МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ РОССИЙСКОЙ ФЕДЕРАЦИИ
ФГАОУ ВПО «КАЗАНСКИЙ (ПРИВОЛЖСКИЙ) ФЕДЕРАЛЬНЫЙ УНИВЕРСИТЕТ»
ИНСТИТУТ МЕЖДУНАРОДНЫХ ОТНОШЕНИЙ, ИСТОРИИ И ВОСТОКОВЕДЕНИЯ
ВЫСШАЯ ШКОЛА ИНОСТРАННЫХ ЯЗЫКОВ И ПЕРЕВОДА
КАФЕДРА ТЕОРИИ И ПРАКТИКИ ПЕРЕВОДА

ПРАКТИКУМ ПО ПИСЬМЕННОМУ ПЕРЕВОДУ ТЕКСТОВ В СФЕРЕ ЛЕСНОГО ХОЗЯЙСТВА

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Составитель: Курмаева И.И., к. филол. н., старший преподаватель кафедры теории и практики перевода ИМОИиВ КФУ

Рецензенты:

к.п.н., доц. Л.Г. Чумарова (ФГБОУ ВО «Казанский государственный аграрный университет»)

к. филол. н., доц. О.В. Акимова (ФГАОУ ВПО «Казанский (Приволжский) федеральный университет»)

Курмаева И.И.

Практикум по письменному переводу текстов в сфере лесного хозяйства: учебно-методическое пособие / И.И. Курмаева. - Казань: Изд-во Казан.ун-та, 2017. - 35 с.

Задачами данного учебно-методического пособия является овладение лексикой и формирование навыков письменного перевода текстов в сфере лесного хозяйства с английского на русский язык. Пособие состоит из двух частей. Первая часть включает 8 уроков и представляет собой комплекс текстов и упражнений, включающий широкий спектр профессиональной лексики, а также тест для самоконтроля. Вторая часть содержит тексты для дополнительного перевода.

Учебно-методическое пособие предназначено для студентов института международных отношений, истории и востоковедения, обучающихся по специальности 45.03.02 – Лингвистика «Перевод и переводоведение (английский и второй иностранный языки)».

СОДЕРЖАНИЕ

Введение

В учебно-методическом пособии «Практикум по письменному переводу текстов в сфере лесного хозяйства» отражены программные требования по предмету «Перевод текстов в сфере сельского и лесного хозяйства». Пособие состоит из двух частей. Первая часть включает 8 уроков и представляет собой комплекс текстов и упражнений, включающий широкий спектр профессиональной лексики, а также тест для самоконтроля. Вторая часть содержит тексты для дополнительного перевода.

Задачами данного учебно-методического пособия является овладение лексикой и формирование у студентов навыков и умений переводить тексты в области лесного хозяйства с английского языка на русский путем использования толковых, двуязычных и специализированных словарей; выработке точности и адекватности перевода текстов такого типа.

Для достижения адекватности и эквивалентности перевода текста в области лесного хозяйства с английского на русский язык требуется использование различных переводческих трансформаций. Под переводческими трансформациями сегодня принято понимать те «многочисленные и качественно разнообразные межъязыковые преобразования», которые используются, «чтобы текст перевода с максимально возможной полнотой передавал всю информацию, заключенную в исходном тексте, при строгом соблюдении норм ПЯ» (Бархударов Л.С.)

Лексические трансформации позволяют отразить значение английского слова в переводном тексте без семантических потерь, а грамматические трансформации необходимы для соблюдения грамматических норм русского языка.

Наиболее частыми и продуктивными лексическими трансформациями при переводе текстов в области лесного хозяйства являются: 1) калькирование (для перевода двухкомпонентных терминов). Например: *taiga forests - таежные леса, forest industry - лесная промышленность;* 2) транскрипция и транслитерация (для перевода имен собственных, в частности, топонимов): *Krasnoyarsk Stolby –Красноярские Столбы, Central Sikhote-Alin - Центральный Сихотэ-Алинь*; (реалий, обозначающих предметы и явления российской действительности): *taiga – тайга.* Реже используются экспликация, дифференциация, конкретизация, генерализация значений, целостное преобразование.

Среди грамматических трансформаций используется: 1) развертывание (сложное слово английского языка передается словосочетанием в русском языке): *clearcutting - сплошные рубки, reforestation – восстановление лесных массивов*; 2) стяжение (передача оригинального словосочетания сокращенным словом русского языка): *logging companies – лесозаготовители* (от «заготовители леса»); 3) уподобление (перестановка, т.е. передача английского словосочетания типа «N+N» русским сочетанием существительных, стоящих в ином порядке): *forest management – управление лесами.* Также используются*:* грамматическая замена (смена грамматической категории слова); членение предложения, т.е. разделение оригинального предложения на два и более самостоятельных предложений.

Учебно-методическое пособие предназначено для студентов института международных отношений, истории и востоковедения, обучающихся по специальности «Перевод и переводоведение (английский и второй иностранный языки)». Также может использоваться широким кругом специалистов в области лесоводства, а также всеми, кто интересуется указанной тематикой.

Lesson 1

Vocabulary

1. species - вид
2. pine - сосна
3. to breathe - дышать
4. oxygen -кислород
5. timber - древесина
6. grain – зерно

Man and plants

Plants - grass, flowers and trees - grow everywhere: high in the mountains, far out in the ocean and in many deserts and polar regions.

There are over 350,000 species of plants. Some are so small, that we see them only with a microscope; some are very large, such as the giant sequoia trees in California, they are over 100 meters high and about nine meter is wide. Plants are very old living things. Pine trees live 300-350 years. There are plants in Russia that are 2000 years old.

Life is impossible without plants. We breathe the oxygen which comes from plants, we eat the food which also comes from plants or from animals that eat plants. Many thousand years ago man built houses and made useful things from timber which he got from trees. He made his clothing from plants too.

Plants also give beauty. People like to look at flowers, at fields of grain, they like to be in the forest.

Man began to change plants about 10,000 years ago, when he began to grow the first food plants. The first farmers saw that there were good plants and not so good plants. They sowed the seeds of good plants and grew new plants from them. In this way man developed the basic food crops of the world. For example, the Indians developed little ears of wild corn into large ears with many grains, which we use today. When Christopher Columbus came to the New World the new corn grew over large territory there.

Exercises

1. Make word combinations:

1. to breath	a. regions
2. to develop	b. things
3. food	c. the oxygen
4. living	d. plants
5. to make	e. corn
6. to sow	f. trees
7. to grow	g. clothing
8. wild	h. ears of wild corn
9. sequoia	i. crops
10. polar	j. the seeds

2. Fill in the gaps with the words given in italics and translate:

1. Grass, flowers and trees are .... 2. In Africa there is a large ... which name is Sahara. 3. In the North the popular tree species is ... . 4. It is impossible to live without ... . 5. Man and animals get ... from plants. 6. Man ... houses from ... long ago. 7. Man began to ... plants 10000 years ago. 8. Man and animals … oxygen. 9. The Pamirs are very … … . 10. Now people … much about plants.

(desert, high, pine, know, oxygen, food, built, timber, grow, breathe, mountains, plants)

3. Translate into Russian:

1. Man made his clothing from plants.
2. Man and animals need oxygen.
3. Life is impossible without plants.
4. Plants are very old living things.
5. We breathe oxygen which comes from plants.

4. Answer the questions:

1. Are there many species of plants?
2. Why is life impossible without plants?
3. When did Man begin to change plants?
4. What did the farmers sow and grow?
5. How did the farmers develop food crops?

Lesson 2

Vocabulary

1. to link - соединять
2. organic matter – органическое вещество
3. inorganic matter – неорганическое вещество
4. to accumulate – накапливать
5. protection - охрана

Plants and nature

Plants and animals are organic nature. On the Earth plants make one third. Animals and man cannot live without plants, because the cycle of nature links them. This natural process gives man and animals oxygen and food. The Sun gives energy for this process. Plants are special living things: they accumulate sunlight and make organic matter from inorganic in their leaves; plants use sunlight and make their food. Man and animals breathe in oxygen and breathe out carbon dioxide, which plants combine with sun energy, water and minerals from the soil and in this way make their food. After plants and animals die, rotting process will give back minerals to the soil, where plants will again use them.

Plants also play a very important part in conservation and protection of soil, water and animals. They protect soil from the wind and keep water in the soil.

Trees give off a lot of oxygen into the air. For example, a hectare of pine forest gives oxygen for ten people. It is necessary to have 1,000 square kilometres of forest for ten million people.

If there are many parks and trees in a city and many forests around it, then its population will have enough oxygen to breathe.

Exercises

1. Find the correspondence:

1.	cycle of nature	1. процесс гниения
2.	give off	2.круговорот в природе
3.	rotting process	3.выделять
4.	breathe in	4. углекислый газ
5.	protection of soil	5. выдыхать
6.	breathe out	6.защита почвы
7.	carbon dioxide	7.вдыхать

2. Fill in the gaps:

1. We live on the planet .... 2. There is life on the Earth ... there are plants on it. 3. The … gives us light and energy. 4. Plants make organic ... from inorganic one. 5. … and soil are

necessary for the life of plants. 6. All living things become old and then .... 7. Animals and man cannot live without ... . 8. Every plant ... its special soil and much light. 9. Plants are necessary for … and ... of soil. 10. Man and animals breathe in ... and breathe out ... .

3. Answer the questions:

1.Will animals and man live without plants?
2.Are plants and animals of organic nature?
3.What do plants use to make their food?
4.Why do plants play an important part in conservation of soil, water and animals?
5. Why does a city need parks and gardens?

Lesson 3

Vocabulary

1. annual – годовой, ежегодный
2. moisture – влажность
3. pressure of air – атмосферное давление
4. tree rings – (годовые) кольца на дереве

Plants, Climate and Weather

Weather is the effect of four forces. They are temperature or heat, moisture or water in the air, wind or air movement and pressure of air. These four factors act together and make weather, although all weather is the result of the action of the Sun, because heat comes from the Sun.

