

МИНИСТЕРСТВО СЕЛЬСКОГО ХОЗЯЙСТВА РОССИЙСКОЙ ФЕДЕРАЦИИ  
ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ ОБРАЗОВАТЕЛЬНОЕ  
УЧРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ  
«БАШКИРСКИЙ ГОСУДАРСТВЕННЫЙ АГРАРНЫЙ УНИВЕРСИТЕТ»

З.Н. Изимариева

# FORESTRY

Учебное пособие  
по английскому языку

Рекомендовано  
научно-методическим советом ФГБОУ ВО Башкирский ГАУ  
в качестве учебного пособия по английскому языку  
для обучающихся направления магистратуры  
«Лесное дело»

УФА  
Башкирский ГАУ  
2019

УДК 811.111(07)  
ББК 81.2 АнглЯ7  
И 36

**Рецензенты:**

*Г.Р.Гарипова* – кандидат филол. наук, доцент кафедры иностранных языков Башкирского государственного аграрного университета;  
*И. В. Эделева* – кандидат филол. наук, ст. преподаватель кафедры иностранных языков Башкирского государственного аграрного университета;  
*Э.Р. Ханова* – кандидат с.- х. наук, ст. преподаватель кафедры лесоводства и ландшафтного дизайна Башкирского государственного аграрного университета;  
*А.С. Рябцева* канд. филол. наук, доцент Института русского языка факультета иностранных языков Наньчанского университета, Цзянси, Китай

**Изимариева З.Н.**

**И 36 Forestry. Лесное дело** : учебное пособие по английскому языку / З.Н. Изимариева.  
– Уфа: Издательство Башкирский ГАУ, 2019 – 127 с.

**ISBN 978 - 5 - 7456 - 0667- 0**

Цель пособия – формирование у обучающихся способности применять современные коммуникативные технологии на иностранных языках для академического и профессионального взаимодействия согласно ФГОС ВО.

Пособие предназначено для аудиторной и самостоятельной работы магистрантов направления «Лесное дело» в рамках дисциплины «Иностранный язык в профессиональной деятельности».

УДК 811.111(07)  
ББК 81.2 АнглЯ7

© Изимариева З.Н., 2019  
© ФГОУ ВО «Башкирский ГАУ»,  
2019

**ISBN 978 - 5 - 7456 - 0667- 0**

# CONTENTS

Introduction .....	4
Part I Professional English .....	8
Unit 1 Forest .....	8
Unit 2 Forest classification.....	15
Unit 3 Sustainable forest management.....	23
Unit 4 Forest threats .....	31
Unit 5 Forest products .....	40
Unit 6 Forest engineer .....	47
Part II Business English .....	53
Unit 1 Career options .....	53
Part III. Texts for independent reading .....	64
1 Biomes or plant formations .....	64
2 Layers of the rainforest .....	65
3 A tree .....	65
4 Conifers .....	66
5 Broadleaves .....	67
6 Temperate forest.....	68
7 Principles of Sustainable Forestry.....	69
8 Forests of Russia .....	71
9 Institutional organization of forest management .....	72
10 Nursery .....	74
11 Forests of the republic of Bashkortostan .....	75
12 Forest threats .....	76
13 Deforestation .....	78
14 Wood production.....	79
15 The Russian woodworking industry .....	80
16 Forests and forestry in different countries .....	81
Appendices .....	87
Appendix 1 Guidelines.....	87
Appendix 2 A Glossary of common forestry terms .....	103
Appendix 3 What are different woods used for? .....	120
References .....	123

## *INTRODUCTION (ОТ АВТОРА)*

Учебное пособие «Forestry» предназначено для обучения английскому языку магистрантов направления «Лесное дело». Использование пособия предполагает наличие у обучающихся языковой подготовки среднего уровня (Intermediate Level). По своему содержанию, структуре, методической направленности, объему языкового материала пособие соответствует требованиям подготовки магистрантов согласно ФГОС ВО.

Пособие состоит из 3 частей, глоссария и приложений. Основной структурной единицей первой и второй части является методический комплекс – урок (Unit). Каждый урок делится на разделы (Section): *Text work* (работа с текстом), *Word study* (изучение лексики), *Speaking practice* (разговорная практика), *Video watching* (просмотр видео), *Discussion* (обсуждение), *Project work* (работа над выполнением проекта), *Independent reading* (самостоятельное чтение), *Writing* (письмо).

