

Дніпровський національний університет імені Олеся Гончара



Ecology in Focus: An English Guide for Ecologists

Осадча О.В.

Дніпро

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Міністерство освіти і науки України
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Для здобувачів вищої освіти за першим (бакалаврським) рівнем біолого-екологічного факультету Дніпровського національного університету імені Олеся Гончара, які навчаються за спеціальностями 101 Екологія, 014.05 Біологія та здоров'я людини, 091 Біологія.

Посібник містить тексти професійного спрямування та різноманітні справи до них. Тематика текстів охоплює різні аспекти охорони оточуючого середовища та актуальні проблеми сучасної науки й можуть використовуватися як основа для монологічного та діалогічного мовлення у процесі професійної комунікації.

Посібник стане в нагоді для самостійної роботи студентів у процесі вивчення курсу «Іноземна мова (англійська)» та під час аудиторних занять.

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ПЕРЕДМОВА

Навчальний посібник “Ecology in Focus: An English Guide for Ecologists” призначається для самостійної та аудиторної роботи здобувачів вищої освіти, які навчаються за спеціальностями 101 Екологія, 014.05 Біологія та здоров’я людини, 091 Біологія.. Матеріали посібника можуть використовуватися під час підготовки до практичних занять з англійської мови.

Посібник містить тексти професійної спрямованості, які супроводжуються тренувальними та комунікативними вправами. Завдання, в першу чергу, базуються на текстах, їх читанні та вилученні з них інформації щодо змісту, структури речень, тлумачення значення слів та словосполучень, Такий підхід сприяє засвоєнню лексичних одиниць, граматичних структур та словотворчих моделей, розвитку основних мовленнєвих умінь.

Опрацьовувати тему пропонуємо у такий спосіб:

1. Прочитайте текст з метою розуміння його основного змісту.
2. Знайдіть у тексті інформацію, що можна використати для підготовки його стислого переказу.
3. Не забувайте про словникову роботу. Краще виписувати не окремі слова, а словосполучення, їх переклад та транскрипцію.
4. Читайте текст вголос, звертаючи увагу на логічні паузи та інтонацію.
5. Виконуючи завдання на пошук слова за визначенням, дайте точний переклад визначення українською мовою. Зверніть увагу, що частини мови повинні співпадати.

Пам’ятайте, що у глибинній структурі української та англійської мови є багато спільного. Вдумлива, систематична та сумлінна праця у вивченні англійської мови неодмінно призведуть до його успішного засвоєння.

Бажаємо успіхів! Practice makes perfect.

Укладач

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Unit 1. Ecology as a Science

Ecology is the study of the relationship of plants and animals with their physical and biological environment. The *physical environment* includes light and heat or solar radiation, moisture, wind, oxygen, carbon dioxide, nutrients in soil, water and atmosphere. The *biological environment* includes organisms of the same kind as well as other plants and animals.

The term “ecology” was introduced by the German biologist Ernst Heinrich Haeckel in 1866. It is derived from the Greek “oikos” (“household”), having the same root as “economics”. So, the term means the study of the economy of nature. Modern ecology, in part, began with Charles Darwin. In developing his theory of evolution, Darwin *stressed the adaptation* of organisms to their environment *through natural selection*.

Ecology is usually considered a branch of biology, the general science that studies living organisms. Organisms can be studied at many different levels, from proteins and nucleic acids (in biochemistry and molecular biology), to cells (in cellular biology), to individuals (in botany and zoology), and finally at the level of populations, communities, and ecosystems, to the biosphere as a whole.

Disciplines of ecology

Ecology is a broad discipline which has many sub-disciplines:

- * *Ecophysiology* examines how the physiological functions of organisms influence their interaction with the environment, both biotic and abiotic.
- * *Behavioral ecology* examines the role of behaviour in animal adaptation to its environment.
- * *Population ecology* studies the dynamics of populations of a single species.
- * *Community ecology* focuses on the interactions between species within an ecological community.
- * *Ecosystem ecology* studies the flow of energy and matter through the biotic and abiotic components of ecosystems.
- * *Systems ecology* focuses on the study, development, and organization of ecological systems from a holistic perspective.

- * *Landscape ecology* examines processes and relationship across multiple ecosystems or very large geographic areas.
- * *Evolutionary ecology* studies the evolutionary histories of species and their interactions.
- * *Political ecology* connects politics and economy to problems of environmental control and ecological change.

Levels of ecological organization

- * **Biosphere:** "What role does concentration of atmospheric carbon dioxide play in the regulation of global temperature?"
- * **Region:** "How has geological history influenced regional diversity within certain groups of organisms?"
- * **Landscape:** "How do vegetated corridors affect the rate of movement by mammals among isolated fragments?"
- * **Ecosystem:** "How does fire affect nutrient availability in grassland ecosystems?"
- * **Community:** "How does disturbance influence the number of mammal species in African grasslands?"
- * **Interactions:** "What evolutionary benefit do zebras gain by allowing birds to remove parasites?"
- * **Population:** "What factors control zebra populations?"
- * **Individual:** "How do zebras regulate internal water balance?"

Because of the different approaches to studying organisms in their environment, ecology is related to such sciences as climatology, hydrology, physics, chemistry, geology, animal behavior and mathematics. Ecology plays a very important role in the modern world because it helps to understand the processes of the nature better and *save our planet from destruction*.

Tasks to Unit 1

Task 1. *Transcribe and translate the following words and word combinations.*

Environment, moisture, proteins, nucleic acids, destruction, diversity, affect, matter, biosphere, multiple, nutrient availability.

Task 2. Give the Ukrainian equivalents to the words and word combinations.

To consider, interaction, to examine behavior, flow of energy and matter, isolated fragments, approach, to gain benefits, to remove parasites, to allow.

Task 3. Fill in the right prepositions.

to save ... destruction

to focus .. the interaction

relationship ... the environment

to study ... different levels

organisms ... the same kind

because ... the different approaches

as well ... other plants

processes ... the nature

adaptation ... the environment

... a whole

Task 4. Complete the sentences and translate them.

The physical environment includes ...

The biological environment includes ...

Darwin stressed...

Organisms can be studied at many different levels, such as ...

Ecophysiology examines ...

Community ecology focuses on ...

Task 5. Make the sentences Passive.

1. Darwin stressed the adaptation of organisms to their environment.
2. We can study organisms at different levels.
3. Ecophysiology examines the physiological functions of organisms.
4. Behavioral ecology examines the role of behavior.
5. Evolutionary ecology studies the evolutionary histories of species.
6. We can connect economic and ecological problems.

Unit 2. The Main Concepts of Ecology

Biosphere. The outer layer of the planet Earth can be divided into several parts: the hydrosphere (or sphere of water), the lithosphere (or sphere of soils and rocks), and the *atmosphere* (or sphere of the air). The *biosphere* (or sphere of life), sometimes described as "the fourth envelope," is all living matter on the planet. It reaches well into the other three spheres, although there are no permanent

inhabitants of the atmosphere. Relative to the volume of the Earth, the biosphere is only the very thin surface layer that extends from 11,000 meters below sea level to 15,000 meters above. The biosphere contains great quantities of elements such as *carbon, nitrogen, hydrogen and oxygen*. Other elements, such as *phosphorus, calcium, and potassium*, are also essential to life, yet are present in smaller amounts. At the ecosystem and biosphere levels, there is a continual recycling of all these elements, which change between the mineral and organic states.

The ecosystem concept. A *central principle* of ecology is that each living organism has a continual relationship with every other element that makes up its environment. All interacting living organisms and their non-living environment in an area form an ecosystem. Studies of ecosystems usually focus on the *movement of energy and matter* through the system.

Almost all ecosystems run on energy received from the sun by primary producers *via photosynthesis*. This energy then flows through the *food chains* to primary consumers (*herbivores* who eat and digest the plants), and to secondary and tertiary consumers (either *carnivores or omnivores*).

Matter is incorporated into living organisms by the primary producers. Photosynthetic plants fix carbon from carbon dioxide and nitrogen from atmospheric nitrogen or soil nitrates to produce amino acids. Much of the carbon and nitrogen contained in ecosystems is created by such plants, and is then consumed by secondary and tertiary consumers. Nutrients are usually returned to the ecosystem via decomposition. The entire movement of chemicals in an ecosystem is termed a *biogeochemical cycle*, and includes *the carbon and nitrogen cycle*.

Ecosystems of any size can be studied. For example, a rock and the plant life growing on it might be considered an ecosystem. This rock might be within a plain, with many such rocks, small grass, and grazing animals - also an ecosystem. This plain might be in the tundra, which is also an ecosystem. In fact, the entire *terrestrial surface* of the earth, all the matter which composes it, the air that is

directly above it, and all the living organisms living within it can be considered as one, large ecosystem. Ecosystems can be divided into *terrestrial* ecosystems (including forest ecosystems, steppes, savannas, and so on), *freshwater* ecosystems (lakes, ponds and rivers), and *marine* ecosystems, depending on the dominant biotope.

Biocenose, or community, is a group of populations of plants, animals and microorganisms.

Ecosystem productivity. In an ecosystem, the connections between species are generally related to food and their role in the food chain. *There are three categories of organisms:*

- *Producers* -- usually plants that are capable of photosynthesis but could be other organisms such as bacteria in oceans that are capable of chemosynthesis.
- *Consumers* -- animals, which can be primary consumers (herbivorous), or secondary or tertiary consumers (carnivorous and omnivores).
- *Decomposers* -- bacteria, mushrooms which degrade organic matter of all categories, and restore minerals to the environment. And decomposers can also decompose decaying animals.

Tasks to Unit 2

Task 1. *Transcribe and translate the following words and word combinations.*

Layer, hydrosphere, inhabitants, permanent, consumer, potassium, nutrient, ocean, cycle, photosynthesis, entire, restore, volume, connection.

Task 2. *Give the Ukrainian equivalents to the words and word combinations.*

outer layer, although, quantities, continual recycling, central principle, food chains, primary consumers, herbivores, soil nitrates, terrestrial ecosystems.

Task 3. *Finish the phrase.*

outer ...	permanent ...	below sea ...
food ...	central ...	to focus on ...
terrestrial ...	primary ...	organic ...

Task 4. Make up sentences with Passive Voice using the table.

Ecosystems	can be	studied.
The plains	might be	divided into <i>several parts</i> .
<i>The outer layer</i> of the Earth	may be	considered an ecosystem.
The energy	could be	described as "the fourth envelope".
A rock and the plant life		found in the tundra.
<i>The biosphere</i> (sphere of life)		received from the sun by primary producers.

Task 5. Choose the correct variant to fill in the blanks.

Planting the seeds of change

The Green Wave project aims to help achieve the goals of the United Nations Convention (1) ... Biological Diversity by (2) ... young people on the significance of biodiversity. In an ambitious program, learners from schools all over the world (3) ... to mark the International Day for Biodiversity each year by planting a single tree. On May 22, (4) ... student teams will each plant their tree – getting together to send a “green wave” from east to west around the planet. Contributing to studies and finding more facts about nature, encouraging team-work and cooperation across countries and continents, The Green Wave (5) ... a noticeable step toward preserving biodiversity throughout the world.