Climate is unchanging weather. Year after year the climate in this or that area is more or less the same. For example, the climate of much of northern and central Africa is hot and dry. Much of southeast Asia is hot and wet. Northern Europe has clear seasons with long winters. The North and South Poles have cold climates. We think of the climate of these regions as never changing. But there is proof that the climate changes in the long run.

Annual tree rings prove it. Every year a tree grows at least a little. If there is much rain and a long summer, the tree produces a new light line. In cold or dry years, the tree does not grow much and its ring is a thin dark line. There are some very old trees that show that there have been some climatic changes.

The pine trees that grow in the White Mountains of California are some of the oldest living things on Earth. The scientists who study the age of trees from their annual rings have found one 4800 years old tree. This tree is still living and is quite good. Comparing the rings of an older dead tree, the scientists have found out what the Climate has been fur the last 9000 years.

Furthermore, there are places where dead trees have become stones. The rings of these trees can be studied too. So, scientists know now that the climate really changes but it takes a very long time.

Why is the possible change in climate important to us? What does it mean to us? Scientists tell us that we should plan our life for it: farmers should develop seeds that can grow in wetter or colder climates; we should plan to build farms in various areas too; we should also be able to move both to other places of the planet and to other planets; we should be able to change ourselves.

Exercises

1. Find the correspondence:

1. air movement	1. атмосферное давление
2. in the long run	2. выводить новые сорта семян
3. climatic changes	3.в конце концов
4. annual rings	4.влажность

5. to develop seeds	5. климатические изменения
6. moisture	6.воздушные потоки
7. pressure of air	7. годовые кольца (на дереве)

2. Find antonyms:

Lose, living, thick, young, light, cold, little, the same, dry, more, old, bad, hot, short.

3. Find the English equivalents of the following:

Более или менее, старейшие создания на земле, климатические изменения, возможное изменение, результат действия солнца, годовые кольца, влажность, Северный и Южный полюсы, атмосферное давление.

4. Answer the questions:

1. What is weather?
2. What are four factors that act together and make weather?
3. What is climate?
4. What trees are the oldest in the world?
5. Does climate really change?

Lesson 4

Vocabulary

1. plant formation - растительная зона
2. vegetation - растительность
3. barley - ячмень
4. to irrigate - орошать
5. oats - овес
6. wheat - пшеница
7. yield - урожай
8. rain forests – тропические леса
9. rich - плодородный
10. man-made canals - искусственные каналы

Plant Formations and Their Environment

Many elements make up a plant's environment. One of the most important is weather. Sunlight, temperature, rain and snow affect the growth of plants. From south to north the temperature is progressively lower; from coastal areas inland moisture is progressively less.

The environment of the plant also includes the soil and the other plants and animals that live in the same area. All these factors make up natural formations. Botanists classify the world into five natural plant formations.

The fast formation is the tundra and high mountains. It is a cold, dry and treeless area that surrounds the Arctic ocean near the North Pole. The vegetation here is poor. The plants grow in groups.

Southward, with higher moisture and temperature forests grow across the continent. That is taiga. Forests cover a third of the land here and consist of both needleleaf and broadleaf trees.

The next formation is open area where we may find many grasses. They are the most typical plants there. Most of the grasslands are used for agriculture. Farmers grow there such grains as barley, oats, wheat etc. The soil is rich here.

Still another formation is desert. It covers about a fifth part of the Earth's land. Some deserts have almost no plant life. They get little rain and have sandy soils. The temperature there is very high. But some plants can live in desert regions. They do not grow together and so they get water and minerals from a large area. Today man-made canals irrigate some deserts and so farmers can

grow there cotton and other crops which require high temperature.

Tropical rain forests - the fifth formation - grow in regions that have warm, wet weather the year round. Most trees are broadleaf there. Because of wet weather they never lose all their leaves. They lose only a few of them at a time. The trees are so thick that little sunlight reaches the Earth and only plants that require little sunlight can grow on tropical forest soils.

Plant formations and their environment are natural resources which man always used and uses now. We should preserve forests, grasslands and soils. Thus the knowledge of the ecology of the natural plant formations and their structure becomes very important.

Exercises

1. Find the correspondence:

1. plant formation	1.искусственные каналы
2. coastal areas	2. сельское хозяйство
3. agriculture	3. растительная зона
4. rain forests	4.влажность
5. botanist	5. тропические леса
6. moisture	6. прибрежные районы
7. man-made canals	7. ботаник

2. Form the antonyms:

Low, wet, find, rich, poor, high, few, a little, dry, a few, small, many, better, great, far, unusual, cold, thin, near, thick, lose, hot, usual, poor, worse

3. Name five plant formations.

4. Answer the questions:

1. What elements affect the growth of plants?
2. What is the first natural plant formation?
3. Where do farmers grow such grains as barley, oats, wheat?
4. Where do tropical rainforests grow?
5. Why is the knowledge of the ecology of the natural plant formations important?

Lesson 5

Vocabulary

1. bush - кустарник
2. shrub - куст
3. cellular structure – клеточная структура
4. lumber -лесоматериалы
5. veneer - фанера
6. perennial - многолетний
7. vine – вьющееся растение
8. durability - прочность
9. black walnut - американский черный орех
10. class - класс
11. order - сорт
12. amily - семейство
13. genus (pl. genera) - род
14. species - вид

Forest, Trees and Wood

If forests, trees, and wood were suddenly not available, the life of people would have to change greatly. Think for a moment how dependent our way of life actually is upon forests, and

forest products. Without lumber, how many people would have no dwelling houses to live in? Without lumber and veneer, how well would the houses be furnished? Without our forests, what would happen to the million of hours of recreation that are now spent hunting, hiking, and sightseeing? Wood enters into other activities in the form of boats, sport equipment, and toys, and what a loss it would be to the great orchestras of our time to be without their wood instruments. If wood were suddenly no longer available, the people would not receive the morning newspaper, one of the most important of the hundreds of paper products we use every day.

Without forests and wood, not only our cultural and social life would suffer, the economy of the nation would be altered considerably. Many of the products flowing into the hands of the consumer cannot be duplicated satisfactorily by any other material, and those which can be duplicated often lack important qualities of the wood.

Why is wood such an important material? Part of the answer lies in the structure and composition of wood, which are responsible for the properties that make wood so useful. The cellular structure gives wood one of the most favorable strength - weight ratios of any common material, and also makes it easier to cut, shape and fabricate. The extractive materials deposited in the heartwood of many woods add durability as well as attractive colors and even pleasant odors.

Great variability of wood is actually one of the main reasons for its wide utilization. Not only are there hundreds of species possessing differing properties, but even within a species there are never two hoards alike. Another reason wood is such an important material is that it has always been readily available. The greatest advantage that wood has - it is a renewable resource. With proper management and utilization, the forests can provide the country with wood practically infinitely.

From a wood utilization standpoint, a tree may be defined as a perennial plant reaching a height of at least twenty feet and producing a trunk of sufficient diameter to be of value in the production of wood products. There are of course many other woody perennial plants such as bushes, vines, and shrubs, but they are of little importance as sources of wood for commercial purposes.

Trees, being plants, fall into the botanical classification system of taxonomic groups - divisions, classes, orders, families, genera, and species. Trees as well as other plants are referred to most precisely by scientific names, which are composed of their genus and species; black walnut, for example, is *Juglans nigra L*. However, the common name (black walnut) is sufficient for most practical purposes. The initial following the scientific name denotes the scientist who named the plant, in this case, Linnaeus, a Swedish botanist.

Exercises

1. Find the correspondence:

a. veneer	1. род
b. black walnut	2. клеточная структура
c. trunk	3. лесоматериалы
d. family	4. фанера
e. lumber	5. возобновляемый ресурс
f. perennial	6. ствол (дерева)
g. genus	7. семейство
h. renewable resourse	8. вид
i. cellular structure	9. многолетний
j. species	10. черный американский орех

2. Fill in the gaps with the words given in italics and translate:

1. Why is wood such an important ... ? 2. Many of wood products cannot be ... by any other material. 3. Many other woody perennial plants are of little … sources of wood for commercial purposes. 4. Wood is a ... resource. 5. Great … of wood is one of the main

reasons for its wide ... . 6. Without ... and veneer, how well would the houses be furnished? 7. Another reason ... is such an important material is that it has always been readily available. 8. With proper management and utilization, the ... can provide the country with wood practically infinitely. 9. There are of course many other woody perennial plants such as ... , ... , and ... , but they are of little importance as sources of wood for commercial purposes.

(shrubs, bushes, vines, forests, wood, lumber, utilization, variability, renewable, importance, material, duplicated)

3. Answer the questions:

1. How may a tree be defined from a wood utilization standpoint?
2. What is the greatest advantage of wood as a raw material?
3. How does wood enter people's activities?
4. Is wood an important material?
5. Why are bushes, vines, and shrubs of little importance as sources of wood for commercial purposes?

Lesson 6

Vocabulary

1. stem – основа, ствол
2. root – корень
3. crown - крона
4. nutrition - питание
5. respiration -дыхание
6. transpiration – транспирация (выделение избыточного количесва водяного пара растениями)
7. digest-усваиать, перераб атывать
8. bark- кора
9. deteriorate – ухудшаться, разрушаться
10. assimilation –ассимиляция, усвоение
11. heartwood- ядровая древесина
12. the green matter - хлорофилл
13. sapwood - заболонь
14. fungus (pl. fungi) – плесень, грибок
15. coniferous - хвойный
16. deciduous -лиственный
17. timber - древесина
18. moisture - влага
19. the black iron – железное дерево (кругиодендрон железный)

How a tree lives

Trees are woody plants, growing with a single stem. They are the largest members of the plant world, ranging in height from 20 to 300 feet or more, according to species and conditions of growth. Trees may be said to consist of three parts :

- the roots which hold the tree in place and take up from the soil water and certain mineral substances needed for the trees' growth;
- the trunk ors tern which supports the crown and supplies it with water and food from the roots;
- the crown. In this part the most important processes are taking place.