*Text work.* Особенностью данного пособия является то, что каждый урок аккумулируются вокруг текста, но перевод не представлен как вид речевой деятельности, однако по усмотрению преподавателя можно сформулировать задания на полный письменный перевод различные виды сокращенного перевода на основе текстов уроков. Задачей обучения чтению является обеспечение необходимых условий для активизации навыков автоматического чтения при работе с иностранным текстом. Тексты содержат предтекстовые задания, помогающие восприятию и общему пониманию, а также послетекстовые задания, которые проверяют понимание и ориентируют на выполнение задания в соответствии с установкой, предоставляя возможность высказаться по проблемам, связанным с будущей специальностью студентов.

В учебном пособии подобраны тексты по основным разделам лесоводства, что определяет лексическое наполнение учебника. Упражнения по развитию языковых навыков, направленные на расширение общей научной лексики, специальных терминов, а также на развитие навыков речевой догадки, представлены в разделе *Word study*. Обширный глоссарий, расположенный в приложении, является достаточным не только для чтения, понимания текстов, но и для выполнения упражнений данного раздела.

Упражнения на закрепление уже усвоенных лексических единиц находят свое продолжение в разделах *Speaking practice* и *Discussion*.

В данных разделах содержатся речевые упражнения, направленные на формирование умений и навыков устной речи: сделать сообщение в соответствии с предложенным планом, сделать сообщение как развернутый ответ на вопрос, сделать сообщение предварительно заполнив таблицу, сделать сообщение по теме (связанной с основной темой урока), дать описание факта (явления, предмета), выразить свое отношение к факту (явлению, предмету).

Тексты для аудирования представлены в разделе *Video watching*. При работе с видео материалами рекомендуется демонстрационный этап (непосредственный просмотр видеоматериалов) использовать для самостоятельной работы во внеаудиторное время, а последемонстрационный этап, направленный на проверку понимания, организовать на аудиторных занятиях. Аутентичные видеоматериалы, обладая большой информативностью материала, создают атмосферу реальной языковой коммуникации и способны обеспечить успешное восприятие обучающимися иноязычной речи.

Современные образовательные тенденции диктуют свои требования и подходы к обучению студентов иностранным языкам с использованием различных интерактивных методов. В настоящее время все большую известность в сфере иноязычного образования приобретает кейс-метод, или *case-study*. Раздел *Project work* включает задания, имеющие коммуникативную направленность и представленные в виде ситуаций, характерных для профессионального общения в естественных условиях. Метод кейсов позволяет подготовить конкурентоспособных специалистов, рассматривая конкретные случаи деловой практики.

Данное учебное пособие предназначено для студентов второго уровня обучения, на котором самостоятельная работа представляет блок аудиторной и внеаудиторной работы с некоторым преобладанием второй. Поскольку чтение – это вид речевой деятельности, в котором можно практиковаться самостоятельно, формирование и развитие навыков и умений чтений должно осуществляться самостоятельно. Задача раздела *Independent reading* – выработать у студентов навыки и умения самостоятельной работы с предлагаемым текстом при последующем контроле со стороны преподавателя. Тематика заданий данного раздела полностью соответствует тематике основных текстов каждого урока и содержит дополнительную информацию по различным аспектам лесоведения, которые не нашли отражения в основной части.

Раздел *Writing* содержит темы для написания эссе. Вторая часть пособия включает материал для ознакомления с основами в деловой коммуникации в конкретной профессиональной области. Третья часть пособия содержит тексты, предназначенные для самостоятельного чтения.

Приложения к пособию включают глоссарий специальных терминов, методическое руководство для обучающихся при работе с текстами пособия, подготовке сообщений, написания эссе, а также выполнения интерактивных заданий.

Учебное пособие предназначено для магистрантов направления «Лесное дело» в рамках дисциплины «Иностранный язык в профессиональной деятельности». При тщательной проработке материала данного пособия обучающиеся получают навыки чтения специальной литературы и научатся общаться на профессиональные темы.

Dear Students!

Just getting a university degree isn't enough nowadays. Employers are increasingly looking for graduates who can hit the ground running. Each degree has been developed in response to current market demands for specific skills. Employers look for graduates who can demonstrate both breadth and depth of subject knowledge. Combining subjects in a degree program is a popular way of tailoring a course to reflect your career aspirations. Work experience plays a key role in making yourself employable. Some of the benefits are: the chance to put theory into practice; development of key skills; greater understanding of career choices; valuable career contacts for the future. Business is increasingly dependent on international collaboration, and employment opportunities demand well developed language skills. I hope, this course of foreign language will provide a broad range of language training opportunities for you!