1	A about	B on	C for	D of
2	A educate	B educated	C educating	D educates
3	A have been invited	B have been inviting	C invite	D have invited
4	A this	B those	C that	D these
5	A take	B is taking	C taking	D taken

Unit 3. The Problems of the Planet

We have spent thousands of years in the fight for our *survival*. But now we discovered that our planet is *under threat* and it's our *fault*.

The *rainforests* are dying, *rare plants and animal species* are disappearing, rivers and seas are *contaminated*, crops don't grow, people are dying of hunger and

the air is *polluted*. It's time we were aware of these problems and started *repairing the damage*.

One of the major problems is the *deforestation* of *rainforests* in South America. They are home to half the world's species and to millions of people. Moreover, the rainforests clean the air by *absorbing carbon dioxide and giving out oxygen*. The trees are cut down for paper or to make room for *cattle* farms. As a result, birds and animals lose their home and die. This *destruction* is also *bringing about changes* in the climate, air pollution, *flooding, drought and famine*. If we continue to *burn down and cut down the rainforests* as we are doing now, the earth will never be the same again.

Another big problem is *water pollution*. Do you like swimming in the sea or drinking a cool glass of water on a hot day? These simple pleasures may soon become a thing of the past. Factories are polluting our rivers and lakes with *dangerous chemicals*. Tons of *industrial and domestic waste* are poured into the sea. Consequently, sea life is *threatened with extinction*.

Air pollution is another *important issue*. The cars and factories in and around our cities are *giving off dangerous fumes*. In the past few years, more and more people than ever before have *developed allergies and breathing problems*. If we don't do something now, our cities will become impossible to live in.

Fortunately, it is not too late *to solve these problems*. We have the time and even the technology to prepare the way for a better, cleaner and safer future. We can plant trees and *adopt animals*. We can *create parks for endangered species*. Together we can *save our planet*.

Tasks to Unit 3

Task 1. Find the match.

drought	a. lack of food
contaminate	b. take in
famine	c. lack of rain
absorb	d. pollute

damage e. harm

Task 2. Finish the phrase using the following words.

To be threatened, carbon, to become, endangered, to give off, breathing, to take, industrial/domestic, to fight, to develop

... waste ... dioxide ... a thing of the past
... for survival ... fumes ... with extinction
... allergies ... problems ... species
... action

Task 3. Make the following sentences passive.

1. Factories pollute our rivers and lakes.
2. The cars in our cities give off dangerous fumes.
3. A lot of people developed allergies.
4. The rainforests clean the air.
5. Oil tankers contaminated seas.
6. People repaired the damage.
7. We can plant trees.
8. They will adopt animals.
9. People create parks for endangered species.
10. We will save our planet.

Task 4. Translate the verb “to pollute” using the right tense.

* завжди забруднюють	* забруднювали з червня до серпня 2010 р
* зараз забруднюють	* будуть забруднювати наступного року
* забруднюють з 2010 року	* збираються забруднювати
* вже забруднили	* є забрудненими
* забруднювали 5 років тому	* були забрудненими

Task 5. Put the questions to the following sentences.

1. It's our fault.
2. Birds and animals lose their home.
3. Factories are polluting our rivers and seas.
4. We have spent thousands of years fighting for our survival.
5. The earth will never be the same.

Unit 4. A Gloomy Picture

The *environment* is everything that surrounds and influences the character and growth of living things. *Ecological issues* can not be separated from *mankind*.

Population explosion. Today there are more than 6 billion people on the planet. Global population has doubled in the last 40 years. African nations are *expanding at the fastest rate*. The *annual growth* is 3%. China is the most *populous country* in the world. Its population is expected to reach over 1.5 billion by 2050.

Famine is another great problem. Many people go to bed hungry every night. According to the United Nations report, 37% of people in India cannot buy food to feed their families. The UNO reports that in the developing countries people are *starving*, they cannot *satisfy the most basic needs* in life.

Pollution. For many people the most alarming problem is *contamination* of air, earth and water from *dumping*. Open sewage drains are common sites in many parts of the world. Children are *born deformed* and die of rare illnesses that are caused by dangerous chemicals. *Creatures* of sea also suffer from pollution. They may *pass* toxic chemicals. So, people are polluting *at the expense of their lives*.

Deforestation. The rapid *reduction of forest land* worries people. Forests *absorb carbon dioxide* from the air and *supply oxygen*. They are home to plants and *wonderful creatures*. They *provide people with fuel, food and shelter*. But instead of forests we have farms and industrial developments.

Extinction. Biological *diversity* is the variety of living organisms and their *habitats*. It is *under threat* now. Tropical *deforestation* is the main reason of the *crisis*, but the pollution of the rivers, lakes and oceans plays the important role. The *total number of species* is not known. Biologists *estimate* that there are between 5 and 30 million species, among them *insects, tiny sea creatures*, plants and animals. The *loss of a single species* can cause the *chain reaction*. Every species plays an important role in the *balance of nature*.

Global warming. Human activity is changing the *composition* of the atmosphere and the global climate. *Natural greenhouse* gas keeps the *Earth's surface* warm, but humans add new dangerous chemicals to the atmosphere. Carbon dioxide has

increased for the last four decades from *burning fossil fuels, deforestation* and using aerosol sprays. Cars and factories *pour it into the atmosphere*. This greenhouse gas is *heating up the atmosphere* and is *thinning the upper level* of the atmosphere, the *ozone layer*. For the past 250 years, humans *have been giving off* large amounts of CO₂ and other *heat-trapping greenhouse gases* into the atmosphere by burning *coal, oil, and natural gas* in our power plants, motor vehicles, homes, and factories. The *buildup* of these gases has caused an increase in the earth's *average surface temperature*, and this global warming will continue to rise in the coming decades if we do not *reduce* pollution.

Global warming means much more than hotter temperatures. Left unchecked, global warming will quickly *destroy* our planet's climate system, causing changes in average temperatures and *precipitation* patterns and *weather extremes* such as *heavy downpours*, storms, and *droughts*.

Tasks to Unit 4

Task 1. *Transcribe and translate the following words and word combinations.*

Surround, mankind, explosion, annual, satisfy, contamination, average, creatures, balance, activity, surface, pattern, burn, atmosphere, fuel.

Task 2. *Give the Ukrainian equivalents to the words and word combinations.*

Annual growth, populous country, to starve, famine, pollution, contamination, fossil fuel, deforestation, pour into the atmosphere, habitat, reduce pollution, to destroy, precipitation, weather extremes, heavy downpours.

Task 3. *Complete the sentences and translate them.*

The environment is ...

China is the most ...

Children are born...

Creatures of sea also suffer ...

In the developing countries people cannot satisfy ..

Forests absorb ... and supply people with ...

Human activity is changing ...

The loss of a single species can cause ...

Task 4. *Fill in the gaps.*

The environment (1) ... the character and growth (2) ... living things. Today the mankind faces a (3) ... of problems. One (4) ... them is deforestation. Forests (5) ... a very important role, (6) ... they provide people (7) ... fuel and shelter. Due (8) ... deforestation, many species (9) ... their habitat. It may cause the (10)... reaction. Another problem is global (11) The (12) ... gas destroys the (13) ... layer of the atmosphere. If we don't (14) ... the pollution, global warming (15) ... continue to rise. People have (16) ... be more careful to biological diversity.

Unit 5. Recycling

When was the last time you went down a *litter-free street*? Though huge amounts of money are spent on *clearing rubbish*, this cannot solve the problem. We are responsible for finding the solution. *Dropping litter* is against the law in Great Britain. Offenders can *be fined* up to 10000 pounds. Litter is not only disgusting, but also dangerous. Why is there so much litter? Most *consumer products* are over-packaged: they are wrapped in plastic, put in a box.

What can we do about the problem? Try *recycling paper* and plastic bottles. Never drop litter, even a tiny piece makes the problem worse. Avoid buying over-packaged things from supermarkets. Arrange clean-up days in the local countryside to pick up rubbish. If we are responsible for making our cities clean, the problem may be solved.

Recycling has been a usual practice for most of human history since 400 BC. During periods when *resources were scarce*, archaeological studies of *ancient waste dumps* show less *household waste* (such as ash, broken tools and pottery) because more waste was recycled in the absence of new material.

Recycling involves *processing used materials* into new products in order to prevent the waste of potentially useful materials, *reduce the consumption* of fresh *raw materials*, *reduce energy usage*, reduce air and water pollution by reducing the need for “traditional” waste disposal, and lower *greenhouse gas emissions*.

Recycling is a key component of modern waste management and is the third component of the "*Reduce, Reuse, Recycle*" hierarchy.

Recyclable materials include glass, paper, metal, textiles and plastics. The composting of biodegradable waste, such as food or garden waste, may not typically be considered recycling, though they have a similar purpose. These materials are brought to a collection centre and sorted, cleaned and made into new products necessary for manufacturing.

Keep Our City Clean

Environment and the activity of humans are closely related. The more *thoughtless* people are to nature, the more *harm they bring*. As a result, they have more health problems than our ancestors did. Nowadays people *suffer from allergies, heart attacks, cancer*. *Humanity* is worried about the state of the environment.

Firstly, the problem of deforestation may bring the *lack of oxygen* as well as the extinction of the biological species. And this is only because people need wood for the industrial purposes.

Secondly, our common home, the Earth, is becoming more and more polluted because people do not take the problem of *recycling* very seriously.

Needless to say, everyone should be responsible for keeping the cities clean. Such simple steps as fines for throwing litter, arranging "clean-up days", state control for the environment protection may be the solution to the problem.

Tasks to Unit 5

Task 1. *Transcribe and translate the following words and word combinations.*

Recycling, litter, rubbish, law, consumer, worse, resources, scarce, lack, typical.

Task 2. *Give the Ukrainian equivalents to the words and word combinations.*

Litter-free street, solve the problem, consumer products, avoid, over-packaged, to process used materials, raw materials, greenhouse gas emissions, lack of oxygen, to bring harm, needless to say.

Task 3. *Change the structure of the sentences.*

1. They started to recycle litter many centuries ago.
..... for many centuries.
2. Manufacturers wrap a lot of consumer goods in plastic.
A lot of consumer goods ...
3. The teacher said to her pupils: "Never drop litter".
The teacher asked her pupils ...
4. We recycle things, we save raw materials.
The more things ...
5. People process used materials because they want to reduce the waste.
People ... in order to
6. That's a pity people don't take the problem of recycling seriously.
I wish ...
7. It's the responsibility of the residents to keep their cities clean.
Residents should be ...
8. We are not so healthy as our ancestors.
Our ancestors were ... than ...
9. The state of the environment is worrying.
We are ...
10. Dropping litter is illegal in Great Britain.
.... against ...