The materials upon which a tree feeds are derived from the soil and the air.

The roots of a tree absorb water from the soil and with it the necessary nutrition and elements of the soil. The amount of water taken up by the roots is usually much larger than is required in the chemical processes which go on in the leaves. The tree gives away this unused water by a

process known as transpiration. Great quantities of water vapor tend to keep the air in the forests humid and favourable to growth.

In the leaves the food necessary for the trees' growth is manufactured. The raw food materials which reach the tree through the roots and the leaves are digested in the leaves. They are then sent to all living parts of the roots, stem and crown where they are either used at once or stored away for later use.

Like all other plants and like animals trees breathe. The breathing is done through the leaves and the bark. Respiration is the factor supplying the energy with the aid of the green matter in the leaves. The energy is supplied by sunlight; the plant takes up carbon dioxide gas of which there is always a small amount in the atmosphere. The carbon is used to elaborate the organic compounds. The carbon assimilation is the most important biochemical process. The air would deteriorate rapidly if plants did not take up carbon dioxide and give off oxygen.

The earlier structure of wood is known as heartwood and the outer, later sections as sapwood. The difference is in the moisture content and ageing. Heartwood is found in all species of coniferous trees such as pine, fir, spruce, larch and in certain deciduous trees, for example, in oak, ash, elm, poplar, as well as in tropical trees.

Dead or heartwood trees no longer perform a function in the living tree.

Hence, if the tree is injured by fire, the heartwood trees are in greater danger, the sapwood trees have greater resistance to fungus attack owing to their nature and content. On the other hand, when a tree has been cut and the timber seasoned the heartwood trees are more resistant to fungi and insect pests. The pores through which a leaf breathes are surrounded with tiny cells which serve to open and close

the pores as the weather changes and as moisture and lire vary. Trees grow from the top and in diameter, the side growth is also called secondary growth. Wood has layers of growth which appear as circles around the centre. They are actually elongated cells and cluster of tubes. This makes it possible to split the wood vertically and prevent splitting across the grain. Wood varies in weight and in specific gravity. Some wood is heavier than water as, for example, the black iron

in Florida, which will sink in water. With a few exceptions dry wood is lighter than water, but the moisture content of wood greatly affects its weight.

Exercises

1. Find the correspondence:

a)

pine	1. тополь
fir	2. грибок
spruce	3. сосна
larch	4. ель
oak	5. дуб
ash	6. лиственница
elm	7. вредители (вредные насекомые)
poplar	8. вяз
fungus	9. пихта, ель
insect pests	10. ясень

b)

1.sapwood	1. кора
2.heartwood	2. вечнозеленые деревья
3.timber	3. хвойные деревья
4.deteriorate	4. заболонь
5.deciduous trees	5. крона
6.evergreen trees	6. ядровая древесина
7.coniferous trees	7. ухудшаться

8.crown 8. лиственные деревья
9.bark 9. древесина

2. Give 10 names of coniferous trees and 10 names of deciduous trees.

3. Mark the statements true or false:

1. Deciduous trees are evergreen trees: they do not lose their leaves in winter.
2. The leaves of coniferous trees look like needles.
3. Deciduous trees do not form definite crown.
4. Plants take up oxygen from the air.
5. The food necessary for the trees' growth is manufactured in the roots.
6. Unlike animals trees do not breathe.

4. Answer the questions:

1.What are the main parts of a tree?
2.How does a tree breathe?
3.Why is the carbon assimilation called the most important biochemical process?
4.What is the difference between heartwood and sap wood?
5. Which part of a tree is responsible for the most important processes in it?
6.What is secondary growth?
7.What kind of tree will sink in water?

Lesson 7

Vocabulary

1.cambium - камбий
2.to mature - созреть
3.to account for – объяснять ч-л.
4.scaly - чешуйчатый
5.wood ray – сердцевинный луч
9. to encircle- окружать
6. to split- расщеплять
7.cell-клетка
8. cone - конус

How a tree grows

A tree grows in three directions: trunk and branches grow upward, roots grow downward, and all grow laterally, that is in diameter. As with all living things, trees are made up of cells, and growth occurs by means of cell division. Vertical growth is of little interest, because the most part of the wood in the tree trunk is formed by lateral growth. Growth· in diameter, also called secondary growth, takes place in a very narrow zone between the wood of a tree trunk and the bark. This area, called cambium, is only a few cells thick, but it produces all the different types of cells in both the wood and the bark. The cambium itself consists of a layer only one cell thick, but as the cells divide and mature, there is a region on each side of the cambium which contains living cells in various stages of development.

When a wood cell is mature, it is technically dead, for it contains no nucleus or protoplasm. Thus, even the wood of a living tree is made up mainly of dead cells, although certain kinds of cells in the sapwood remain alive longer than others.

During a normal growing season, the cambium produces millions of cells, and a layer of new wood is formed. Since the cambium is a cover surrounding the tree trunk, the layer of wood produced each year is in the same form, and when the tree is only a year or two old, the layer of wood is a cone as high as the tree. During each successive growing season, another cone-shaped layer of wood is added around underneath. Thus, in order to find the age of a tree by the time-honoured method of counting growth rings, one must cut the tree very near the ground or the first year or

two is missed.

During each growing season, a layer of bark is also added, but it is added to the inside of the bark. It would seem, then, that since a tree enlarges in diameter each year, the outer layers of bark must stretch. But what actually happens is that the outer layers of bark become dry and, instead of stretching, they crack. This accounts for the scaly appearance of the bark of most trees.

On a cross-sectional surface we can see the growth rings. These are the concentric layers of wood added each season to the diameter of the trunk. The rings are usually quite distinct because in the temperate climates, the wood formed during the early part of the growing season is different from the wood formed later. The wood formed in the spring when growth is more rapid is called earlywood or springwood, and is characterized by cells which are larger and thin-walled, making a rather porous layer of wood. Slower growth later in the growing season produces latewood or summerwood, which has smaller thick-walled cells, forming relatively more dense wood.

Besides, on the surface of hardwoods, fine lines can be seen radiating from the centre of the tree outward. These are wood rays, made up of cells oriented horizontally in the tree instead of vertically, as the majority of the cells are. The horizontal orientation of ray cells helps to conduct food materials laterally in the tree.

Exercises

1. Find the correspondence:

1.trunk	1.стадия
2.branches	2.клетка
3.cell	3.ствол
4.scaly	4.ветви
5.bark	5.чешуйчатый
6.surface	6.кора
7.wood ray	7.камбий
8.stage	8.сердцевинный луч
9.cone	9.поверхность
10.cambium	10.конус

2. Fill in the gaps with the words given in italics and translate:

1. In the temperate zone trees grow actively during the … months and stop growing during the … months. 2. In the beginning of the growing season the growth is … .and then it slows down. 3. A tree ... in three directions . 4. The problem of ... is an important one. 5. Deciduous trees are ... trees: they do not lose their ... in winter. 6. The leaves of ... trees look like needles. 7. … take up oxygen from the air. 8. The trees breathe through the leaves and the … .

(grows, rapid, warmer, cold, bark, reforestation, leaves, evergreen, plants, coniferous)

3. Answer the questions:

1. In which three directions does a tree grow?
2. Where does the secondary growth occur?
3. What part of a tree produces cells?
4. How can one know the age of tree?
5. Why are the annual rings well seen in temperate climate?
6. What are wood rays? What is their function?

Lesson 8

Vocabulary

1.raw – сырой, необработанный
2.directly - прямо
3.indirectly - косвенно
4.fuel- топливо, горючее
5.cultivation - возделывание
6. pest - с/х вредитель

Plants and their uses

From earliest times plants are known to play an important part in everyday lire of man. We know plants to provide us with food, clothing, shelter and many other necessary things. People are still as dependent upon plants as primitive man was many thousand years ago. Great necessity caused primitive man to grow plants. And the cultivation of plants is thought to be closely connected with man's progress. In order to grow plants man had to settle down and to begin building homes. Primitive men had few needs except food and clothing.

Civilization has increased man's wants to a surprising extent. The man of today is no longer satisfied with merely having food to eat and house to live in. He wants raw materials which can be made into useful things and products.

Man's food and clothing are produced directly or indirectly by plants. Many animals· teed on plants and produce food and raw materials used by man. Without plant life neither animals nor men will be able to live.

Many things people use in everyday life are made from plants. The paper they write on, the clothes they wear, the tables they sit at, all come from plants. Plants are used as timber in the making of furniture and as fuel. Many drugs are made from plants.

Plant culture began a great many years ago. The most important plants in the world are said to have been grown 4000 years ago.

There exist very many species of plants. But the best known to most people are those that are useful to men. They are grown and cultivated by farmers and are called farm crops. These crops are used for many different purposes.

· Some are used directly by man, some are consumed by animals, others are used in industry and medicine. We can 'Certainly expect new uses to he found and the value of other plants to be discovered.

As plants are so important to man, they must he well cared for and grown under suitable conditions. Then they will give greater yields.

For the plants to grow well they must also he well protected against pests and diseases. With this in view scientists have worked out a system of measures for plant protection which is being realized in our society.

Exercises

1. Find the correspondence:

1. raw materials	1. возделывание
2. farm crops	2. урожай
3. yields	3. сырье
4. timber	4. горючее
5. fuel	5. с/х культура
6. drugs	6. жилище
7. diseases	7. первобытные люди
8. primitive men	8. болезни
9. shelter	9. древесина

10. cultivation	10. лекарства

2. Complete the sentences:

1. To grow plants man had to .... 2. Many necessary things are .... 3. We expect new uses of plants …. 4. The most important species ... 5. Farm crops are used .... 6. Plants must be …. 7. Many animals .... 8. Cultivated plants ....

