-monuments of landscape art.
10. Which of the artificially created categories of nature reserve fund is the most common in Ukraine.

Tasks for self-study

Using specific case studies, prepare a report on the role of artificially created territories and objects of the nature reserve fund in scientific, cultural, recreational, educational and upbringing activities.