Task 4. *The Litter Police*

A shop owner in a small village in England has come up with a clever way to stop kids from (1) ... litter. Yvonne was fed up with seeing so (2) ... litter around her village, so she decided to take matters into her own hands. When kids buy crisps, sweets and drinks from her shop, Yvonne writes their names on the packets. If Yvonne (3) ... any litter around the village, she picks it up and looks for a name on it, so she knows who's to blame. The "criminals" then get a penalty from Yvonne - she temporarily bans them from her shop or they (4) ... to pick up litter around the

village. Yvonne says, "It is a bit of education and it seems to be working. The whole village is a lot (5)

	A	B	C	D
1	drops	having dropped	dropping	Drop
2	much	many	few	a few
3	notices	will notice	had noticed	notices
4	ask	are asking	are asked	will ask
5	cleaner	cleanest	more clean	Clean

Unit 6. Ecotourism

Nowadays, many of us try to live in a way that will *damage the environment* as little as possible. We *recycle* our newspapers and bottles, we take public transport to get to work, we try to buy locally produced fruit and vegetables and we stopped using *aerosol sprays* long ago. That's why we choose the alternative form of tourism – ecotourism which is becoming more and more popular all over the world. There are many names for this form of tourism – *responsible tourism*, nature tourism, educational tourism. People agree that ecotourism must:

- 1) *conserve the wildlife* and culture of the area;
- 2) involve local community;
- 3) make a profit without *destroying natural resources*.

Tourists *stay in local houses* with local people, not in specially built hotels. So they experience the local culture and do not take energy and water away from local people. They travel on foot, by boat, bicycle or elephant so there is no *pollution*. And they have a special experience that they will remember all their lives. This type of tourism can only involve small numbers of people so it can be expensive. But you can use these principles wherever you are on holiday.

Learn the basic rules of ecotourism:

1. Learn about the place you are going to visit. Find out about its culture and its history. Learn a little of foreign language, at least basic phrases like “please” and “thank you”.

2. Wear clothes that will not *offend* people. Ask permission before you take a photo. Remember that you are a visitor. Stay in local hotels and eat in local restaurants, buy local food.

3. If the area doesn't have enough water, don't waste it for some showers a day. Bear in mind the expression: "Leave nothing behind you except your footprints and take nothing with you except photographs. *Take good care of* the places you explore. Don't purchase any souvenirs made of *endangered animals* or plants. Walk or travel by *non-polluting* means of transport.

Don't hesitate to ask the holiday company about what is "eco". Remember that "eco" is becoming attractive today and a lot of holidays that *are advertised* as ecotourism are not much more fascinating than traditional tourism. Before you get too enthusiastic, think about how you are going to get to your dream "eco" paradise. Flying is one of the *biggest sources of carbon dioxide* in the atmosphere. One *return flight* from London to Miami puts as much carbon dioxide into the atmosphere as the *average British car driver* produces during a year. So, you don't have to fly long distances for your "eco" holiday. There are probably places of natural fascination and beauty in your own country that you have never explored.

Tasks to Unit 6

Task 1. *Transcribe and translate the following words and word combinations.*

Damage, alternative, conserve, experience, phrases, permission, advertise, except.

Task 2. *Give the Ukrainian equivalents to the words and word combinations.*

As little as possible, that's why, all over the world, involve, make a profit, offend people, take much care of the places, ask permission, endangered animals, average car driver, fashionable, advertised, probably.

Task 3. Put the word into the right form.

Globalisation

<p>We have the right to say that the world is turning into a village. Up-to-date means of have made the world a lot smaller and the problems we come across such as are not typical of one country. The of the rainforests in Brazil is a global issue and thewhich is spread in many African countries is a problem for Europe too. The of rare species is a disaster for the planet as a whole, and the exhaustion of oil will damage the of the world’s economy.</p> <p>The of our environment is the responsibility of both rich and poor nations. However, unprecedented economic ... between strong and weak countries results in the of inequality between the rich and poor nations.</p>	<p>globe communicate pollute destroy starve extinct found protect compete create</p>
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Unit 7. Changing the Way We View Ecological Issues

Al Gore has been worried about climate changes, or “a *climate crisis*” as he characterizes it, for the most part of his political career. As the years passed, he began touring the world in order to make people aware of the consequences of global warming using computer slideshows. *Free of charge*, he informs his audiences that the world *is facing* “*planetary emergency*” and that it is not too late to stop it if *relevant measures* are taken now.

While of touring and presenting lectures Gore was spotted by Hollywood producer Laurie David, who encouraged him to *turn his slideshow into a documentary* in which he would play the starring role. In the beginning, Gore was reluctant, but David managed to persuade him. The result was a breathtaking documentary offering *predictions when it comes to the future of our planet*. It focused on the scary *effects of climate changes*.

“Inconvenient Truth” certainly gives us much food for thought. For instance, is there any connection between the *frequency of strong hurricanes* and *global*

warming? Why was 2005 the hottest year ever recorded? Could such huge cities as San Francisco one day go under water due to *rising sea levels*?

Simultaneously with the *release of the film*, Gore brought out the book of the same title. It included additional information and scientific analysis. The profits from both the film and the book are now *funding other campaigns* to promote the message about global warming. Schools are using the DVD to help them teach *awareness of environmental issues* to their students.

Though the film seems pessimistic, it ends on a positive note. It's not too late to solve this crisis. The author hopes that most people *accept reality* and turn their knowledge into action. According to Gore, if we are aware of the problem is, we can implement changes in our daily lives, such as choosing the "*greenest*" *lights bulbs or cars*. He insists on *using biodiesel vehicles* and has decided to *become carbon neutral*, which means that he *reduces the amount of carbon dioxide* he produces every day.

Gore realizes that people need a little more help when it comes to changing their everyday habits. For this reason, he has been working hard to encourage large shops to sell more *environmentally friendly* goods. He maintains that together people can change the world.

Tasks to Unit 7

Task 1. *Transcribe and translate the following words and word combinations.*

View, issue, majority, career, emergency, appropriate, persuade, inconvenient truth, certainly, frequency, hurricane, release, title, campaign, awareness, vehicle.

Task 2. *Give the Ukrainian equivalents to the words and word combinations.*

Climate crisis, free of charge, turn a slideshow into a documentary, play the starring role, give predictions, concentrate on the terrifying consequences of, rising sea levels, accept reality, light bulb, encourage, for this reason.

Task 3. *Finish the phrase.*

Be concerned with ...	Appropriate ...	Publish the book of ...
Majority of ...	Be noticed by ...	Contain additional ...
Educate people about ...	A fascinating ...	Fund other campaigns to ...

Free of ...	A link between ...	Teach awareness of ...
Explain to ...	Due to rising ...	Insist on ...
To face planetary ...	The release of ...	Reduce the amount of ...
During the time of ...	To solve ...	Encourage shops to ...

Task 4. Answer the questions to the Text.

1. What is Al Gore's purpose of travelling the world?
2. How did his slideshow become a documentary?
3. What does "Inconvenient truth" make us think about?
4. How did the book differ from the film?
5. How are the profits from both the film and the book used?
6. What are the ways of solving the crisis according to the author

Завдання для самостійної роботи

1. Complete the sentence and translate it

1. Ecology is the study of the relationship of with their physical and biological environment.
2. The *physical environment* includes
3. The *biological environment* includes
4. Organisms can be studied at many different levels, from proteins and nucleic acid (in biology), to cells (in biology), to individuals (in botany and), and finally at the level of populations,, and ecosystems.
5. Ecosystem ecology studies the flow of and through the biotic and abiotic components of ecosystems.
6. Ecology plays a very important role in the modern world because it helps to save our planet from
7. The biosphere contains great quantities of elements such as
8. Other elements, such as, are also essential to life, yet are present in smaller amounts.
9. All interacting living organisms and their non-living environment in an area form an
10., or community, is a group of populations of plants, animals and microorganisms.

2. Fill in the gaps in the text

Almost all ecosystems run on energy received from the (1) by primary producers via (2) This energy then flows through the food (3) to primary consumers (4) who eat and digest the plants), and to (5) and tertiary consumers (either carnivores or omnivores).

Matter is incorporated into living organisms by the primary producers. Photosynthetic plants fix (6) from carbon dioxide and (7) from atmospheric nitrogen or soil nitrates to produce (8) Much of the carbon and nitrogen contained in ecosystems is created by such plants, and is then

consumed by secondary and tertiary consumers. (9) are usually returned to the ecosystem via (10) The entire movement of chemicals in an ecosystem is termed a biogeochemical cycle, and includes the carbon and nitrogen cycle.

3. Put the word in the right form

The outer (1) (lay) of the planet Earth can be divided into several parts: the hydrosphere (or sphere of water), the lithosphere (or sphere of soils and rocks), and the atmosphere (or sphere of the air). The biosphere (or sphere of life), sometimes described as "the (2) (four) envelope," is all (3) (live) matter on the planet. It reaches well into the other three spheres, although there are no permanent (4) (inhabit) of the atmosphere.

A (5) (center) principle of ecology is that each living organism has a continual (6) (relate) with every other element that makes up its environment. All (7) (interact) living organisms and their non-living environment in an area form an ecosystem. Studies of ecosystems usually focus on the (8) (move) of energy and matter through the system. In an ecosystem, the (9) (connect) between species are (10) (general) related to food and their role in the food chain.

4. Choose the right variant to fill in the gap

Ecosystems of any size can (1) For example, a rock and the plant life (2) on it might be considered an ecosystem. This rock might be within a plain, with many such rocks, small grass, and grazing animals - also an ecosystem. This plain might be in the tundra, (3) is also an ecosystem. In (4), the entire terrestrial surface of the (5), all the matter which composes it, the air that is directly (6) it, and all the living organisms living within it can be considered as one, large ecosystem. Ecosystems can be (7) into terrestrial ecosystems (including forest ecosystems, steppes, savannas, and so on), freshwater ecosystems (lakes, (8) and rivers), and *marine* ecosystems, (9) on

the dominant biotope. The entire (10) of chemicals in an ecosystem is termed a biogeochemical cycle.

1	a be studying	b study	c be studied	d studied
2	a be growing	b growing	c is growing	d grow
3	a which	b who	c whose	d whom
4	a fact	b result	c the whole	d example
5	a biosphere	b ocean	c earth	d country
6	a opposite	b between	c under	d above
7	a considered	b known	c counted	d divided
8	a ponds	b seas	c oceans	d straits
9	a relying	b including	c suggesting	d depending
10	a development	b movement	c discovery	d creation

5. Complete the sentence and translate it

1. We have spent thousands of years fighting for our
2. The rainforests are dying, rare plants and animal are disappearing.
3. China is the most country in the world. Its population is expected to reach over 1.5 billion by 2050.
4. is another great problem. Many people go to bed hungry every night.
5. The UNO reports that in the developing countries people are starving, they cannot the most basic needs in life.
6. The loss of a single species can cause the chain
7. Every plays an important role in the balance of nature.
8. Global means much more than hotter temperatures.
9. Global warming will quickly our planet's climate system, causing changes in average temperatures.
10. involves processing used materials into new products in order to prevent the waste of potentially useful materials

6. Fill in the gaps in the text

Environment and (1) of humans are closely connected. The more thoughtless people are to nature, the more (2) they bring. As a (3) they have more health problems than our ancestors did. Nowadays people (4) from allergies, heart attacks, cancer. The humanity is (5) about the state of environment.