3. Translate the sentences:

Plants need water and sunlight 2. What do those plants need? 3. There are animals which feed entirely on grass, they don't need any other food. 4. A group of students helped schoolchildren to plant the park. 5. There is no use applying manure to rich the soil. 6. They no longer use timber as fuel. 7. Many drugs are made from plants. 8. The agronomists consider it necessary to increase the number of species grown at the experimental station. 9. Man's wants have greatly changed since the beginning of the century.

4. Answer the questions:

1.What do plants provide us with?
2.What things that people use in everyday life are made from plants?
3.Are people still dependent upon plants as primitive man was?
4.How do people use plants?
5.What caused primitive man to grow plants?

Test

1. ***How many plant species are there?***

1. over 350,000 species 2. less than 350,000 species 3. 350,000 species

2. ***The name of the giant tree in California is ...***

1. pine tree 2. fir 3. sequoia tree

3. Who developed little ears of wild corn into large ears with many grains?

1. Christopher Columbus 2. the Indians 3. the Americans

1. Plants accumulate ... and make organic matter from inorganic in their leaves.

1. water 2. sunlight 3. minerals

5. What protects soil from the wind?

1. sunlight 2. oxygen 3. plants

6. Trees give off a lot of ... into the air.

1. oxygen 2.carbon dioxide 3. rotting process

7. What is climate?

1. effect of four forces 2. air movement 3. unchanging weather

8. If there is much rain and a long summer, the tree produces a new light line.

1. true 2.false

9.Weather is …

1. climatic changes 2. The effect of temperature, moisture in the air, wind and pressure 3. unchanging climate

10.There are places where dead trees have become stones.

1. true 2. false

11. Taiga consists of …

1. needleleaftrees 2. broadleaftrees 3. both needleleaf and broadleaftrees

12. What formation gets little rain and has sandy soil?

1. taiga 2. the tundra 3. desert

13. Broadleaftrees in tropical rainforests never lost all their leaves because of …

1. cold weather 2. dry weather 3. wet weather

14. What factors make up natural formations?

1. the soil and the other plants and animals in the same area 2. mountains 3. forests

15. Wood is a ... resource

1. renewable 2. material 3. considerable

16. The cellular structure makes wood easier to cut, shape and fabricate.

1. true 2. false

17. Many other woody perennial plants are of little ... as sources of wood for commercial purposes

1. important 2. importance 3. aim

18. The extractive materials deposited in the heartwood of many woods add durability as well as attractive colors and even pleasant odors

1. true 2. false

19. It supports the crown and supplies it with water and food from the the crown roots.

1. the roots 2. the crown 3. the trunk

20. ... of a tree absorb water from the soil and with it the necessary nutrition and elements of the soil.

1. The leaves 2. The roots 3. the stem

21. The breathing of trees is done through the leaves and the bark.

1. true 2. false

Supplementary texts

Text 1. A TREE IS A LIVING THING

From the seed that in the autumn falls to the ground and is covered with leaves and soil, a tree is born.

In the spring, when the soil gets warm enough and moisture is abundant, deep changes begin to take place in the dormant seed, already condi-tioned by the low winter temperatures. The embryo tree awakens from its sleep and begins to grow. What causes this awakening of life is not exactly known, and what is known is complicated, indeed. The growth hormone is activated; the enzymes, whose part is to direct and hasten living processes, start their work feverishly. The insoluble stored fats and starch begin to break down to soluble sugars, mainly dextrose. The stored proteins are split by the enzymes into some 20 soluble compounds called amino acids. Both sugars and amino acids are rushed to the growing points, where still different enzymes rearrange them into building material to be used by the germinating embryo. Proteins are formed again from the amino acids, and dextrose is partly used for building the body of the tree and partly burned up to provide necessary energy for the process.

The embryo grows fast. Soon the seed shell becomes too small and splits open. The newly born tree emerges above the ground. Its shoot be-gins to grow straight up and its roots straight down. The root has important work to do, it provides water for the young seedling. As soon as the little root of a seedling penetrates the ground, the tree is permanently anchored, for better or for worse, to the place, where, unless it is transplanted, it has to stay all its life. From now on the tree has to depend on the nutrients available in that particular place and to develop under climatic conditions found there, which cannot be changed. In nature, however, a seedling generally begins its life in a place where its ancestors have been growing for a long time, so the little tree is well adapted to the existing conditions.

Besides the root and stem tips, another important growing region is soon established in the seedling. It is called the cambium layer and is found between the wood and the bark. It makes the tree grow in girth. The cambium consists of a single layer of cells that retain their capacity to di-vide throughout the life of the tree. This single layer of cells has a peculiar property in that it gives origin both to the wood and to the bark. In the spring, when the cambium layer becomes active, it begins to split off rows of wood cells to the inside and rows of bark cells to the outside. Generally speaking, the bark part of the tree is much thinner than the woody part, or the stem. Bark continuously sloughs off, while the wood accumulates. In the soft inner bark, or bast, are formed sieve tubes, through which manu factured sugar dissolved in water flows from the foliage to storage tissues in stem and root.

The wood formed in the spring consists of light-colored, thin-walled cells, toward the end of the season smaller cells are formed, their walls are heavier and darker and thus summer wood is formed. This alternation of spring wood and summer wood causes the concentric structure of the tree trunk known as annual rings, they are seen clearly on the cross section of a tree, one can determine fairly closely its age. When growth conditions are favorable and food and water are abundant, the rings are wide. When drought occurs, the growth slows down and the rings are narrow. By reading a cross section of an old tree, one can determine what growth conditions prevailed during any particular year of the past.

In the cross section of the hardwood trees there may be seen numerous dots. These are canals, so-called vessels, that serve for conducting water along the trunk. In the conifers, like pines or firs, there are no vessels and water moves painstakingly up the trunk through minute holes from one cell to another.

Sixty percent of the wood of a tree is cellulose — by far the most important ingredient. The structure of cellulose is well understood and is rather simple: molecules of dextrose are linked in pairs to form a more complex sugar, cellobiose, and these units are hooked up to form long chains of cellulose molecules. This structure of cellulose may be easily changed by action of even a weak

acid, cellulose then falls apart into the original dextrose molecules, providing an enormous source of sugar that can be used for many purposes, from fattening hogs to production of industrial alcohol. Most of the cellulose used at present, however, is converted into pulp and paper. The rest of the wood consists mostly of lignin; which is a binding material composed, like the cellulose, of carbon, oxygen, and hydrogen, but of an entirely different and more complicated chemical structure than cellulose. Lignin is not so useful as cellulose at present, but there is little doubt that valuable products will be made from it.

Besides cellulose and lignin, wood contains a small quantity of different substances — starch, fats, sugar, resins, tannins, and many others — and is literally saturated with water.

About 10 percent of the wood mass of a tree is found underground in the form of roots. The root system of a large tree is enormous. The total length of all roots of a big spreading oak tree amounts to many hundreds of miles. The function of the root is to provide water and minerals for the tree and to anchor it securely to the ground. It is important to keep in mind that the roots are part of a living organism and they need air, food, and water for growing. Mistreatment of roots, such as tramping the soil above them, flooding them for long periods of time, or burying them too deeply, will affect the welfare of the whole tree.

Topical Vocabulary

seed — семя;
embryo — зародыш, эмбрион;
growth hormone — гормон роста;
enzyme — энзим (фермент);
starch — крахмал;
dextrose — **д**екстроза (*уст.*) = глюкоза;
protein — протеин, белок;
amino acids — аминокислоты;
germinating embryo — прорастающий зародыш;
seed shell — оболочка, скорлупа семени;
shoot — росток,
seedling — (лесной) сеянец;
nutrients — питательные вещества;
stem tip — верхушка ствола;
cambium — камбий (образовательная ткань между древесиной и лубом);
girth — окружность ствола; обхват;
bast — лыко;
sieve tube — ситовидная трубка;
foliage — листва;
storage tissue — запасающая ткань, паренхима;
annual ring — годичное кольцо;
cross section — поперечное сечение;
hardwood (= deciduous) **tree** — лиственное дерево;
vessel — сосуд;
conifer (= softwood tree) — хвойное дерево;
cellulose (= pulp) — целлюлоза; клетчатка;
cellobiose — **ц**еллобиоза;
lignin — лигнин;
resin — смола;
tannin — танин (дубильная кислота).

Text 2. WHAT MAKES THE FOREST?

When most people look at a forest, they see a large number of trees close together. But forests are much more than that. They are intercon-nected communities of diverse organisms — bacteria and fungi, gigantic trees, birds, shrubs, ants and beetles, fish, and mammals. Forests cover about 30 % of the earth's land masses, and the forests can be viewed from the microscopic realm to a global perspective.

Variables such as climate, sunlight, rainfall, soil and elevation deter-mine the character of a forest — whether it consist s of small needle-leaved juniper, pine, spruce, or dense tropical vegetation thick with vines and but-tressed trees, or open, dry woodland dominated by giant Ponderosa pine.

When people think of animals that live in forests, creatures such as bears, eagles, gorillas, tigers are usually what come to mind. Forest plants, other than trees, are often ignored. And many people are unaware of the fact that organisms such as bacteria and fungi are just as important to the forest as the trees themselves.

Inorganic materials are also crucial to the living organisms. Green plants — everything from trees to the most delicate ferns — form the base of all forest ecosystems. These plants require clean air, soil, water, and sun to grow and support the fragile network of life in a forest.

An enormous variety of creatures inhabit the forest. Some are spec-tacular, others are hidden somewhere beneath the canopy of countless bil-lions of leaves. The web of interactions between individuals and species is intricate and complex; nothing about a forest is simple, and humans are only just beginning to understand any part of these ecosystems.