Sincerely yours, author

# Part I Professional English

## Unit 1 FOREST

*The forest is not a resource for us, it is life itself.*

*Evaristo Nugkuag Ikanan*



### SECTION 1 TEXT WORK

#### **1. Discuss the following questions with your groupmates.**

- 1) What does the saying of Evaristo Nugkuag Ikanan about the forest mean?
- 2) What do you know about forest layers?
- 3) How can you define the term “forest”?

#### **2. Read the text.**

##### **Forest biome**

A biome is a large geographical area of distinctive plant and animal groups, which are adapted to that particular environment. The climate and geography of a region determines what type of biome can exist in that region (fig.1). Major biomes include deserts, forests, grasslands, tundra, and several types of aquatic environments. Each biome consists of many ecosystems whose communities have adapted to the small differences in climate and the environment inside the biome. To understand a world biome, you need to know the climate and geography of the region, the special adaptations of the vegetation, the types of animals found in the biome and their physical and behavioral adaptations to their environment.

Forest biome is the largest terrestrial biome. The forest biome includes terrestrial habitats that are dominated by trees and other woody plants. Forests are interconnected communities of diverse organisms – bacteria and fungi, gigantic trees, birds, shrubs, ants and beetles, fish, and mammals. Forests can be found in all regions capable of sustaining tree growth, at altitudes up to the tree line, except where natural fire frequency is too high, or where the environment has been impaired by natural processes or by human activities. Forest is a complex system in which trees are the dominant life-form.