Firstly, the problem of deforestation may bring the (6) of oxygen as well (7) the extinction of the biological species. And this is only because people need wood for the industrial (8) Secondly, our common home, the Earth, is becoming more and more (9) because people do not take the problem of recycling very seriously.

Needless to (10) , everyone should be responsible for keeping the cities clean. Such simple steps as fines for throwing litter, arranging “clean-up days”, state control for the environment protection may be the solution to the problem.

7. Put the word in the right form

Human (1) (active) is changing the (2) (compose) of the atmosphere and the global climate. Natural greenhouse gas keeps the Earth’s surface warm, but humans add new (3) (danger) chemicals to the atmosphere. Carbon dioxide has increased for the last four decades from (4) (burn) fossil fuels, deforestation and using aerosol sprays. Cars and factories pour it into the atmosphere. This greenhouse gas is heating up the atmosphere and is thinning the upper level of the atmosphere, the ozone (5) (lay). The buildup of these gases has caused an increase in the earth’s average surface temperature, and this (6) (globe) warming will continue to rise in the coming decades if we do not reduce (7) (pollute). One of the major problems is the (8) (forest) of the rainforests in South America. As a result, birds and animals lose their home and die. This (9) (destroy) is also bringing about changes in the climate. Consequently, biological species are threatened with (10) (extinct).

8. Choose the right variant to fill in the gap

When was the last time you walked down a litter-free street? (1) millions of pounds are spent on clearing rubbish, this alone can not (2) the problem. The solution lies in our hands. Dropping litter is (3) the law in Great Britain. You can be fined up to 10000 pounds. Litter is not only ugly, (4) dangerous. Why is there so much litter? Most consumer products are over-packaged: they are wrapped in (5), put in a box. What can we do about the problem? Try recycling paper and plastic bottles. Never (6) litter, even the smallest piece makes the problem (7) Avoid buying over-packaged things from supermarkets. Organize day-trips to the local countryside (8) pick up rubbish. If we are (9) for our clean cities, the problem may be solved. Recycling has been a common practice for most of human history since 400 BC. (10) periods when resources were scarce, archaeological studies of ancient waste dumps show less household waste (such as ash, broken tools and pottery) because more waste was recycled in the absence of new material.

1	a Besides	b Although	c In spite	d Through
2	a decide	b avoid	c solve	d create
3	a against	b after	c under	d by
4	a also	B but too	c either	d but also
5	a wood	b plastic	c nylon	d glass
6	a pick up	b gather	c collect	d drop
7	a worse	b worst	c less	d better
8	a due to	b in order to	c according to	c for purpose
9	a irritated	b generous	c productive	d responsible
10	a While	b since	c During	d Ago

Unit 8. The Animal Kingdom. Extinct Animals

In recent years, *environmentalists* have become increasingly concerned about the number of animals *facing extinction*. Unless we do something to save them now, we may soon lose many *rare species* forever.

The first thing we should do is stop *destroying the habitats* of wild animals. By doing this, they will be able to live and breed in their *natural environment*.

Moreover, governments should *ban* the hunting of *endangered species* completely. As a result, many animals, such as tigers and alligators, would have a better *chance of survival*.

Finally, we should make more wildlife parks. In this way, rare species will be able to live safely without losing their homes to man, or their lives to illegal hunters.

All in all, there are many ways in which we can save endangered species from *extinction*. Without care and consideration, they will certainly *disappear*.

Extinct Animals

1. **Mammoth** is an *extinct animal resembling* the elephant. There were a lot of Mammoths during the *Ice Age*. Several species have been identified. The imperial mammoth was the largest mammoth. It was 4.6 m high *at the shoulder* and *weighed* more than 8 tons. (An unusually large African elephant may reach a similar *weight* but a *height* of only about 4 m.) Mammoths had long, curved *tusks* 5 m long. The head had a dome of *fatty tissue*. Mammoths were covered with dark hair. Thousands of mammoths have been found frozen in *the soil* of Siberia and Alaska. Many are perfectly *preserved*. *Remains* of *dwarf mammoths*, which were about 1.8 m high at the shoulder, have been found on islands off the coasts of California and Siberia.

Stone Age people *hunted* mammoths and drew pictures of them on the walls of caves. Most mammoths became extinct about 10,000 years ago; some dwarf mammoths lived 4,000 years ago. Over-hunting by humans and a *warming of the climate* may have together caused the extinction of mammoths.

2. **Mastodon** is a large, extinct animal *resembling* the elephant and mammoth. Like the mammoth, the mastodon had long, curving tusks in the *upper jaw*. Some early species also had a set of short tusks in the *lower jaw*. The mastodon was covered with hair, as was the mammoth, but the mastodon's head was less *dome-shaped* and its body was more *slender* than the mammoth's. The mastodon was 2.1 to 2.9 m tall and 3 to 4.3m *in length, excluding* the tusks. The mastodon lived in Asia, Eastern Europe, and North and South America during the Ice Age. It was hunted by early humans. The mastodon became extinct, *for unknown reasons*, about 10,000 years ago.

3. **Saber-toothed Tiger**, or *Saber-toothed Cat*, is an extinct *carnivorous* animal once found throughout North and South America, Asia, Africa, and Europe. It first appeared 35,000,000 years ago, during *the Oligocene epoch*, and lived until 10,000 years ago. The animal was about 6 m long and had short, *heavy legs* and a short *tail*; large *canine teeth*, sometimes as long as 23 cm, and *wide-opening jaws*.

It's easy to imagine that saber-tooth cats hunted in the same way as today's tigers do. Tigers hunt alone, waiting until *twilight* and using *vegetation* to *hide themselves*. A tiger will come to its *prey* close enough to strike in a couple of *quick leaps*. The kill comes when the tiger *bites* through the back of its *victim's neck* and cuts the *spinal cord*. Tigers can also kill their prey with a long-lasting bite to the throat. The cats' oversized teeth were strong, but their jaws weren't built for *strangulation*. Instead, these cats used their canines for cutting the softest parts of their prey -- their *throats* and *abdomens*. Most likely, saber-tooth cats' prey died slowly from *loss of blood* rather than quickly from strangulation or a broken neck. They became extinct at the end of the last ice age, about 10,000 years ago.

4. **Dinosaurs** became extinct at the end of the *Cretaceous Period*. For centuries, *paleontologists* have been trying to solve this problem. For this purpose, they analyze *fossils* and *rock formations*. *Nevertheless*, these fossils and rock formations do not give all the answers. It may happen that various scholars see the same material but come to different *conclusions*, creating many different theories.

Some paleontologists believe the extinction was the result of a *disaster* such as a *meteorite* or *comet* hitting the earth or a huge *volcano eruption*. Others believe that a certain step-by-step *process* was to blame. Some theories suggest that *competition* between dinosaurs and mammals resulted in their extinction. Some climate changes can be responsible as well. Some scientists think that the extinction happened in several days. Others say that the process of extinction took from hundreds of generations to over half a million years. The *extinction* did not kill all animal and plant life. Many species of animals survived, including *fishes, frogs, turtles, crocodilians, birds, and mammals*.

Tasks to Unit 8

Task 1. *Transcribe and translate the following words and word combinations.*

Environmentalist, increasingly concerned, rare species, government, breed, appear/disappear, resemble, to weigh/weighed, weight, height, length, curved tusks, dwarf, upper/lower jaw, carnivorous, canine teeth, instead, fossils.

Task 2. *Give the Ukrainian equivalents to the words and word combinations.*

To face extinction, become extinct, endangered species, ban hunting, as a result, save from extinction, during the Ice Age, at the shoulder, for unknown reasons, vegetation, prey, a couple of quick leaps, victim's neck, spinal cord, a bite to the throat, come to conclusion, volcano eruption, solve a puzzle, gradual process.

Task 3. *Make up sentences using the table.*

Mammoth	resembled	the elephant and mammoth.
Mastodon	had	at the end of the Cretaceous Period.
Saber-toothed tiger	was covered	during the Ice Age.
Dinosaur	lived	long curved tusks.
	was	with dark hair.
	hunted	canines for killing its prey.
	used	about 6 meters long.
	became extinct	alone waiting until twilight.

Task 4. *Fill in the gaps.*

1. The imperial mammoth ... more than 8 tons.
2. The mammoth's head had a dome of fatty
3. Stone Age people drew pictures of mammoths on the walls of

4. Warming of the climate may have caused the ... of mammoths.
5. Mastodon had long curving tusks in the ... jaw.
6. Saber-toothed cat is an extinct ... animal.
7. Saber-toothed cat had short, heavy legs and a short
8. A tiger comes to its prey close enough to strike in a ... of quick leaps.
9. Tigers can also kill their ... with a long-lasting bite to the throat.
10. The extinction was caused by a ... such as a meteorite or comet.

Task 5. Translate the following sentences paying attention to the "–ing" form.

1. Mammoth is an extinct animal resembling the elephant.
2. Over-hunting by humans may have caused the extinction of mammoths.
3. The mastodon was up to 4 meters in length, excluding the tusks.
4. Tigers hunt alone waiting until twilight and using vegetation to hide themselves.
5. Paleontologists try to solve the puzzle by studying fossils and rock formations.
6. The extinction was caused by a catastrophe such as a comet hitting the earth.
7. Many kinds of animals survived, including fishes, frogs, turtles, birds, mammals.
8. Rare species should live safely without losing their homes to man.

Unit 9. Endangered Species

1. Bees. “Once the bees have left the earth, man will have four years left on the planet.” This statement was made by Albert Einstein. The importance of bees' role in *pollination* within the *food chain* has been understood for quite some time. The problem is that over the past two years many bee populations around the world have dropped very much. Bees pollinate *crops*, flowers and plants. Einstein probably thought that man would not be able *to grow adequate crops* to feed the world without pollination. There would also be other *disruptions* in the food chain, and plants in general would *suffer*. In many areas of the U.S. bee populations have dropped by 50 percent or more. No specific cause for this drop has been identified, though *infections*, *viruses*, *pollution* and *pesticides* have all been considered.

The loss of bees has been called “*colony collapse disorder*.” Today there are two *popular hypotheses* for this *phenomenon*. The first is the growing number

of *cellular phone towers*. It is thought that the *frequencies* used by cell towers may disrupt the communication between bees and how the bees migrate to and from the *hive*. The second theory involves *genetically modified foods*. GMOs may provide *poor nutrition* for bees or *affect* their life cycle.