Forests are some of the most diverse habitats on the planet. Biodiver-sity is not simply something that's "nice" to have. All species, including humans, are dependent on all other species for survival. The extinction of even one organism — a monkey, a flowering plant, a water flea — will have unpredictable and often disastrous consequences.

Forests and people are connected, and have been since ancient times. We have always had a special relationship based on survival. It was a deli-cate chain of existence that we once treated with respect and appreciation. But people began to upset this balance. They saw the forest not as a part of them but as something to be conquered. They used the seemingly limitless forest, cutting down millions of trees. But now it is coming to our attention that the forests *do* have limits and it is time to bring them back into bal-ance.

There is still much we don't know about forest ecosystems but each day is leading to new discoveries. Each animal, insect and plant contains its individual genetic material that has been evolving for thousands of years. Protecting the forests does not just mean saving a lot of trees, it is preserving a process of life that started billions of years ago. Forests pro-tect our waters and manage our climate. When it rains in the forests, the leaves allow the water to slowly drip to the ground. When a forest has been clear-cut, the rain pours down hard on the unprotected soil. The dirt then washes into streams, muddying the waters. This is unhealthy for the fish, and can cause flooding. Also, without trees, the moisture in the air evaporates quickly, changing the climate of nearby forests. This process prevents trees from receiving the water they need.

People enjoy and appreciate fresh air, clear water, beautiful scenery and wildlife. So, places with all of the above are ideal tourist spots. Also, businesses like to be located in areas of such serene beauty.

Without the forests we would have much less oxygen. One acre of forest provides over 6 tons of oxygen per year! This is because trees (and all green plants) use a process called photosynthesis, during which they take in carbon dioxide and, as a by-product, produce oxygen. Plants "breathe" carbon dioxide, like we breathe oxygen. There has been a bal-ance between species that breathe out carbon dioxide and take in oxygen, and species that take in carbon dioxide and exhale oxygen. Since the 1800's this balance has been upset. Fossil fuels, when burned, create car-bon dioxide, so carbon dioxide levels have risen dramatically. Unfortu-nately, this gas, in large amounts, acts like an insulator and keeps heat near the surface of the Earth. This

is called the "greenhouse effect." Unlike clouds, "Greenhouse gases", are invisible and build up in the atmosphere.

In addition to the other important aspects of the ancient forests, some individual species, such as the yew tree (*Taxus brevifolia*), have shown great importance in the medical field. The bark of the yew tree provides taxol, an anti-cancer agent. It helps treat ovarian, lung and breast cancer. This property of the yew tree was only discovered in recent years, and if the forests that are home to the yew trees are lost, other medical treatments may also be lost as well.

Topical Vocabulary

interconnected communities— взаимосвязанные сообщества;
fungus (*pl*. **fungi**) — гриб; грибок; плесень;
mammal — млекопитающее;
microscopic realm — микроскопическое царство;
perspective — ракурс, проекция; перспектива;
variables — переменные (величины);
needle-leaved — хвойный;
juniper — можжевельник;
vine — вьющийся стебель, лоза, плеть;
buttressed trees — дерево, поддерживаемое (подпорами);
woodland — лес; (лесо)насаждение; лесная площадь;
fragile network — хрупкая (тонкая) взаимосвязь, организация;
web of interactions — сеть, система взаимосвязей;
habitat — место обитания; местожительство;
survival — выживание; долговечность;
to upset the balance — нарушать равновесие;
extinction — уничтожение;
conquer — завоевывать, покорять; подавлять;
cut down — рубить (деревья);
clear-cut — проводить сплошную рубку леса;
cause flooding — вызывать наводнение;
exhale — выдыхать; производить выдох;
carbon dioxide — диоксид углерода, углекислый газ
take in — поглощать;
fossil fuels — ископаемое топливо;
greenhouse effect— парниковый эффект;
build up — накапливать(ся);
yew tree — тис;
anti-cancer agent — противораковый препарат.

Text 3. TAIGA'S GROWTH CONDITIONS

The taiga is found throughout the high northern latitudes, between the tundra, and the steppes.

Taiga is a biome characterized by coniferous forests. Covering most of inland Alaska, Canada, Sweden, Finland, inland Norway and Russia (especially Siberia), as well as parts of the extreme northern continental United States, northern Kazakhstan and Japan (Hokkaidō), the taiga is the world's largest terrestrial biome. In Canada, boreal forest is the term used to refer to the southern part of this biome, while "taiga" is used to describe the more barren northern areas of the Arctic tree line.

Since North America, Europe and Asia were connected by the Bering land bridge, a number of animal and plant species (more animals than plants) were able to colonize both continents and

are distributed through-out the taiga biome. Others differ regionally, typically with each genus having several distinct species, each occupying different regions of the taiga. Taigas also have some small-leaved deciduous trees like birch, alder, willow, and aspen; mostly in areas escaping the most extreme winter cold. However, the deciduous larch is coping with the coldest winters on the northern hemisphere in eastern Siberia. The southernmost part of the taiga also has trees like oak, maple, and elm scattered among the conifers.

Up to 70—75 % of taiga forests in Russia have remai ned close to their natural state. Despite the relative richness of the natural forests in Euro-pean Russia, the taiga as a whole is relatively disturbed by various human activities, including forestry. Few substantial areas of intact natural forest remain. The remaining areas include the Pechora Ylych region and its headwaters in the Republic of Komi, the forests along the Karelia— Arkhangelsk and Arkhangelsk—Komi borders, the subtu ndra forests in the Arkhangelsk, Komi and Yamal-Nenets autonomous regions and the east-ern part of the Kola peninsula.

Taiga soil tends to be young and nutrient-poor; it lacks the deep, or-ganically-enriched profile present in temperate deciduous forests. The thinness of the soil is due largely to the cold which hinders the develop-ment of soil, as well as the ease with which plants can use its nutrients. Fallen leaves and moss can remain on the forest floor for a long time in the cool, moist climate, which limits their organic contribution to the soil; acids from evergreen needles further leach the soil. Since the soil is acidic due to the falling pine needles, the forest floor has only lichens and some mosses growing on it. It is not good for farming because it is nutrient poor.

Taiga, the world's largest biome, has a harsh continental climate with a very large temperature range between summer and winter. Aside from the tundra and permanent ice caps, it is the coldest biome on Earth. High lati-tudes mean that for much of the year the sun does not rise far above the horizon. Winters last at least 5—6 months, with ave rage temperatures be-low freezing. Temperatures vary from −50 °C to 30 ° C throughout the whole year, with eight or more months of temperatures averaging below 10 °C. The summers, while short, are generally warm and humid. In gen-eral, taiga grows south to the 10 °C July isotherm, occasionally to the 9 °C July isotherm. The southern limit is more variable. In these warmer areas, the taiga has higher species diversity with more warmth-loving species such as Korean Pine, Jezo Spruce and Manchurian Fir, and merges gradu-ally into mixed temperate forest.

The taiga experiences relatively low precipitation throughout the year (200—750 mm annually), primarily as rain during the summer months, but also as fog and snow; as evaporation is also low for most of the year, pre-cipitation exceeds evaporation and is sufficient for the dense vegetation growth. Snow may remain on the ground for as long as nine months in the northernmost extensions of the taiga ecozone.

Topical Vocabulary

latitude - широта (географическая);
inland — внутренняя часть страны; территория, удаленная от моря или границы;
terrestrial biome — наземный биом; живущий на земле или в земле;
barren — бесплодная земля;
genus (*pl*. genera) — род;
alder — ольха;
willow — ива;
aspen — осина;
deciduous — лиственный, листопадный;
larch — лиственница;
cope (with) — справиться; выдержать;
northern hemisphere — северное полушарие;
maple — клен;
elm — вяз, ильм;
scatter — разбрасывать, раскидывать; рассыпать;

headwaters — главный водосбор;
subtundra forest — лесотундра;
harsh climate — суровый (о климате);
ice cap — ледниковый покров;
humid — **в**лажный;
isotherm — изотерма;
warmth-loving species — теплолюбивый вид;
merge (into, with) — сливать(ся) (в…); соединять(ся) (с…);
mixed temperate forest — смешанный лес умеренного климата;
precipitation — выпадение осадков; осадки;
evaporation — испарение;
northernmost — самый северный;
organically-enriched — обогащенный органикой;
profile — вертикальный разрез; сечение;
moss — мох; плаун; лишайник;
moist climate — сырой, влажный климат;
acid — кислота;
leach soil — выщелачивать почву;
lichen — лишайник.

Text 4. FOREST MANAGEMENT

The scientific study of forest species and their interaction with the environment is referred to as forest ecology, while the management of forests is often referred to as forestry. Forestry is the art of growing rotational crops of timber trees in forests and woods. It may be defined in principle as the management of forests to insure maximum benefit to mankind.

While the continuous production of timber products is generally the main objective, secondary benefits such as recreation, wildlife protection, and watershed maintenance are almost always involved. Forest manage-ment has changed considerably over the last few centuries, with rapid changes from the 1980s onwards culminating in a practice now referred to as sustainable forest management. Foresters who practice sustainable for-est management focus on the integration of ecological, social and eco-nomic values.

The concept of forest management has acquired a broader content than it used to have and now relates more to caring for the forest environment as an integrated totality. The actions and methods employed in wood production are nowadays designed to ensure that the requirements of the natu-ral environment are taken into consideration during all stages of the for-est's growth.

Likewise in forest regeneration, the alternatives now chosen have the farthest-reaching effects on both wood production and environmental pro-tection.

Forest regeneration. Regeneration is an inseparable aspect of sustain-able use of forests. Generally conifer stands are regenerated at an age of 60—120 years (depending on growth site) in the cent ral parts and at 80— 160 years in the north of Russia. The corresponding recommendation for birch stands is 60—80 years, but they can be regene rated earlier if the tree trunks are stout enough.