# World Biomes

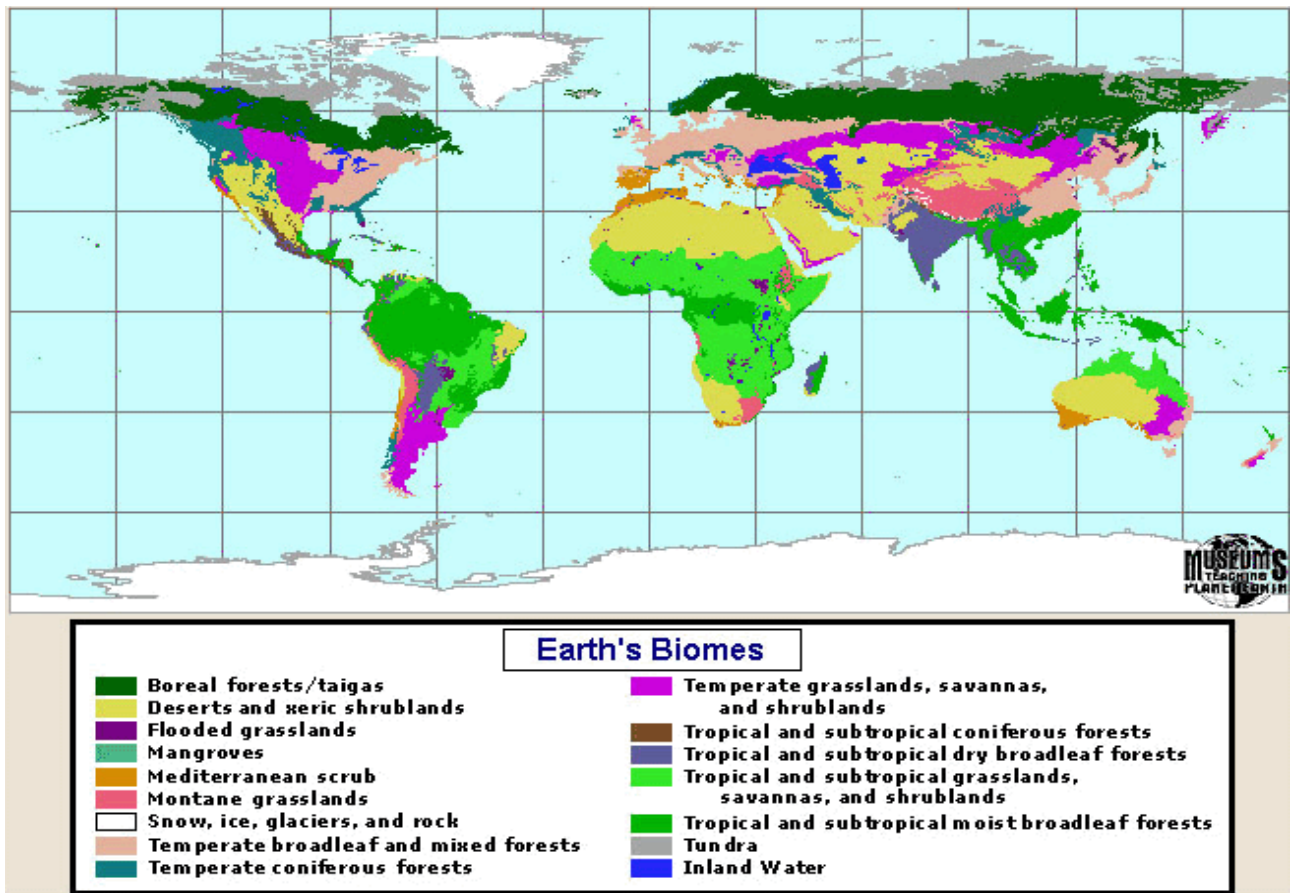
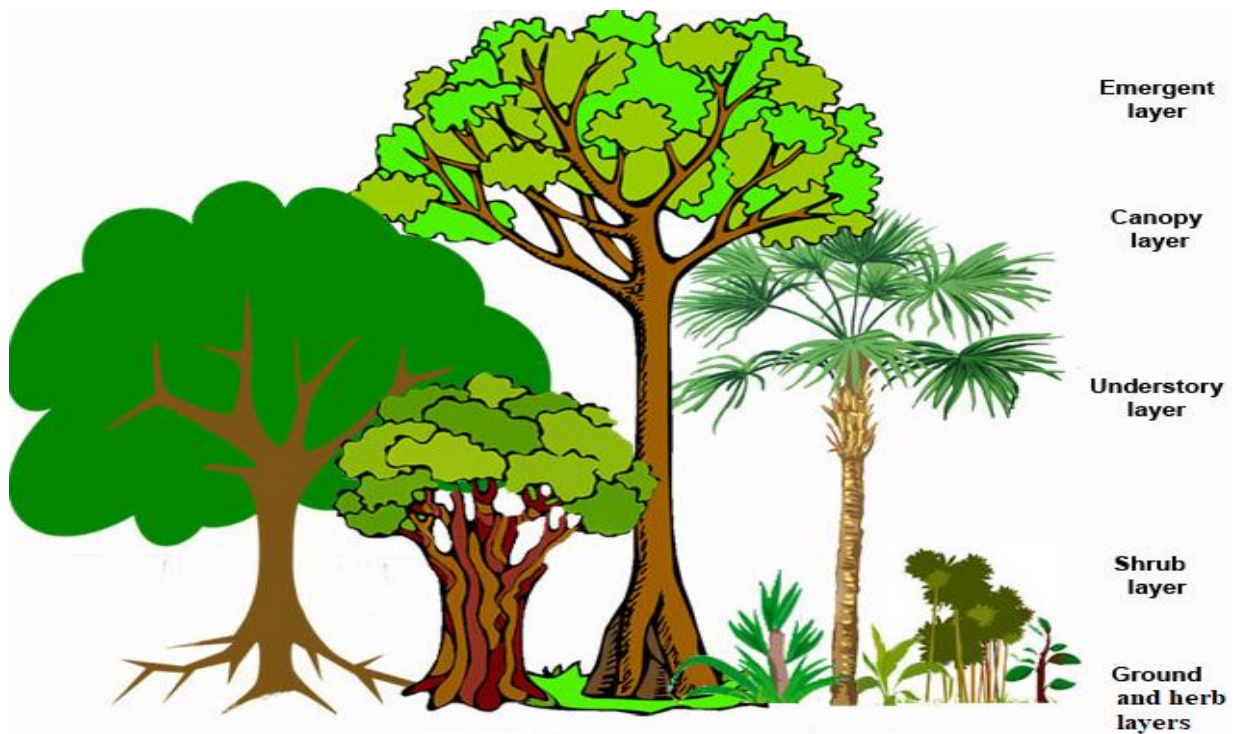


Figure 1 World biomes

Although the flora, fauna, and structure of forests vary greatly, they often can be broken down into several structural layers. These include the forest floor, shrub layer, understory, canopy, and emergent layer (fig.2).