2. Cheetahs. Powerful, *black-spotted golden* animals are the fastest sprinters on Earth. Scientists believe cheetahs can *accelerate* from *walking speed* to about 65 kilometers an hour in less than two seconds and *develop top speeds* of 110 kilometers an hour. The cheetah has a *flexible spine* and long *front and hind legs*. It jumps as far as 7 meters — about five times the length of its body. The cat can run at its top speed for only 200 to 300 meters. But it is enough for the cheetah *to overtake its prey*, typically a Thomson's gazelle or other small antelope. The cheetah then knocks the animal to the ground with a *forepaw* and strangles it with a bite to the throat. These gentle-looking cats can not *roar* like lions due to the structure of cheetahs' *windpipes*. Instead, they make *moaning sounds*. Cheetahs can be *tamed*, and beginning at least 3,000 years ago with the ancient Egyptians, aristocrats trained the cats to hunt just as they trained *falcons*. A royal chronicle tells how Akbar the Great, who ruled India's Mogul Empire in the A.D. 1500s, caught at least 9,000 cheetahs during his 49-year reign for hunting *deer*.

3. Wolves. It is known that in some areas of the world there are no more wolves living *in the wild*? The wolf was traditionally regarded as an evil enemy. In fact, this *misunderstood* animal is not so terrible. Wolves are magnificent hunters. They would rather hunt *wild* animals than *domestic* ones. They do not have the tendency to *over-population*, instead, they keep their populations at the level they can *feed*. With regard to killing people, ecologists say that this is far from being true. Wolves *avoid* people. We should bear in mind that wolves only attack human beings in *fairy tales*. ”

Though certain plans are implemented on how to bring wolves back to their wild areas of Scotland, local people *have doubts* about the idea. “We want wolves back. They lived for thousands of years in Scotland – it is their land – but we are afraid for our animals,” one farmer says. The authorities has stated that it will pay

for any farm animals killed by wolves. People who are not against the idea of bringing the wolf back say this: “Let our children have the chance to hear a wolf *howl* at the moon on a still, Scottish night, and let us *be proud* that we made it possible.”

4. Manatees. The manatee is a large mammal which lives mainly in the waters around Florida in the United States. Adults *range* in length from 2.5 to 4.5 meters and can be as much as 700 kilos in weight. Manatees are *slow-moving creatures* which feed on sea and *fresh-water vegetation*. They live alone or in small family groups of up to twenty members. Members of groups usually communicate by *touching* each other’s mouths and noses. Manatees are endangered because of hunting and because they are often *injured* or killed by motor boat propellers. It is extremely important to protect manatees because they help to keep the waters they live in clean and *healthy*.

5. Elephants. Elephants have always been very important to the people of India. They are trained to do work which *demand*s great *strength*. What many people do not know is that elephants are excellent swimmers. This large, five-tonne, *land-living* animal can put its head under water and use its *trunk* as a *snorkel*. Its huge legs help it move gently in the water. Elephants can swim faster than humans. Working elephants are *well-treated*. At sixty, after many years of hard work, they can relax on the beach and play in the sea. Today, elephants live on almost 300 *islands* near Burma and Indonesia.

6. Crocodiles. For centuries, people existed alongside and treated with respect the all-powerful crocodile. Those big jaws and *lethal teeth* terrified all attackers away. People were also *charmed* by their beauty and their *intelligence*. Unfortunately, it was their wonderful skin which put them *under threat*. When explorers realized how *valuable* crocodile skin was, the situation changed. Hunters risked their lives – and sometimes lost them – to *satisfy* the world’s need for crocodile skin.

To make matters worse, crocodiles’ homes began to *vanish* as new towns and companies developed on the land near *swamps* and rivers. *Luckily* for the crocodiles, people realized that a world without them would not be the same, and

now they are officially declared *an endangered species*. In some areas of the world, there are now parks for crocodiles to live *safely*, with laws to protect them.

“It is *illegal* to kill crocodiles,” says conservationist Charles Swaby, who has spent the last thirty years defending the Jamaican crocodiles. The problem is that when farm animals are killed by crocodiles, farmers *ignore* the law and kill them. Charles is trying hard to change the situation. “Crocodiles are much more *afraid* of us than we are of them. They are *terrible* but lovely to observe,” he comments. If Charles, and other campaigners, can *persuade* the world to *share this opinion*, crocodiles will be with us forever.

A radio programme about endangered species.

Presenter: Good evening, listeners. On this week’s edition of the “Animal Kingdom”, Ms Ellen Gordon, *a conservationist*, will tell us about endangered animals. Welcome, Ms Gordon.

Ms Gordon: Thank you. Well, I’d like to talk about the animals that I have studied recently. For example, *the sea turtle* is in great danger because hunters are killing it for food. Its numbers are also *decreasing* due to the *destruction of its habitat*. A particular type of *seal* like the harp seal, is also endangered due to the fact that hunters are killing it for its *skin*. In the Antarctic, the Emperor Penguin *is threatened* due to increased fishing and pollution of the seas.

Presenter: Can you tell us what is done *to protect* these animals?

Ms Gordon: Yes. Many countries *are banning* the hunting of seals. In the Antarctic, there are programmes that *make sure* that the water is not polluted. But there’s still a lot that needs to be done.

Presenter: Well, I’m afraid we’re *out of time*. Thank you for joining us today.

Tasks to Unit 9

Task 1. *Transcribe and translate the following words and word combinations.*

Percent, hypotheses, phenomenon, frequency, cellular phone, hive, forepaw, to tame, avoid, doubt, creature, injure, ton, well-treated, frighten away, unfortunately, scare/scary, convince, under threat, declare, ignore, decrease.

Task 2. Give the Ukrainian equivalents to the words and word combinations.

Within the food chain, pollinate, grow adequate crops, disrupt communication, colony collapse disorder, provide poor nutrition, to affect life cycle, flexible spine, overtake prey, roar like a lion, moaning sounds, domestic animals, fresh-water vegetation, valuable skin, satisfy demand for, share the opinion, be out of time.

Task 3. Complete the sentences.

1. The bee's role in pollination within the is very important.
2. There are two popular ... for the colony collapse disorder.
3. Bees migrate to and from the
4. Frequencies from cellular phone towers ... the communication between bees.
5. Cheetahs are the ... sprinters on Earth.
6. Cheetahs can not ... like lions due to the structure of their windpipes.
7. Wolves prefer hunting ... animals to ... ones.
8. Manatees are ... creatures which feed on sea and fresh-water
9. An elephant can use its ... as a snorkel.

Task 4. Choose the correct word out of the following pairs to fill in the gaps.

long/length

1. Manatees range in ... from 2.5 to 4.5 meters.
2. Crocodiles can be as ... as 6 meters.

weighed/weight

3. Manatees can be 700 kilos in
4. The imperial mammoth ... more than 8 tons. An elephant can reach a similar ...

high/height

5. Dwarf mammoths were about 1.8 m ... at the shoulder.
6. A large African elephant can reach a ... of about 4 meters.

strong/strength

7. Elephants do work which demands great
8. No doubts, elephants are very ... animals.

Task 5. Turn the following into Reported speech.

1. "I'd like to talk about the animals that I have studied recently".

Ms Gordon said that she ‘d like to talk about the animals that ...

2. “The sea turtle is in great danger because hunters are killing it for food”.

She told us that the sea turtle

3. “Its numbers are also decreasing due to the destruction of its habitat”.

She added that

4. “The Penguin is threatened due to increased fishing and pollution of the seas”.

She noticed that the Penguin

5. “Can you tell us what is done to protect these animals?”

The presenter asked if she

6. “There are programmes that make sure that the waters are not polluted”.

Ms Gordon informed us that

7. “A world without crocodiles will never be the same”.

People realized that a world without ...

Unit 10. The Natural Vegetation and the Animal World of Ukraine

The natural vegetation. 30% of Ukraine’s territory is occupied by the area of *natural vegetation*. 14% is *forested*, 8% is *swampland*, 3% is *highlands*.

Ukraine has mostly *coniferous* (*pine, fir*) and *deciduous trees* (*oak, beech (бук), birch (береза)*). Plantations of oak and beech are increasing. The forests include *berries, mushrooms, medicinal herbs*. Characteristics of Polissia are the *alder (ольха), willow (ива), pine (сосна), oak (дуб), aspen (осина), maple (клен), linden (липа)*. The forest-steppe zone contains the oak, *hornbeam (граб), black poplar (тополь), ash (ясень)* and *pine*.

In the Carpathians the vegetation is rich: *mixed forests, grasses, low shrub, saffron, primrose (примула), mercury, snowdrop, edelweiss*.

In the Crimean Mountains you can find oaks, *juniper (можжевельник), snowdrops, crocuses, cypresses, palms, magnolias, platans and laurels*. The Nikitsky Botanical Gardens contain plants from all over the world.

The animal world of Ukraine is very *diverse*, with hundreds of species of mammals and birds. *Predators* include *wolf, fox, badger (барсук) and marten*

(куніца). *Hoofed animals* include *roe* (косуля), *deer*, *wild pig* and *elk* (лось). There is *beaver* (бобер), *hamster* (хомяк), *field mouse*.

The *birds* include *sparrow*, *grouse*, *owl* and *partridge* (серая куропатка).

Fur animals are *nutria*, *mink*, *silver-black fox* and *musk-rat* (ондатра). In the rivers there are *perch* (окунь), *pike* and *carp*.

The animals of Polissia include the *wolf*, *wild pig*, *elk*, *lynx*, *polecat* (хорек), *raccoon* (енот) and *bear*. Birds include *black*, *hazel*, *wood goose*.

The animals of forest-steppe zone also include *squirrels*, *forest martens*, *foxes*, *hares* and *roes*. The animal life of the Carpathians is unique. Here we find *deer*, *wild cats*, *ermine* (горностаї), *golden eagles*, *black woodpeckers* (дятел).

The common *mammals* of the steppe Crimea are the *rodents*. The *harvest mouse*, *hamster* are active day and night. In 1961 *wild rabbit* was brought to Tarkhankut peninsula. There are many different birds in the Crimea, such as *grey heron* (цапля), *crane* (журавель), *pelican*, *sea-gull*, *bustard* (дрофа) and *lark* (жаворонок). The forests are *inhabited by starling* (скворец), *bull finch* (синица) and *turtle-dove* (горлинка).

The animal life is very *fragile*. Our most important task is to protect the animals that share the *habitat* with us. In recent years environmentalists are worried about the number of *animals facing extinction*. If we don't do something, we will lose the *rare species* forever. Firstly, we must stop *destroying the natural habitat*. Secondly, the governments should *ban hunting endangered species*. Finally, we should make more *wildlife parks* and in this way save endangered species from extinction.

Tasks to Unit 10

Task 1. Transcribe and translate the following words and word combinations.

Be occupied, coniferous, fir, deciduous, swampland, increase, the Carpathians, diverse, predator, hoofed animals, fur animals, unique, rodent, fragile, mercury.

Task 2. Give the Ukrainian equivalents to the words and word combinations.

Natural vegetation, include, contain, common mammals, be inhabited by, share the habitat with, in recent years, be worried, the number of, lose rare species forever, destroy natural habitat, ban hunting, endangered species, wildlife parks.