In most cases, regeneration is intended to create a mixed forest, in which the dominant species is pine or spruce, with birch in a complemen tary role. Forests on the most barren soils, where hardwood species do not thrive, are an exception. The main tree species and regeneration method used are chosen primarily on the basis of soil type and fertility. Especially on nutrient-poor soils, the first option to be considered is natural regenera-tion. It is the least expensive and easiest alternative — when it succeeds. In the event of enough seedlings failing to spring up spontaneously, expen-sive and labour-intensive efforts to redress the matter — such as supple-mentary planting and removing grass and other undergrowth — must be resorted to.

Site preparation is of decisive importance in forest regeneration. Ex-posing mineral soil gives planted seedlings a better chance of thriving and promotes the natural sprouting of, especially, birch as a supplementary species. Gentler soil-preparation methods have been adopted in recent years and deep ploughing has been almost completely abandoned. Today, about two-thirds of the area treated is gone over by scarifying or scalping machines and the remainder mounded using tractor-diggers or excavators. Interest in controlled burning is reviving, but the areas on which this method is practised are still small.

Management of young stands. The species balance in young tree stands is regulated by means of cleaning and thinning. This involves re-moving shrubs and other undergrowth likely to interfere with the growth of the main species.

The guidelines for tending young stands have been revised in recent years. The main changes are that now the aim is to have more hardwoods and to delay final treatment of the young stand. Having hardwoods mixed with the main softwood species improves soil properties, reduces pest and disease damage and increases biodiversity. Hardwoods also improve the quality of softwoods, especially pine, by retarding the growth of branches. Stands of young trees usually need tending once or twice during their first fifteen years of life. In the final tending operation, the stands are thinned to a density of, depending on species, 1,600—2,000 tre es per hectare and then left to grow on until it is time for the first thinning.

Undergrowth is removed with a clearing saw; herbicides are nowa-days rarely used. There is growing interest in using biomass obtained when older seedling stands and young forests are thinned as fuel.

Thinning. The purpose of thinning is to control the amount and distri-bution of available growing space, to replicate the forest's natural develop-ment and ensure an even age structure. Removing trees whose growth has been stunted or which are diseased or otherwise of poor quality gives the others more room in which to grow. Depending on growing conditions a nd species, a stand is usually thinned 1—3 times durin g a rotation. The fre-quency of thinning has been reduced to improve the economy of these op-erations and lessen the damage done to standing trees.

The first thinning is done 30—35 years after regene ration, when the trees are 12—14 metres tall, and reduces the number per hectare to around 1,000. First thinnings ought to be carried out considerably more often than at present. Neglecting them decisively reduces the profitability of wood production. Second and subsequent thinnings cut the density to 450—550 per hectare and these trees are allowed to grow on until the area in ques-tion is due for regeneration.

Ecological thinning is where the primary aim of forest thinning is to increase growth of selected trees, favoring development of wildlife habitat (such as hollows) rather than focusing on increased timber yields.

Pruning. Pruning, as a silvicultural practice, refers to the removal of the lower branches of the young trees so clear knot free wood can subse-quently grow over the branch stubs. Clear knot-free lumber has a higher value. Pruning in landscaping and gardening is the practice of removing diseased, non-productive, or otherwise unwanted portions from a plant.

Topical Vocabulary

sustainable forest management — устойчивое лесоуправление;
dominant species — преобладающая порода;
complementary — дополнительный, дополняющий; комплиментарный;
barren soil — бесплодная, тощая земля;
thrive — процветать; пышно расти, разрастаться;
endangered species — исчезающий вид; вид, находящийся под угрозой исчезновения;
rot — гниль; гнить;
fertility — плодородие;
nutrient poor — бедный (питательными веществами);
natural regeneration — естественное восстановление, самосев;
seedling — сеянец; саженец, рассада; зернышко;

undergrowth — подлесок; подрост;
sprout — давать почки, пускать ростки, давать побеги, расти;
site preparation — расчистка территории;
scarifying machine — культиватор-рыхлитель;
scalping — обнажение (почвы), удаление растительного слоя;
treat — подвергать (технологической) обработке, обрабатывать; очищать
digger — землеройное орудие; культурный плужный корпус;
thinning — прореживание (леса); рубка ухода;
cleaning — очистка, осветление; рубки осветления;
tending young stands — уход за молодым древостоем;
final treatment — последняя обработка; окончательные рубки ухода;
final tending operation — последняя рубка ухода;
clearing saw — пила для рубок ухода;
stand — лесонасаждение; древостой;
stunt growth — останавливать рост;
growing conditions — условия произрастания;
rotation — ротация, чередование
standing trees — деревья на корню;
subsequent thinnings — последующее прореживание (леса);
ecological thinning — экологические рубки ухода;
pruning — обрезание ветвей, удаление сучьев;
clear wood — бездефектная древесина;
branch stub — обрубленный конец ветки;
knot-free lumber — пиломатериалы без сучков.

Text 5. FLORA AND FAUNA OF TAIGA

There are two major types of taiga, *closed forest*, consisting of many closely-spaced trees with mossy ground cover, and *lichen woodland*, with trees that are farther-spaced and lichen ground cover; the latter is more common in the northernmost taiga.

The forests of the taiga are largely coniferous, dominated by larch, spruce, fir, and pine. *Evergreen* species in the taiga (spruce, fir, and pine) have a number of adaptations specifically for survival in harsh taiga win-ters, though larch, the most cold-tolerant of all trees, is deciduous. Taiga trees tend to have shallow roots to take advantage of the thin soils, while many of them seasonally alter their biochemistry to make them more resis-tant to freezing, called "*hardening*". The narrow conical shape of northern conifers, and their downward-drooping limbs, also help them shed snow.

Because the sun is low in the horizon for most of the year, it is diffi-cult for plants to generate energy from photosynthesis. Pine and spruce do not lose their leaves seasonally and are able to photosynthesize with their older leaves in late winter and spring when light is good but temperatures are still too low for new growth to commence. The adaptation of evergreen needles limits the water lost due to transpiration and their dark green color increases their absorption of sunlight. Although precipitation is not a limit-ing factor, the ground freezes during the winter months and plant roots are unable to absorb water, so desiccation can be a severe problem in late win-ter for evergreens.

Although the taiga is dominated by coniferous forests, some *broadleaf* trees also occur, notably birch, aspen, willow, and rowan. Many smaller herbaceous plants grow closer to the ground. Periodic stand-replacing wildfires (with return times of between 20—200 year s) clear out the tree canopies, allowing sunlight to invigorate new growth on the forest floor. For some species, wildfires are a necessary part of the life cycle in the taiga; some, e. g. Jack Pine have cones which only open to release their seed after a fire, dispersing their seeds onto the newly cleared ground. Grasses grow wherever they can find a patch of sun, and mosses and lichens thrive on the damp ground and on the sides of tree trunks. In com-parison with other biomes, however, the taiga has a low biological diver-sity.

Coniferous trees are the dominant plants of the taiga biome. A very few species in four main genera are found: the evergreen spruce, fir, and pine, and the deciduous larch or tamarack. In North America, one or two species of fir and one or two species of spruce are dominant. Across Scan-danavia and western Russia the Scots pine is a common component of the taiga.

The taiga is home to a number of large *herbivorous* mammals and smaller rodents. A number of wildlife species threatened or endangered with extinction can be found in the Canadian Boreal forest including woodland caribou, grizzly bear and wolverine. Habitat loss due to destructive development, mostly in the form of logging, is the main cause of de-cline for these species.

The animals have adapted to survive the harsh climate. Some of the larger mammals, such as bears, eat during the summer in order to gain weight and then go into hibernation during the winter. Other animals have adapted layers of fur or feathers to insulate them from the cold.

Due to the climate, carnivorous diets are an inefficient means of ob-taining energy; energy is limited, and most energy is lost between trophic levels. However, predatory birds (owls and eagles) and other smaller car-nivores, including foxes and weasels, feed on the rodents. Larger *carni-vore*s, such as lynxes and wolves, prey on the larger animals. *Omnivore*s, such as bears and raccoons are fairly common, sometimes picking through human garbage.

A considerable number of birds such as Siberian thrush, white-throated sparrow and black-throated green warbler, migrate to this habitat to take advantage of the long summer days and abundance of insects found around the numerous bogs and lakes. Of the perhaps 300 species of birds that summer in the taiga, only 30 stay for the winter. These are either *car-rion-feeding* or large raptors that can take live mammal prey, including golden eagle, rough-legged buzzard, and raven, or else seed-eating birds, including several species of grouse and crossbills.

Areas untouched by man are rarer but there are still considerable areas where human influence is slight, and many natural values are present, e. g. areas with a diverse flora, rich in herbs; lakes and marshy areas of *ornitho-logical* value with resting places for migrating birds.

Many species in the Red Data Books (endangered lists) for Sweden and Finland still exist in viable populations in the Northwest of Russia. The main reason is that the forests, although intensively used or disturbed in many places, have not been subject to the same systematic and intensive forestry methods applied in neighbouring Finland and Sweden.