The forest floor is one of the most distinctive features of a forest ecosystem. The forest floor is composed of two sub-layers: the herbaceous (herb) and ground layers. The herb layer rises 10 to 20 feet and receives more sunlight than the ground layer. It consists of herbaceous plants such as grasses, ferns, mosses and wildflowers. The ground layer mainly consists of shed vegetative parts, such as leaves, branches, bark, and stems, existing in various stages of decomposition above the soil surface. Although principally composed of non-living organic material, the forest floor also teems with a wide variety of fauna and flora.

The shrub layer of a forest consists usually of plants from 3 to about 15 feet in height. This layer is made up of sapling trees, many different kinds of shrubs and vines, which are adapted to grow under lower light conditions.



**Figure 2 Forest layers**

The understory (or understorey) layer extends from about 15-20 feet above ground. It consists of immature and fully grown shade - loving trees. This layer is made of trees that are growing to reach the canopy. The trees have thin trunks. Tree flowers and fruits emerge here, attracting bats, large insects, various animals and birds.

The canopy consists of the crowns of mature trees and can reach heights of 100 feet. It receives the most sunlight and wind. The canopy is made up of the tops of trees. These tree tops form a roof that blocks a good deal lot of light from entering the forest. The canopy is not only home to countless animal species but also to plant species as well.

The emergent (or overstory) layer includes the crowns of the tallest trees, which grow above the rest of the canopy. Growth that surpasses 130 feet is referred to as the overstory, or less commonly, the emergent layer. Only very large trees reach the overstory, buttressed by massive roots and thick trunks that can reach more than 15 feet in circumference. The over-story consists of the treetops that climb above the thick canopy, home to rare butterflies, birds and different animals.

The number of layers, which can be distinguished in forests, is variable. The number of layers present depends on a great many factors. These will include local climate and conditions, the species of plants present in the area (particularly the dominant trees), as well as the amount of light reaching the ground in individual areas.

An enormous variety of creatures inhabits the forest. Some are spectacular, others are hidden somewhere beneath the canopy of countless billions 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.

**3. Answer the following questions after reading the text.**

1. What is the place of forest biome among the world biomes?
2. What is the new information about forest biome for you?
3. What is the difference between a shrub and a tree (see Glossary in Guidelines)?
4. Is the presence of all forest layers obligatory for all forest biomes?
5. Is there a connection between the herb and ground layers?
6. What facts will help you to study forest biome?

**4. Write out key words and word-combinations (5-8 words) from the text. Write summary of the text (40 - 50 words) (see Summary in Appendix 1. Guidelines).**

**5. Retell the text (see Retelling in Appendix 1. Guidelines).**

 **SECTION 2**  
**WORD STUDY**

**1. Find the words in the text that match the definitions given below.**

- 1) The highest level of the forest is ... .
- 2) The primary layer of the forest formed by mature tree crowns is....
- 3) The layer characterized by woody vegetation that grows relatively close to the ground is ....
- 4) The bottom layer of the forest biome is ....
- 5) The layer of the forest dominated by nonwoody vegetation plants is....

**2. Complete the sentences with the right word from the box.**

trunks	root	humidity	floor	bushes
decomposers	animals	forest	emergent	layers

- 1) There are four very distinct ... in a tropical rain forest.
- 2) These layers have been identified as the emergent, upper canopy, understory, and forest ....

- 3) Emergent trees are spaced wide apart, and are 100 to 240 feet tall with umbrella-shaped canopies that grow above the ....
- 4) Most of the rainforest's ... live in the upper canopy.
- 5) These giant trees have straight, smooth ... with few branches.
- 6) Most areas of the shrub layer receive so little light that few ... or herbs can grow there.
- 7) A lot of litter falls to the ground where it is quickly broken down by ... like termites, earthworms and fungi.
- 8) The heat and ... further help to break down the litter.
- 9) The forest ... is usually completely shaded.
- 10) The ... system of emergent trees is very shallow, and to support their size they grow buttresses that can spread out to a distance of 30 feet.