Task 3. Put questions to the underlined words.

1. 30% of Ukraine's territory is occupied by the area of natural vegetation.
2. Ukraine has mostly coniferous and deciduous trees.
3. The forests include berries, mushrooms, medicinal herbs.
4. The forest-steppe zone contains the oak, black poplar, ash and pine.
5. In the Crimean Mountains you can find snowdrops, crocuses, cypresses, etc.
6. The Nikitsky Botanical Gardens contain plants from all over the world.

Task 4. Fill in the gaps using the words from the box.

Birds	predators	fur animals	hoofed animals	rodents	mammals
-------	-----------	-------------	----------------	---------	---------

1. are nutria, mink, silver-black fox and musk-rat.
2. The animal world of Ukraine includes hundreds of species of ... and birds.
3. Sparrow, grouse, owl, crane, lark and sea-gull are
4. include deer, wild pig and elk.
5. Wolf, fox, bear, badger and marten are the representatives of
6. The steppe Crimea is inhabited by ... : harvest mouse, hamster, rabbit, etc.

Task 5. Open the brackets (Conditionals).

Type I Conditional: If + Present Tense, will + verb. (Unless = if not)

1. If we ...(continue) destroying the natural habitat, we will lose rare species.
2. Endangered animals will disappear if we ...(not/protect) them.
3. Unless governments ban hunting of seals, we ... (see) them any more.
4. Unless/if we ... (make) wildlife parks, we ... (save) these species from extinction.

Type II Conditional: If + Past Simple, would + verb.

5. If people protected the animal world, many species ... (be) under threat.
6. The sea turtle wouldn't be in danger if hunters ... (kill) it for food.
7. If the waters ... (not/pollute), the Penguin ... (not/threaten). (*Mind Passive!*)
8. If people ... (stop) destroying the nature, everyone ... (live) safely.

Type III Conditional: If + Past Perfect, would have + verb 3.

9. Dinosaurs wouldn't have become extinct if the comet ... (hit) the Earth.
10. If many species hadn't survived then, the planet ... (change) its face.
11. We ... (see) the extinct animals if we ... (visit) the Zoo Museum last summer.
12. If we ... (not/hear) the program, we ... (not/learn) about endangered species.

Unit 11. The Wonderful World of Nature

Task 1. Male Birds Sing Their Song by Putting a Little Muscle into It

Certain male songbirds can sing **(1)** ... notes than females since they have stronger muscles to produce the sounds. Some scholars used to think it is related to how well the birds could push the air out of the lungs, but a new study says it is more associated with the muscles in the **(2)** ... throats.

There's a theory why boy birds are better singers. They have **(3)** ... a mate. The more varied their songs, **(4)** ... it will be different from other boy birds who are also singing with the view to finding a mate. Different songs also are easier to hear over noises, like a flowing river or the noisy sounds of other birds.

Though all birds **(5)** ... knowing different calls, songbirds learn how to sing from their parents. That capability is only observed in songbirds, humans and some other species like dolphins, whales and bats. Remember about muscles the next time you hear a bird singing. Muscles **(6)** ... just in your arms and legs, or in a bird's wings.

1	A more	B many	C much	D the most
2	A songbirds'	B songbird	C songbirds	D songbird's
3	A attracting	B attracted	C to attract	D to be attracted
4	A better	B the better	C best	D the best
5	A to be born	B are born	C born	D was born
6	A weren't found	B weren't finding	C aren't finding	D aren't found

Task 2. The Keeper of the Wolves

Doug Smith is the senior wildlife biologist in Yellowstone National Park. He manages wildlife within the park boundaries ranging from predator to prey, on the

ground and in the sky. Doug first came to the park as wolf project manager at the beginning of the grey wolf reintroduction.

Since the age of 18 Doug has worked with wolves. His first job entailed noting captive wolf behavior at Purdue University. Following that experience he made "a very important career move" by studying wolf and moose interactions at Isle Royale on Lake Superior starting in 1979.

In 1994 he moved to Yellowstone National Park where his current job has him researching and managing wolves in the park, although he started off in charge of wolves in the entire Greater Yellowstone Ecosystem.

"Today my job is more about research than management," he explains. "When you study wolves outside a national park setting it's going to be more management than research because the problems are going to be greater than you know. In the park, we're trying to study the situation to better provide information to those working on the management side of things outside the park setting. "Doug supervises an average of 12 employees who maintain radio collars on wolves so they can track their movements and monitor each pack.

"In addition to that I try to keep people away from wolves because people can **"love them to death"**. We try to protect the wolf areas. Wolves in the park are not as afraid of people as they are outside the park so I have to try to keep people from approaching them".

Doug and his crew had to kill a wolf last spring because visitors had fed it and the wolf was approaching 20 people and cars a definite human/wildlife safety threat.

Doug also spends a lot of time communicating with other agencies, researching and writing papers on the species, and doing community outreach to make sure people get accurate information.

"A big part of what I do is try to tell the facts about the story because wolves are such a controversial animal and an emotional animal so everybody has their own view about them and people tend to ignore the facts. I think there's no other animal that is so prone to misinformation as wolves".

- 1 What did Doug Smith do before his work in Yellowstone National Park?
 - A He managed a group of employees.
 - B He managed a moose population.
 - C He worked at Purdue University.
- 2 Which of the following functions is NOT among Doug Smith's responsibilities?
 - A Writing research papers on wildlife in the National Park.
 - B Studying the behaviour of wolves in captivity.
 - C Informing the National Park authorities about wolves.
 - D Raising awareness about wolves.
- 3 What opportunities does Doug Smith's current job give him?
 - A To provide captive wolves and moose with care.
 - B To provide captive wolves with care.
 - C To manage a group of independent researchers.
 - D To do a comprehensive project on wolves in the wild.
- 4 What does Doug mean by saying people can "**love them to death**"?
 - A People's good intentions can pose a threat to wolves.
 - B People's behavior towards wolves can be violent.
 - C People can have a lifelong affection to wolves.
 - D People may hunt wolves to extinction.
- 5 What can be inferred from the text about Doug Smith's work?
 - A Doug and his team treat wolves with distrust
 - B Doug prefers to deal with wolves instead of people.
 - C Doug manages wolves in order to limit their numbers.
 - D Doug and his team work to protect both wolves and people.

Task 3. Whales are Singing Louder

The seas around the UK have got so noisy that whales must sing louder in order to make (1) ... heard above the noise produced by ships, wind farms and off-shore oil industry. Judging by a story told by a marine biologist, whale song (2) ... the coast of Britain is now ten times louder than it used to be 50 years ago. Scientists established that whales attempt to adapt by making much louder noises or by

calling at **(3)** ... frequencies. As the whale numbers are depleted dramatically, the capacity **(4)** ... over long distances could be a clue to finding a mate. The whales' messages are becoming simpler and **(5)** ... more often, just like a human forced to shout.

	A	B	C	D
1	Their	themselves	theirs	they
2	Around	through	across	over
3	Higher	high	the high	highest
4	to communicate	communicate	communicated	communicating
5	Repeats	repeated	repeat	repeating

Task 4. Amazon Parrots

Amazon parrots are native to the New World. Indeed, **(1)** ... , that he brought back to Europe after his first voyage here. There are 27 species of Amazon parrot. Most parrot species are bred successfully in captivity and several types of Amazons are available from breeders and pet stores here in Canada. Prices generally range, depending on the species, from \$800 to \$1600, **(2)**

Amazon parrots are very good at talking and imitating sounds. One test subject, Alex – a parrot, can name about 40 objects, identify seven different colours, and say whether two objects are the same or different; and **(3)** Studies put the intelligence of these feathered chatterboxes on the same level as three-year-old humans, dolphins and monkeys.

Amazons are actually very similar in personality to monkeys. Parrots are very energetic, playful, social creatures that crave lots of interaction with their human owners. The best pet birds are hand-raised and have bonded early with human companions. More than other parrot species, **(4)** They can be, at different times, loud, quiet, stubborn, silly, playfully aggressive or irritable. They will play and fight with their toys for hours on end **(5)** Sometimes, an Amazon may temporarily become quite aggressive.

You really have to understand your bird's moods and behaviours **(6)** Amazon parrots are definitely not for all pet owners, they need much more love and

attention than most people would expect. Owning an Amazon is very similar to owning a dog with wings.

A with a premium paid for the breeds that are considered to be better "talkers"

B even rolling over on their backs to juggle a ball or play with some string

C the research has clearly shown that it is very intelligent and will speak in context

D as the trickier aspect of owning an Amazon parrot

E and talking ability will vary from species to species and from bird to bird

F Christopher Columbus himself apparently gave the name "Amazon" to the green, short winged parrots

G they also love being around people, and they are particularly good at speaking

H Amazons are well known for their strong or often moody characters

Task 5. Why Do Onions Make You Cry?

Onions, (1) ... other plants, are made of cells. The cells are divided into two sections (2) ... by a membrane. One side of the membrane contains an enzyme which helps chemical processes to (3) ... in your body The other side of the membrane contains molecules that contain sulfur. When you cut an onion, the (4) ... on each side of the membrane mix and cause a chemical reaction. This reaction (5) ... molecules such as ethylsufine which make your eyes water.

To (6) ... crying when you cut an onion, cut it under a running tap of cold water.

The sulfur compounds (7) ... in water and are rinsed down the sink before they (8) ... your eyes. You can also put the onion in the freezer for ten minutes before you cut it. Cold temperatures slow down the reaction (9) ... the enzymes and the sulfur compounds, so fewer of the molecules, that caused a (10) ... sensation, will reach your eyes.

	A	B	C	D
1	Like	similar	As	Such
2	Isolated	shared	Sorted	separated
3	Carry	go	Occur	Flow
4	Properties	contents	Ingredients	flavours
5	Does	brings	Produces	discovers
6	Prevent	remove	Protect	except

7	Miss	lose	Dissolve	steam
8	Come	achieve	Take	reach
9	Among	between	Through	along
10	Sparkling	flaming	Burning	shining

Task 6. The Swiftly Evolving Blackcap

Evolution doesn't necessarily take centuries. In the event of the Blackcap songbird, (1) ... decades were sufficient. The birds inhabit the forests of southern Germany and normally fly to Spain to spend winters. The majority still travel south, but since the 1960s, 10% (2) ... to wintering in England, where the colder climate is more than (3) ... by the food left out on bird tables – a postwar phenomenon. These birds have rounder wings than the Spanish species (which offer better mobility but are (4) ... adapted to long-distance flights) and longer, narrower beaks, better adapted to eating bread and nuts rather than olives. Researchers argue that if the birds (5) ... to evolve like this, they could at last become a separate species.

	A	B	C	D
1	a little	few	Little	a few
2	have taken	taken	has taken	Taking
3	Balance	balanced	Balances	Balancing
4	Little	least	Less	the least
5	will continue	continues	continued	continue

Завдання для самостійної роботи

1. Complete the sentence and translate it

1. In recent years, environmentalists have become increasingly concerned about the number of animals facing
2. Unless we do something to save them now, we may soon lose many rare forever.
3. We should stop destroying the of wild animals.
4. Governments should hunting endangered species completely.