Topical Vocabulary

closely-spaced — с небольшим просветом;
farther-spaced — с большим просветом;
cold-tolerant — хладостойкий, морозоустойчивый;
shallow roots — поверхностные корни;
resistant to freezing — морозоустойчивый;
hardening — закалка; закаливание;
downward-drooping — ниспускающийся, нисходящий;
transpiration — испарение;
desiccation — высыхание; высушивание; обезвоживание;
rowan — рябина;
herbaceous lants — травянистые растения;
invigorate — давать силы, укреплять; вселять энергию;
wildfires — лесные пожары;
tamarack — лиственница американская;
Scots pine — сосна обыкновенная;
herbivorous mammals — травоядные млекопитающие;
rodent — грызун;
threaten / endanger with extinction — подвергать опасности исчезновения;
caribou — карибу; канадский олень;
grizzly bear — медведь гризли;
wolverine — росомаха;
weasel — куньи, куницы, куницеобразные (*Mustelidae*);
hibernation — спячка;

carnivorous — плотоядный;
trophic level — уровень питания;
trophy — трофей; добыча;
predatory — хищный;
owl — сова; сыч; филин;
eagle — орел;
carnivore — плотоядное (хищное) животное;
weasel — ласка, горностай;
feed (on) — питаться (чем-л.), кормиться;
lynx — рысь;
wolf (*pl.* wolves) — волк;
prey (on) — ловить, охотиться (на);
omnivore — всеядное животное;
raccoon — енот;
Siberian Thrush — дрозд сибирский;
warbler — певчая птица;
carrion-feeding — падальщик;
raptor — хищник;
prey — добыча;
buzzard — канюк;
raven — ворон;
grouse — куропатка;
crossbill — клёст;
marshy — болотный; болотистый, топкий;
Red Data Books — Красная книга;
viable populations — жизнеспособные популяции;
subject (to) — подвергать(ся) склонный, предрасположенный (к чему-л.).

Text 6. FOREST GROWTH CONDITIONS

The general environmental requirements for successful growth of plants are sufficient light, water, oxygen, mineral nutrients and suitable temperatures. In terms of physiological processes the environmental requirements are conditions favorable for the manufacture of sufficient food for growth and maintenance of a satisfactory internal water balance. These apparently simple requirements actually involve a large number of environmental factors and physiological processes.

Light. The effects of light on plant growth depend on its intensity, its quality or wavelength, and its duration and periodicity. Variation in any of these characteristics can modify both the quantity and quality of growth. For example, seedlings grown in light of low intensity differ not only in height and dry weight from those grown in full sun but also in root/shoot ratio and leaf and stem structure. The photoperiod affects both vegetative growth and flowering, and wavelength affects other processes in addition to photosynthesis.

Temperature. Fluctuations in soil and air temperature influence growth and distribution of trees by altering rates of various important physiological processes such as photosynthesis, respiration, cell division and elongation, enzymatic activity, chlorophyll synthesis and transpiration. Growth usually increases with an increase in temperature until a critically high temperature for a species is reached, and then declines rapidly. The decrease in growth may result from excessive respiration which reduces carbohydrates, from decreased rates of photosynthesis, from excessive transpiration which causes wilting, or from a combination of these.

Atmospheric Conditions*.* The climate of any given place is determined chiefly by its

latitude, its elevation and meteorological forces that operate over wide areas and at high as well as low altitudes. But within the broad limits established by these major factors, local modifications of the "microclimate" are effected by topography and forest cover. These effects vary greatly with different combinations of slope, aspect, kind and size of trees, density of stand, and area covered.

Wind Movement. The first thing that one notices on entering a forest on a windy day is the relative calm. So great is the difference that one seems to have stepped suddenly into another world. The mechanical obstruction offered by the trees deflects upward a large part of the moving mass of air, and slows down the velocity of that which enters the forest. Dense stands with heavy foliage naturally have the greatest effect. Thus, a forest of deciduous broadleaf trees has more effect on wind velocity in summer than in winter.

The stronger the wind, the greater the reduction of actual velocity, but not of relative velocity.

This influence on wind movement is felt not only inside the forest itself, but for a considerable distance to the leeward. Shelter belts consisting of several rows of trees are often planted to take advantages of this fact, particularly in regions where lack of natural forest cover gives the wind an unbroken sweep over long distances.

Temperature and Radiation. Forests exercise a moderating influence on air temperature as well as on wind movement. Here again the extent of the influence is greatest in dense stands with heavy foliage, which have the maximum effect on incoming and outgoing radiation. Protection from solar radiation, which under extreme conditions may be in the forest only 1 percent of what it is in the open, reduces maximum temperatures throughout the year. In the forests of the United States the reduction in monthly maxima may range from about 3 °F in January to 8 °F in July.

Similarly the slowing down of outward radiation from the earth generally raises minimum temperatures throughout the year. The effect of a forest on monthly minima is less than on monthly maxima, both in summer and winter, but may amount to more than 6 °F in the United States.

Topical Vocabulary

density of the stand — густота, плотность насаждений;
elongation — удлинение; вытяжение;
fluctuation — колебание, неустойчивость;
latitude — широта (географическая);
leeward — подветренная сторона; подветренный;
maximum (*pl.* maxima) — максимум; максимальный показатель;
obstruction — препятствие; обструкция;
photoperiod — фотопериод; световой день;
photosynthesis — фотосинтез;
respiration — дыхание;
root/shoot ratio — пропорция (соотношение) между корнем и побегом;
seedling — сеянец; саженец, рассада; зернышко;
transpiration — испарение; выделение жидкости (из организма в виде паров);

Text 7. DISTURBANCES AND THREATS

No communities of plants and animals are stable. Many factors are constantly disrupting these ecosystems — weather, predation, food supply, and, above all, humans. Conditions are favorable to different species at different times. Ecosystems are constantly changing, and after every change, it is impossible to recreate the ecosystem that existed before.

In ecology, a disturbance is a temporary change in average environmental conditions that causes a pronounced change in an ecosystem. Outside disturbance forces often act quickly and with great effect, sometimes resulting in the removal of large amounts of biomass. Ecological disturbances include fires, flooding, windstorm, insect outbreaks, as well as anthropogenic

disturbances such as forest clearing and the introduction of exotic species. Disturbances can have profound immediate effects on ecosystems and can greatly alter the natural community.

Every old-established forest provides a home for vast numbers of animals, birds and insects which live in a delicate state of balance with each other and with their environment. Seed-eaters might, in theory, destroy the forest by devouring all the nuts destined to produce seedling trees, but in practice this rarely happens. Predatory owls, hawks, foxes and pine martens limit the numbers of seed-eating birds, mice and squirrels and allow sufficient seeds to survive to ensure the replacement of old and diseased trees. If the predators become too successful and destroy their prey, they in turn will decline in numbers through shortage of food.

The wildlife population is markedly different in deciduous and coniferous woodlands. Broad-leaf forests support a great variety of life. More than 200 insect species have been found on oak trees alone, including leaf-roller moths, gall-makers, predators and vegetarians. Insect-eating birds like thrushes, blackbirds and warblers abound, sharing their habitat with seed-eating wood-pigeons, pheasant, dormice and squirrels. Coniferous forests have a more restricted fauna comprising species better equipped to deal with their resinous bark and foliage and their tough leaves and seeds.

This delicate balance may, however, be upset by the introduction of a species into a new country where it has no natural enemy. Today, quarantine laws attempt to safeguard each country's woodlands, but without complete success. The bark beetles that carried a virulent strain of Dutch elm disease to Britain in 1970 made the crossing from Canada in consignments of unsawn rock elm used in the boat-building industry. Maps plotting the spread of the disease focused on ports at which the timber was landed.

Poisons are the simplest large-scale means of attack, but these need repeated application and may also harm innocent species. Biological con-trol offers a better remedy. American Monterey pines, planted in Australia, suffered great damage from *Sirex* wood wasps accidentally imported from Europe. The balance was restored by the introduction of the European ich-neumon fly — a natural, and destructive, parasite o f the wood wasp.

Timber, naturally durable material, provided by the forest, does not change or lose its nature, as result of age. So long as timber is protected from moisture and insect attack it can remain unchanged for centuries. Many materials become brittle and crumble after a certain number of years due to oxidation and other slow chemica1 alterations in their composition, but wood retains its strength indefinitely. Nor does it suffer fatigue, as do metals, after repeated stressing.

Under damp conditions, however, and when in contact with the soil all natural materials derived from plants and animals decompose, more or less slowly. It is in fact fortunate that they do so as otherwise forests would become cluttered up with fallen trees, branches and leaves. Decay does not happen as a result of wet conditions alone but is brought about by the fungi and, though to a lesser extent, by bacteria.

Fungi are forms of plant life that do not possess the chlorophyll which enables greens plants to make organic materials from the carbon dioxide in the air. Consequently they must obtain their nutrients from living on other plants, on animals, or on their dead remains. The fungi that attack living plants are called “parasites” and those that grow o nly on dead remains are known as “saprophytes”. Some fungi grow in the sapwood and block the vessels that carry the sap to the leaves thus causing the tree to die of desiccation. Others grow deeper in the trunk causing the disease known as “heart-rot”, while “butt-rot” is caused by a fungus entering the tree at its base and may eventually result in the tree-falling in a gale. It is however the saprophytes with which the timber user is most concerned. These fungi live on fallen logs and branches and attack timber in storage and also wooden structures in service if these are not protected by preservative or paint.

Topical Vocabulary

anthropogenic — антропогенный, созданный человеком; обусловленный влиянием человека;

bark beetle — короед;

biomass — биомасса; энергетическое сырьё;
blackbird — черный дрозд;
brittle — ломкий, хрупкий;
consignment — партия отправленного/прибывшего товара, груз;
crumble — крошить(ся); осыпать(ся);
desiccation — высыхание; высушивание;обезвоживание;
disturbance — нарушение; вторжение в естественный ход вещей, нарушение порядка;
devoure — есть (жадно), пожирать; уничтожать;
dormouse (pl. dormice) — соня (зоол.);
foliage — листва;
gall-makers — галлообразователи (насекомые);
habitat for wildlife — место обитания живой природы
habitats (for organisms) — естественная среда обитания (организмов);
hawk — ястреб; сокол;
leaf-roller moth — листовертка;
marten — куница;
pheasant — фазан;
prey — добыча;
prey (on) — ловить, охотиться (на);
resinous — смолистый;
seed-eater / seed-eating bird — птицы, поедающие семена;
thrush — дрозд;
virulent strain — вирулентный (опасный) штамм;
warbler — певчая птица; славка (Sylviidae);
wood-pigeon — вяхирь (Columba palumbus);

Text 8. SUSTAINABLE FOREST MANAGEMENT

Support for environmentally friendly, socially responsible and sustainable forest management. The state has owned and managed forests in Russia for almost two centuries. During this time a powerful bureaucratic apparatus (employing about 250 thousand people) has developed and no country in the world can compete with Russia in the numbers of various forest officials. The country has sophisticated forest legislation, so complicated and intricate that even forest industry employees can hardly work with it (no wonder, all active forest laws and industrial regulations are written on about 10,000 typewritten pages).