**3. Read the text below and choose the best word (a, b or C) for each gap (1-10).**

### Layers of the forest

Forests are made (1) ... of many layers. A typical forest consists of five different layers. Different types of trees grow to form these different layers. These layers enable many different types of plants and (2) ... to live in a small area. The first, primary layer of the forest is called the canopy. The canopy is made up of the tops of (3) ... trees. These tree tops form a roof that blocks a good deal lot of light from entering the forest. The next layer is the understory. This layer is made of trees that are growing to (4)... the canopy. Some of the animals found in this layer are birds, butterflies, frogs, and snakes, as well as squirrels, raccoons, and opossums. The third layer is the shrub layer. This layer is made up of young trees, mature shrubs, and bushes. It grows (5) ... the smaller trees of the understory and the forest floor. Shrubs can range from about knee-high to 10 feet, which means these shrubs can grow into the understory. The layer that lies directly (6) ... the forest floor is the herbaceous layer. This layer of tree seedlings, ferns, grasses, and weeds acts as a cover to the forest floor and doesn't receive (7) ... sunlight. The

- |   |  |
|---|--|
| 1 | <ul style="list-style-type: none"> <li>a) about</li> <li>b) around</li> <li>c) up</li> </ul>           |
| 2 | <ul style="list-style-type: none"> <li>a) people</li> <li>b) animals</li> <li>c) vegetation</li> </ul> |
| 3 | <ul style="list-style-type: none"> <li>a) trees</li> <li>b) grass</li> <li>c) shrubs</li> </ul>        |
| 4 | <ul style="list-style-type: none"> <li>a) reach</li> <li>b) make</li> <li>c) touch</li> </ul>          |
| 5 | <ul style="list-style-type: none"> <li>a) beside</li> <li>b) because</li> <li>c) between</li> </ul>    |
| 6 | <ul style="list-style-type: none"> <li>a) up</li> <li>b) above</li> <li>c) below</li> </ul>            |
| 7 | <ul style="list-style-type: none"> <li>a) many</li> <li>b) much</li> </ul>                             |

plants found in this layer bloom in early spring, before the trees begin to grow their leaves. Some of the animals that are found in this layer are rabbits, squirrels, mice, and raccoons. The last layer is the forest floor, which contains all of the dead matter. The dead matter releases (8) ... into the soil that will be used by the plants in the forest. It is also very (9) ... in this layer due to lack of sunlight. The animals that are found in this layer include sow bugs, spiders, and earthworms.

c) *greatly*

8

- a) *feed*
- b) *food*
- c) *nutrients*

9

- a) *black*
- b) *dark*
- c) *light*



### SECTION 3 SPEAKING PRACTICE

#### **1. Describe the plants:**

- redwood tree
- Rafflesia flower
- moss
- fern

Use the words: to grow, giant / tiny, vascular / nonvascular, to produce seeds. To find necessary information you may use the Internet.

#### **2. The forests of the world have changed in composition over the course of evolution. Tell about the evolution of forests. Information below will help you.**

Silurian Period (443-416 million years ago)	dominated species: giant ferns, horsetails, and club mosses
Triassic Period (251-201 million years ago)	dominated forests: gymnosperms (such as conifers, cycads and gnetales)
Cretaceous Period (145-66 million years ago)	dominated forests: angiosperms (such as hardwood trees)



Monologue



### SECTION 5 DISCUSSION. SAYINGS AND PROVERBS



Watch the video "What a forest is?".

<https://www.youtube.com/watch?v=jbRgJGql98I>

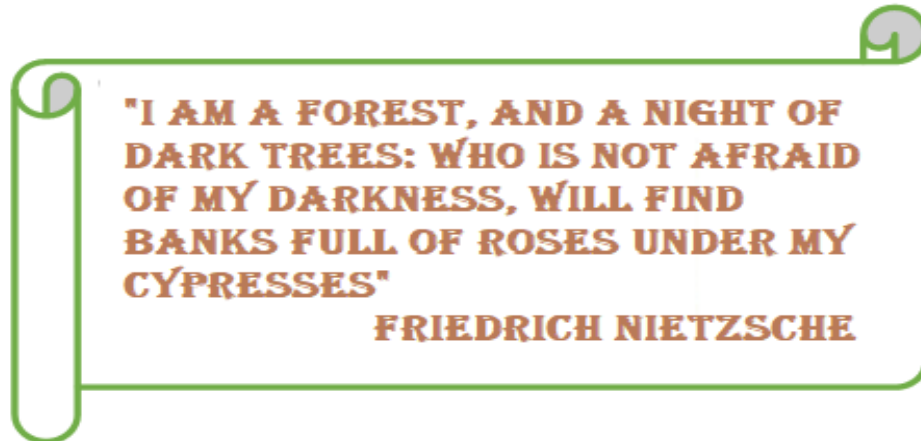
*Post -Viewing activity.*

Answer the questions:



1. What is the definition of a forest given by Professor Donald H. Pfister?
2. How do forests work?
3. What is the role of forests in our life?
4. Do forests consume or produce oxygen? How do they do it?