5. As a , many animals, such as tigers and alligators, would have a better chance of survival.
6. There are many ways in which we can save species from extinction.
7. Mastodon is a large extinct animal the elephant and mammoth.
8. How and why dinosaurs disappeared is a *puzzle* that *paleontologists* are trying by studying *fossils* and *rock formations*.
9. Sometimes different scientists see the same material but come to different, so there are many different theories.
10. Some paleontologists think the extinction was caused by a

2. Fill in the gaps in the text

The importance of bees' role in (1) within the (2) *chain* has been understood for quite some time. The problem is that over the past two (3) many bee (4) around the world have (5) very much. Bees pollinate (6), flowers and plants. Einstein probably thought that man would not be (7) *to grow adequate crops* to feed the world (8) pollination. There would also be other *disruptions* in the food chain, and plants in general would (9) In many areas of the U.S. bee populations have dropped by 50 percent or more. No specific (10) for this drop has been identified, though *infections*, *viruses*, *pollution* and *pesticides* have all been considered.

3. Put the word in the right form.

Elephants have always been very (1) (importance) to the people of India. They are trained to do work which *demands* great (2) (*strong*). What many people do not know is that elephants are (3) (excel) swimmers. This large animal can put its head under water and use its *trunk* as a *snorkel*. Its huge legs help it move (4) (gentle) in the water. Elephants can swim (5) (fast) than humans.

4. Choose the right variant to fill in the gap

For centuries, people lived with and respected the all-powerful crocodile. Those big jaws and lethal teeth (1) all attackers away. People were also (2) by their beauty and their intelligence. (3), it was their beautiful skin that put them under (4) When explorers realized how (5) crocodile skin was, everything changed. Hunters risked their lives in (6) to satisfy the world's demand for crocodile skin. The crocodiles' homes began (7) as new towns and industries were developed. Luckily for the crocodiles, people (8) that a world without them would not be the same, and now they are officially declared an (9) *species*. In some parts of the world, there are now parks where crocodiles may live (10), with laws to protect them.

1	a attracted	b frightened	c rejected	d loved
2	a terrified	b disgusted	c fascinated	d upset
3	a luckily	b though	c unfortunately	d even
4	a threat	b risk	c extinction	d pressure
5	a cheap	b thin	c narrow	d valuable
6	a private	b practice	c vain	d order
7	a disappear	b to disappear	c disappears	d disappeared
8	a created	b complained	c realized	d ignored
9	a endangered	b extinct	c safe	d normal
10	a safe	b safely	c safety	d unsafe

Unit 12. Mutation

To explain how plants and animals *develop variations*, biologists turn to genetics, *the science of heredity*. Genetics shows that characteristics are passed from parents to *offspring* by means of genes—segments of large *nucleic acid molecules* contained in chromosomes. Offspring inherit these genes from their parents during *sexual reproduction*.

When a gene is *altered* in any way, the offspring *acquires a new characteristic* not possessed by either parent. The gene is passed on to the offspring in the

mutated form. This change in the gene is called a *mutation*. Mutations are responsible for *genetic variability* in a given species. When a mutation introduces a *harmful characteristic*, the organism probably will not survive unless the harmful effect is balanced by *beneficial effects*. Helpful characteristics acquired by mutation are likely to be passed on to future generations.

Mutations can be produced in laboratories by the action of *X-rays*, other forms of *radiation*, or *chemicals*. Mutations often happen in nature from *random errors* in *chromosome replication*. Radiation and chemicals present in the environment can also cause the genes to mutate.

Sexual Recombination. The combining of genes from two parents is called *sexual recombination* and controls the *rate* at which *variations occur*. Sexual recombination mostly allows *progressive evolution* but not *chaotic*. Most organisms *reproduce through* sexual recombination. Related to sexual recombination is *genetic drift*, where many of the parents' genes are not passed on to the offspring. During sexual recombination, only half of the chromosomes from each parent are passed on to the *progeny*. If the number of offspring is small, it means that some genes of the parents will not be passed on.

Divergence. When different populations of the same species *become isolated* from each other (as by a physical barrier such as a mountain, *desert*, or ocean) each population *adapts to its own environment*. When a physical barrier separates two populations of the same species, it can give rise to a new species. When the isolated population experiences genetic drift or other mechanisms of natural selection, it causes the evolution of a new species. In time, the isolated populations may diverge into different species. A physical barrier is not always necessary for populations of a species to diverge. For example, different populations sometimes eat different foods in the same *general area*. Such populations will have little interaction with each other and may *eventually* diverge into different species.

The various species of *finches*, known as Darwin's finches, that live on the Galápagos Islands give an example of both forms of divergence. It is thought that these finches evolved from members of a single species blown by the wind from

the *mainland* of South America, some 965 km away. The ocean isolated those birds from the rest of their species. Different groups of finches found different types of food on the islands. Each group *developed adaptations* (such as a *particular beak shape*) for eating its own type of food; eventually, the groups diverged into more than a dozen species.

Convergence. When unrelated species adapt to the same kind of environment, they independently develop similar characteristics—that is, they converge. For example, though *whales* are mammals and *penguins* are birds, they each *share certain characteristics* with *fish* (such as *finlike appendages* and *streamlined bodies*).

Other Evolutionary Principles

1. Highly *complex species* evolve from relatively simple ones. *Simple species*, however, may evolve from complex ones—a process called *degeneration*—if a simpler structure helps a species to adapt better to its environment.

2. When different species *interact closely*, as in *predator-prey* or *parasite-host* relationships, they *co-evolve* — that is, they evolve together. For example, through evolution, *rabbits* have developed *keen hearing*, which helps them escape predators, such as *owls*. Owls, on the other hand, have developed *feathers* for *silent flight*.

Tasks to Unit 12

Task 1. *Transcribe and translate the following words.*

Acid, heredity, alter, acquire, means, characteristic, variability, gene, effect, chemicals, occur, isolated, desert, area, island, owl, feather, efficiency.

Task 2. *Give the Ukrainian equivalents to the words and word combinations*

Turn to genetics, science of heredity, by means of genes, to contain, nucleic acid molecules, to possess by either parent, to be responsible for, to introduce a harmful characteristic, beneficial effect, by the action of X-rays, to happen in nature, random errors, little interaction, to escape predators.

Task 3. *Put the verbs in Passive.*

1. Genetics shows that characteristics ... (pass) from parents to *offspring*.
2. When a gene ... (alter) in any way, the offspring acquires a new characteristic.
3. The gene ... (pass) on to the offspring in the mutated form.
4. This change in the gene ... (call) a mutation.
5. The organism will not survive unless the harmful effect ... (balance) by beneficial effects.
6. Helpful characteristics are likely to ... (pass) on to future generations.
7. Mutations can ... (produce) in laboratories by the action of *X-rays*.
8. The combining of genes from two parents ... (call) sexual recombination.
9. If the number of offspring is small, it means some genes will not... (pass) on.
10. It ... (think) that these finches evolved from members of a single species.

Task 4. Match the nouns with the adjectives to form phrases.

Barrier	Flight	Change
food	characteristic	generations
hearing	process	population
ancestor	efficiency	effect
drift	selection	errors

1. <i>Continual</i> ...	9. <i>Average</i> ...
2. <i>Remote</i> ...	10. <i>Beneficial</i> ...
3. <i>Gradual</i> ...	11. <i>Harmful</i> ...
4. <i>Natural</i> ...	12. <i>Genetic</i> ...
5. <i>Sufficient</i> ...	13. <i>Random</i> ...
6. <i>Successive</i> ...	14. <i>Keen</i> ...
7. <i>Internal</i> ...	15. <i>Silent</i> ...
8. <i>Physical</i> ...	

Task 5. Complete the sentences with the phrases from Task 4 and translate them.

1. The accumulated changes may become so great that the descendant doesn't look like its
2. Evolution is aby which one form of life changes into another form.
3. Organisms become extinct if they do not getand other necessities.
4. Natural selection causes ain the characteristics of the species.
5. The successive generations improve their ...and adjustment to their environment.

6. When a mutation introduces ..., the organism probably will not survive unless the harmful effect is balanced by ...
7. Related to sexual recombination is, where many of the parents' genes are not passed on to the offspring.
8. Mutations often happen in nature fromin chromosome replication.
9. When a separates two populations of the same species, it can give rise to a new species.
10. Rabbits have developed, which helps them escape predators, such as owls. Owls, on the other hand, have developed feathers for

Unit 13. Evolution

Evolution, as defined in biology, is the *continual process* by which one form of life changes, or *evolves*, into another form. Some religious groups deny that evolution exists, but most scientists accept it as fact. The theory of evolution suggests that all living things *descended* from one or several kinds of simple organisms. It also explains why there are so many different kinds of organisms. The *inherited characteristics* of nearly all living things change from generation to generation. The *accumulated changes* may become so great that the *descendant* doesn't look like its *remote ancestor* and may belong to a different species. Evolution is of two types: *anagenesis* and *cladogenesis*. Anagenesis is gradual change in *a single species*. Cladogenesis involves the branching of the species into two or more species over generations. It took a single species more than 3 million years to evolve into the current 10 million species on Earth today. This means that all species on the planet today had *a common ancestor*.

During evolution, natural selection works in a way that ensures that species that are more *capable* of adapting to their environment live and evolve further, while species that are *unsuited to their environment* die out.

Natural Selection. There are more living things produced than can possibly survive, because there is not enough space and food to support them. The result is *competition* among organisms in the struggle for survival. The individuals in each

species are not all exactly alike. They have *varying characteristics*, and these variations may either help or hinder them in their struggle to live.

Organisms become *extinct* (die out) if they do not have enough characteristics that enable them to get *sufficient food* and other necessities to withstand the climate, or to compete successfully with other forms of life. The ones that survive and reproduce *pass on* to the next generation some of the characteristics that made them better adapted to their environment. In this way *the successive generations* improve their *internal efficiency* and their *adjustment* to their environment. Natural selection causes *a gradual change* in the characteristics of the species. In some species, *females* prefer *males* with different traits. This leads to evolution of a species where males have traits which are different from those of females.

Directional selection is the evolution of characteristics that assist the species in *adapting to their habitat*. A species that needs longer limbs in order to run fast and catch its prey will evolve longer limbs.

Stabilizing selection is the continuance of the characteristics of a species that already has all the suitable traits needed to survive in its environment. If the average population of a species has all the characteristics it needs to survive, then individuals born with different traits do not survive long enough to pass on their traits through reproduction.

Diversifying selection ensures that the population has two different characteristics. A gene causes *a disorder of blood cells* within the human population, which is fatal if inherited from both parents. But when inherited from only one parent, it provides carriers of *the gene resistance* to malaria.

Tasks to Unit 13

Task 1. Read and translate the following words.