Russian forest industry also takes the first place in many aspects. The forest industry enterprises employ about 800 thousand people. Each year they log some 150 million cubic meters of timber and in the 1960's this figure was twice as big. Only six countries (USA, China, India, Indonesia, Canada and Brazil) outlog Russia (some 30 years ago Russia was the leader). What gives Russia these enormous logging amounts?

In efficiency of timber use Russia lags far behind. One cubic meter of timber in Russia gives products worth ten time less than, say, in Scandinavian countries. From each cubic meter of timber forest sector employees receive salaries 20 times lower than in other countries. In other words, to produce a unit of finished product Russian forest industry logs 10 times more timber than in neighboring Finland.

Types of cuttings applied in Russian forestry are also far from being perfect, at least from the standpoint of environmental protection. Over 80% of timber in Russia is logged in clear cuttings and in most forests clear cuttings are permitted in large areas (over 50 ha). These logging practices cause largest possible damage to the environment and in large areas ancient forests are replaced with birch and aspen forests. The total annual clear cutting area in Russia is 20 times bigger than the territory of Moscow. Logging carried out in the last 100 years have largely

exhausted accessible and most productive forests in Russia, which results in that many forest industry companies are facing shortages of accessible high quality timber.

The outcome is quite obvious: poor forest settlements of jobless people, salaries that at best are enough to provide water and bread, out-of-date machinery and back-breaking labor conditions of forest industry employees. And more: constant lack of funds on forest protection and conservation resulting in regular forest fires, piles of litter along forest roads, illegal logging, no funds on normal reforestation and young forest maintenance.

It is rather difficult to improve the existing situation. First of all, it is necessary to understand that logging should not be growing (this what "forest generals" from the Natural Resources Ministry want). It should efficiently use what is cut. More cutting is already impossible in Russia: economically accessible forests have been largely exhausted, while cutting remote northern and Siberian forests will only result in more losses. And it is a must that considerable investments should go to restoration and maintenance of valuable forests. Otherwise, in 10 to 20 years Russian forest industry will die. Russia should reject exports of round timber (this is where Russia is taking the first place) as this type of export brings profits only to those countries that process this timber afterwards. Not all agree to the above, though: round timber exports "feed" lots of officials as most unregistered incomes come from this type of exports (in round timber exports it is very difficult to determine precisely the quality and price of exported timber at the customs).

Topical Vocabulary

aspen — осина;
birch - береза;
clear-cut — сплошная рубка; лес, вырубаемый сплошной рубкой;
intricate — запутанный, сложный, замысловатый;
logging — лесозаготовки; трелёвка, вывозка леса;
reforestation – восстановление лесных массивов;
round timber – лес кругляк;
standpoint – точка зрения;
sustainable forest management — устойчивое лесоуправление;

Text 9. WORLD HERITAGE

About UNESCO World Heritage

The Convention Concerning the Protection of the World Cultural and Natural Heritage was adopted at the 17th session of the General Conference of UNESCO on November 16, 1972, and it came into force on December 17, 1975. Its main goal is to involve the world community in conservation of unique cultural and natural properties. In 1975, the Convention was ratified by 21 countries. Over the next 40 years, it was signed by another 170 countries, and at the middle of 2014 the number of States Parties reached 191. This Convention has the more signatories than any other UNESCO convention. In 1976, to ensure effective implementation of the Convention, the World Heritage Committee and the World Heritage Foundation were formed.

Two years later, the first cultural and natural properties were inscribed on the UNESCO World Heritage List. The first natural territories to receive status of World Heritage properties were the Galapagos Islands (USA), Yellowstone National Park (USA), Nahanni National Park (Canada), and Simien National Park (Ethiopia). Over the years, the List has grown to encompass a wide variety of regions and properties: by the middle of 2014, it included 197 natural, 779 cultural and 31 mixed natural and cultural properties in 161 countries of the world. Most cultural properties in the List are in Italy, Spain, Germany and France (more than 30 properties in each). The United States and Australia have the greatest number of World Heritage natural properties (more than 10 properties each). The Convention also protects such world-renowned natural sites as the Great Barrier Reef, the Hawaiian Islands, the Grand Canyon, Mount Kilimanjaro and Lake Baikal.

Undoubtedly, it is a big honor for a territory to be on a list of the world's most valuable natural sites. It is also a big responsibility. A territory, once nominated, can be inscribed in the World Heritage List only after thorough evaluation to determine that it meets at least one of four criteria developed by experts from the World Heritage Committee. **These criteria are:**

- Contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance.
- Be outstanding examples representing major stages of the earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features.
- Be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals.
- Contain the most important and significant natural habitats for in-situ conservation of biological diversity, including habitats containing threatened species of universal value from the point of view of science or conservation.

Protection, management, authenticity and integrity of the property are also the important factors that are taken into account during its evaluation before the inscription into the List. World Natural Heritage status provides additional guarantees of conservation and integrity of the unique ecosystems: gives higher status to the territory, promotes popularity of the properties and development of alternative types of nature management; ensures priority funding for the properties.

World Heritage Project

In 1994 Greenpeace Russia initiated the project "World Heritage" in order to identify and protect outstanding natural systems presently threatened by significant modification due to human impact. Acquisition of the highest protection status by the territories in order to ensure additional guaranties for their preservation is the main objective of this work carried out by Greenpeace.

The first attempts to include protected areas in Russia in the UNESCO List occurred in the early 1990s. In 1994, during the seminar "Current Issues Facing the Creation of a System of World and Russian Natural Heritage Properties", a list was made of possible territories for inscription. Also in 1994, experts from Greenpeace Russia prepared documents for inclusion of the Virgin Komi Forests territory in the World Heritage List. In December 1995, that territory became the first in Russia to achieve the status of a World Natural Heritage property.

Over the next several years, other Russian territories were added to the List: Lake Baikal (1996), Volcanoes of Kamchatka (1996), Golden Mountains of Altai (1998), Western Caucasus (1999). In late 2000, Curonian Spit became the first Russian-Lithuanian International World Heritage property to qualify as a "cultural landscape". Later, the UNESCO List was extended to include Central Sikhote-Alin (2001), Uvs Nuur Basin (2003, in cooperation with Mongolia), Natural System of Wrangel Island Reserve (2004), Putorana Plateau (2010) and Lena Pillars Nature Park (2012).

Nominations for consideration by the World Heritage Committee must be inscribed first on the National Tentative List. At present Russia's list includes such natural complexes as Commander Islands, Magadan Nature Reserve, Daurian Steppes, "Lena Pillars" Nature Park, Krasnoyarsk Stolby, Great Vasyugan Mire, Ilmensky Mountains, Bashkirian Urals. The Upper and Middle Valley of Bikin River in the Central Sikhote-Alin as well as adjoining to Golden Mountains of Altai territories in China, Mongolia and Kazakhstan are to be nominated. Negotiations with Finland and Norway for joint nomination of the Green Belt of Fennoscandia are in process.

Russia is undoubtedly rich in unique intact natural territories. There are more than 20 areas in our country that could be nominated for inscription in the World Heritage List. Among them are Kuril Islands, Delta of the Lena, Delta of the Volga.

Russian cultural properties currently on the UNESCO World Heritage List are such well-known historical and architectural sites as the Historic Centre of Saint Petersburg, the Kremlin and Red Square, Kizhi Pogost, Solovetsky, Ferapontov and Novodevichy monasteries, Trinity Sergius

Lavra, the Church of Ascension in Kolomenskoye, and the Historic Monuments of Novgorod the Great, Vladimir, Suzdal, Yaroslavl, Kazan and Derbent.

World Natural Heritage Properties in Russia

Topical Vocabulary

Commander Islands, Magadan Nature Reserve, Daurian Steppes, "Lena Pillars" Nature Park, Krasnoyarsk Stolby, Great Vasyugan Mire, Ilmensky Mountains - Командорские острова, природный заповедник «Магадан», Даурская лесостепь, природный парк «Ленские Столбы», Красноярские Столбы, Васюганские болота, Ильменские Горы;

Convention Concerning the Protection of the World Cultural and Natural Heritage - Конвенция об охране всемирного культурного и природного наследия;

Central Sikhote-Alin - Центральный Сихотэ-Алинь;

Curonian Spit - Куршская коса;

in-situ conservation - на месте сохранения;

Kizhi Pogost - Ки́жский пого́ст (архитектурный ансамбль);

Lena Pillars Nature Park - природный парк «Ленские Столбы»;

Nahanni National Park - Национальный парк Наханни;

Natural System of Wrangel Island Reserve - Природный комплекс заповедника на острове Врангеля;

Putorana Plateau - Плато Путорана;

Simien National Park - Национальный парк Симиен;

tentative list – предварительный список;

the Church of Ascension in Kolomenskoye - Церковь Вознесения в Коломенском;

the Great Barrier Reef, the Hawaiian Islands, the Grand Canyon, Mount Kilimanjaro and Lake Baikal - Большой Барьерный риф, Гавайские острова, Гранд-Каньон, гора Килиманджаро и озеро Байкал;

Trinity Sergius Lavra - Троице-Сергиевая лавра;

Uvs Nuur Basin - Убсунурская котловина;

UNESCO World Heritage List - Список всемирного наследия ЮНЕСКО;

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