Discuss the following saying of Friedrich Nietzsche  
(see *Discussion in Appendix 1. Guidelines*).



## **SECTION 6** **PROJECT WORK**



### **Case** **"Endangered species"**

The survival and well-being of a biome and its organisms depends on ecological relationships throughout the world. Even changes in distant parts of the world and its atmosphere affect our environment and us. An enormous variety of creatures inhabits the forest. Most of them are endangered species. Find information about some of them (see Case Study in Appendix 1. Guidelines).

❖ Remember to say:

- species
- habitat
- forest layer
- reasons of being endangered

❖ Answer the following questions.




1. Is it found in the Red Book?
2. What can we do to help it?



## **SECTION 7** **INDEPENDENT READING**



1. Read the texts (see *Part III Texts for independent reading*):

-  Biomes or plant formations
-  Layers of the rainforest
-  A tree

2) Be ready to discuss the texts with your groupmates.

## SECTION 8 WRITING



**Write an essay on one of the following topics** (see *Essay in Appendix 1. Guidelines*).

1. Forest biome is the largest and most complex terrestrial biome. Do you agree with this statement?
2. What would happen if some forest layer disappeared?

## *Unit 2 FOREST CLASSIFICATION*

*A tree lives by its roots. Change the roots and you change the tree. Change the trees and you change the forest.*

*Jane Hirshfield*

## SECTION 1 TEXT WORK

**1. Discuss the following questions with your groupmates.**

1. What does the saying of Jane Hirshfield about the forest mean?
2. What determines the character of the forest?
3. What is a "man-made forest"?
4. Name some conifers and deciduous trees.

**2. Read the text.**

### **Forest classification**

A forest is a large area dominated by trees. Forests are the main terrestrial ecosystem of Earth, and are distributed around the globe. Forests account for 75% of the gross primary production of the Earth's biosphere, and contain 80% of the Earth's plant biomass. Only the north and south

poles, the tops of some mountains, the deserts, and some prairies are bare of forests.

Forests to a non-specialist seem to be nothing but a collection of trees. The closer they are examined, the more they differ. Furthermore, their difference may be expressed in a number of ways. Forests can be classified in different ways and to different degrees of specificity.

On the basis of age a forest is classified into two groups: even - aged forest and uneven - aged forests. Even-aged forests, also called regular forests are those consisting of even - aged woods. Even - aged wood means trees of approximately the same age. True even - aged forests can be only man - made forests. In case of forests, which regenerate naturally, some age difference is often allowed. A forest of trees of similar age and composition is called a “stand”. Every stand has a more or less regular upper layer of green crowns, called “the forest canopy”. A forest is called uneven - aged or irregular when trees vary widely in age. Uneven-aged stand has trees of every age, from seedlings to old veterans.

## Hardwoods



Comes from deciduous trees

This is a broad-leaved tree which loses its leaves in the winter.

Beech

Oak

Ash

Teak

Forests can also be classified according to the amount of human alteration. Old-growth forest contains mainly natural patterns of biodiversity in established seral patterns, and they contain mainly species native to the region and habitat. The old-growth forest is a mix of young, old, and middle-aged trees. Large fallen trees and branches lie on the ground there.

In contrast, secondary forest (or second-growth

forest) plantation is

**Figure1** regrowing forest following timber harvest and may contain species originally from other regions or habitats. A second growth forest is a forest that has regrown after a major disturbance.

On the basis of regeneration forests are identified into natural forests and man – made forests. When the regeneration is obtained naturally, the forests are called natural forests.

## Softwoods



Comes from coniferous trees

This tree is an evergreen (green all year), needle-leaved, cone-bearing tree.

Pine

Spruce

Cedar

Fir

**Figure 2**

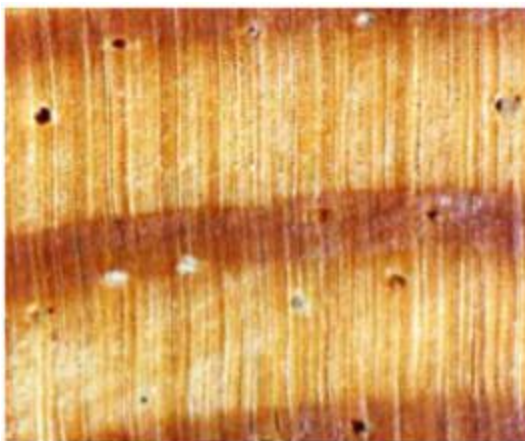


Natural forests contain mainly natural patterns of biodiversity in established seral patterns, and they contain mainly species native to the region and habitat. The natural formations and processes have not been affected by humans with a frequency or intensity to change the natural structure and components of the habitat. When it is obtained artificially, the forests are called man-made forests or plantations. These forests have been created by humans or sufficiently affected by humans to change or remove natural seral patterns. They often contain significant elements of species which were originally from other regions or habitats.