Y [ai] – deny, supply, apply, classify, identify

I [ai] – kind, find, bind, mind, wild

Th [θ] – theory, through, thought, both

Th [ð] – though, although, other, another, either, further, feather

Ur, er, ir [3:] – further, occur, certain, prefer, bird, circulation

Enough, allow, owl, type, ensure, earth

Task 2. Give the Ukrainian equivalents to the words and word combinations.

To deny, to exist, to accept, to descend, several kinds, inherited characteristics, accumulated changes, remote ancestor, gradual change, to involve the branching, current species, to be capable of, to adapt to environment, to evolve further, to be unsuited to; to support, to compete successfully, in order to, disorder.

Task 3. Give the English equivalents to the words and word combinations.

Безперервний процес, визначати/давати визначення, змінюватися від покоління до покоління, належати, спільний предок, Земля, забезпечувати/гарантувати; природний відбір, конкуренція, боротьба за виживання, покращувати, спричиняти поступові зміни, приводити до, надавати перевагу, схопити здобич, успадковувати.

Task 4. Finish the sentences.

1. Evolution is a continual process by which
2. Some religious groups ...
3. Most scientists ...
4. The inherited characteristics of nearly all living things ...
5. The accumulated changes may become so great that ...
6. Natural selection works in a way that ...

Task 5. Put the questions to the underlined words.

1. The theory of evolution suggests that all living things descended from one or several kinds of simple organisms. What
2. It also explains why there are so many different kinds of organisms.
3. Anagenesis is a gradual change in a single species.
4. Cladogenesis involves the branching of the species into two or more species over generations.
5. It took a single species more than 3 million years to evolve into the current 10 million species on Earth today. How long.....?

Завдання для самостійної роботи

1. Complete the sentence and translate it

1. is of two types: anagenesis and cladogenesis.
2. is gradual change in a single species.
3. involves the branching of species into two or more species over generations.
4. This means that all species on the planet today had a common
5. Organisms become (die out) if they do not have enough characteristics that enable them to get sufficient food and other necessities.
6. The ones that survive and reproduce pass on to the next some of the characteristics that made them better adapted to their environment.
7. Natural selection causes a gradual in the characteristics of the species. In some species, females prefer males with different traits.
8. To explain how plants and animals develop variations, biologists turn to genetics, the science of
9. Genetics shows that characteristics are passed from parents to offspring by means of —segments of large nucleic acid molecules contained in chromosomes.
10. Offspring these genes from their parents during sexual reproduction

2. Fill in the gaps in the text

Evolution, as defined in biology, is a (1) process by which one form of life changes, or (2), into another form. Some religious groups (3) that evolution exists, but most scientists (4) it as fact. The theory of evolution suggests that all living things (5)from one or several kinds of (6) organisms. It also (7) why there are so many different kinds of organisms. The (8) characteristics of nearly all living things change from (8) to generation. The (9) changes may become so great that the descendant doesn't look like its remote (10) and may belong to a different species.

3. Put the word in the right form

The change in the gene is called a (1) (mutate). Mutations are (2) (responsibility) for genetic (3) (vary) in a given species. When a mutation introduces a (4) (harm) characteristic, the organism (5) (probable) will not survive unless the harmful effect is balanced by (6) (benefit) effects. (7) (help) characteristics acquired by mutation are likely to be passed on to future generations. Mutations can be produced in laboratories by the (8) (act) of X-rays, other forms of (9) (radiate), or chemicals. Mutations often happen in nature from random errors in chromosome replication. Radiation and (10) (chemistry) present in the environment can also cause the genes to mutate.

4. Choose the right variant to fill in the gap

Early successful cloning experiments had (1) cells from a very *early stage of development*. The Roslin Institute's first cloned sheep, Megan and Morag, were (2) in early 1996. They were produced from *embryonic* (3), and their birth caused great interest (4) scientists.

Most scientists did not believe that it was possible to manipulate (5) animal tissue to produce a complete organism. As an animal (6) before birth, cells begin to specialize as blood, bone, skin, and all other kinds of cells in the body. Wilmut and his (7) of scientists believed that depriving an adult cell of food would force it into (8) They could then transfer its genes into another cell and stimulate that cell to begin dividing. They hoped that this stimulation would reactivate all the transferred genes. The team used this technique in (9) Dolly. They took away the nucleus, which (10) the genes, from a female sheep's egg cell.

Word list

1. famine/hunger	51.mankind
2. to recycle paper	52.breathing problems
3. for industrial purposes	53.rare species
4. to become impossible	54.to repair damage
5. cattle farms	55.contamination/pollution of air
6. to reduce the air pollution	56.safer future
7. changes in the climate	57.to pour into the sea
8. to become impossible	58.different approaches
9. under threat	59.rainforest
10.although	60.instead of
11.destruction	61.drought
12.to protect the environment	62.dangerous chemicals
13.developing countries	63.to absorb carbon dioxide
14.the same root	64.human activity
15.to fight for survival	65.to starve/starvation
16.to adopt animals	66.the annual growth
17.to be connected with	67.too late
18.the modern world	68.tiny sea creatures
19.solar radiation	69.alarming problem
20.as a result	70.moreover
21.flood	71.moisture
22.important issue	72.light and heat
23.to supply oxygen	73.relationship
24.domestic/industrial waste	74.to satisfy the needs
25.to be threatened with extinction	75.global warming
26.to disappear	76.to burn fossil fuels
27.endangered species	77.habitat
28.to plant trees	78.the total number of species
29.to pollute/contaminate	79.to cause the chain reaction

30.fortunately	80.as well as
31.precipitation	81.soil
32.the Earth's surface	82.the main reason
33.the loss of a single species	83.to destroy wild life
34.average temperatures	84.global disaster
35.to provide people with food	85.to cause changes
36.at the expense of their lives	86.to experience water shortages
37.to increase	87.motor vehicle
38.sad news	88.to play important role
39.to drop litter	89.illegal trade
40.according to	90.consequently
41.oil	91.coal
42.deforestation	92.to reduce/reduction
43.variety of living organisms	93.composition of the atmosphere
44.ozone layer	94.large amount of carbon dioxide
45.to estimate	95.biological diversity
46.heat-trapping green house gases	96.to continue to rise
47.in the coming decades	97.heavy storms/rains
48.a clean-up campaign	98.a litter-free street
49.to give off dangerous fumes	99.lack of oxygen
50.to a greater extent	100. needless to say

Review Tests

Variant 1

1. Highly complex species from relatively simple ones.
a) find b) research c) evolve d) characterize
2. Biological ... is the variety of living organisms.
a) diversity b) coal c) surface d) fuels
3. Tropical is the main reason of the crisis.
a) warming b) extinction c) habitat d) deforestation
4. Carolus Linnaeus classified organisms ... their structural similarities.
a) due to b) because of c) that's why d) according to
5. The earliest studies of biology were probably made by physicians.
a) ancient b) modern c) nervous d) scientific
6. The heart is the central organ of the ... circulation.
a) water b) blood c) disease d) low
7. The peripheral system consists of the nerves leading from the brain and spinal cord.
a) heart b) skeletal c) nervous d) network
8. The ... inside the tree tell about its age.
a) rings b) bones c) branches d) leaves
9. Mammoth is an ... animal.
a) dangerous b) ordinary c) domesticated d) extinct
10. Jenner first used against smallpox.
a) vaccination b) body c) examination d) disease

Variant 2

1. Your mood by many factors.
a) influences b) is influenced c) influenced d) will influence
2. The nature of has received much attention from psychologists.
a) intelligent b) intellectual c) intelligence d) intel
3. A manner, a process or a regular way of doing something is
a) method b) translation c) success d) level
4. Studies of central system give another approach to this question.
a) nerve b) musical c) nervous d) political
5. Pavlov gained fame as a in physiology.
a) researcher b) politician c) fundamentals d) profession
6. Stress disorganizes the of a person and changes his normal behavior.
a) language b) journey c) activity d) habit
7. There are positive and psychic states that many people feel in everyday life.
a) negative b) good c) important d) usual
8. In ancient times people didn't think that the brain was the center of activity.
a) scientific b) mental c) cultural d) attentive
9. Chemists found that over 100 chemical take place in the brain every second.
a) tasks b) formula c) science d) reactions
10. Many scientists came to the about the role of environment.
a) century b) conclusions c) development d) increase

Variant 3

1. ... are so small that they cannot be seen by naked eye.
a) organs b) bodies c) cells d) animals
2. Microbiology studies all microorganisms, such as, yeasts, moulds, algae.
a) bacteria b) birds c) plants d) reptiles
3. The rainforests are dying, rare plant and animal ... are disappearing.
a) forests b) species c) dioxide d) zoos
4. Factories are polluting our rivers and lakes with dangerous
a) cars b) machinery c) chemicals d) paper
5. We don't want to damage the environment and ... our newspapers and water.
a) cycle b) bicycle c) recycle d) cyclist
6. Physical traits are transmitted from generation to
a) offspring b) child c) baby d) generation
7. Ecology studies the relationships between organisms and their
a) environment b) parents c) species d) bodies
8. There has been much research of the composition and functions of nucleic ...
molecules.
a) structure b) acid c) methods d) cells
9. To explain how animals develop variations, biologists turn to
a) astronomy b) botany c) genetics d) microbiology
10. Through photosynthesis, plants absorb
a) carbon dioxide b) helium c) copper d) oxygen

Variant 4

1. In the 20th more emphasis was placed on experimental knowledge.
a) age b) century c) year d) thousand
2. To explain the variations in the species, biologists turn to genetics, science of
3. Each population adapts to its own
4. Dolly the sheep was from an adult cell of another animal.
5. The change in the is called mutation.
6. studies animal and plant classification.
7. Andreas Vesalius gave the first of the human body.
8. Mutations can be produced by the of X-rays, other forms of radiation, or chemicals.
9. The species of finches give example of both forms of divergence.
10. Due to his discovery R. Koch became known all the world.

Variant 5

1 ... studies animal and plant classification.

- a) taxonomy b) mycology c) genetics d) histology

2. Hippocrates believed that diseases have ... causes.

- a) difficult b) natural c) cell d) tissue

3. Gregor Mendel discovered the basic laws of ...

- a) size b) heredity c) hero d) character

4. Charles Darwin created his theory of ... in the Origin of Species.

- a) subdivision b) pollution c) evolution d) transition

5. William Harvey published his discovery of how ... circulates through the body.

- a) blood b) idea c) arteries d) structures

6. Baron Cuvier made major contribution in anatomy and paleontology, the study of life.

- a) prehistoric b) spiritual c) family d) medical

7. Anton van Leeuwenhoek discovered forms of life.

- a) medical b) good c) microscopic d) telescopic

8. C. Linnaeus classified organisms to their structural similarities.

- a) because b) in order to c) according to d) that's why

9. Scientists produced the clone of a ..., that was called Dolly.

- a) bird b) sheep c) insect d) mouse

10. People of ancient India and China knew various medicinal

- a) cultivation b) soil c) plants d) germs

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