According to forests composition, there are pure forests and mixed forests. Pure forests are composed almost entirely of one species, usually to the extent of not less than 50 percent. Perfectly pure forests over large areas occur not often however. It was observed that species do not do well when planted in pure stands, especially upon usual forest soils.

The reason is that they make very heavy demands upon soil plant food (nutrients). Such pure stands may do well in youth, but as they become older, their growth becomes very slow and the trees die. Mixed forests are defined as forest composed of trees of two or more species intermingled in the same canopy. Trees in the forest are of two basic kinds: Hardwoods (fig.1) and softwoods (fig.2).

Hardwoods have broad leaves and bear their seeds in dry clusters or in fruits; examples are beach, oak, ash, teak. Softwoods have needle-shaped leaves and bear their seeds in cones, for which reason they are often called conifers; examples are pine, spruce, fir, cedar. Most softwoods are evergreen, which means they lose only some of their needles each year, and so remain green year-round. This description can be misleading, however, because several hardwoods, including the American holly and the magnolia, are also evergreen.

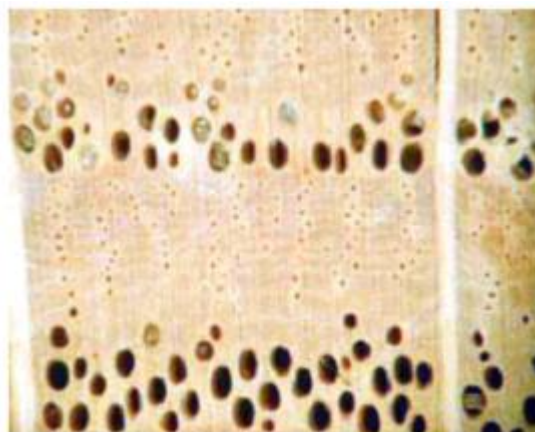


**Figure 3 Pine cross section**

One of the major botanical distinctions between softwoods and hardwoods lies in the structure of the wood.

In softwoods, the cells that serve to transport water also provide the mechanical support for the stem. In hardwoods, some division of labor has evolved, with some cells specializing in water transport, and others specializing in

mechanical support. In hardwoods, the water conducting cells, known as vessels, are commonly very much larger in diameter than the cells, known as tracheid, in softwoods. The vessels can frequently be seen with the naked eye as a number of pinholes in the cross section surface of the wood. As a result, hardwoods are commonly referred to as porous woods, and softwoods as nonporous woods. The differences in the anatomical structure of these two groups can be seen in the pictures Pine cross section (fig.3) and Red oak cross section (fig.4).



**Figure 4 Red oak cross section**

Whether the forests are composed predominantly of broadleaf trees, coniferous (needle-leaved) trees, or mixed, they are divided in Boreal forests, Temperate zones forests and Tropical and subtropical forests. Boreal forests occupy the subarctic zone and are generally evergreen and coniferous. Temperate zones support both broadleaf deciduous forests (*e.g.*, temperate deciduous forest) and evergreen coniferous forests (*e.g.*, temperate coniferous forests and temperate rainforests). Warm temperate zones support broadleaf evergreen forests, including laurel forests. Tropical and subtropical forests include tropical and subtropical moist forests, tropical and subtropical dry forests, and tropical and subtropical coniferous forests.

**3. Answer the following questions after reading the text.**

- 1) What is the forest's share on the globe?
- 2) What determines the character of the forest?
- 3) How are forests classified?
- 4) Are man-made forests and plantations the same?
- 5) What is the difference between even - aged and uneven - aged forests?

**4. Write out key words and word-combinations (5-8words) from the text. Write summary of the text (40-50 words).**

**5. Retell the text.**



## SECTION 2 WORD STUDY

### 1. Complete the sentences with the right word from the box.

biomes	planet	boreal	habitats
humans	species	diversity	forests

1) Forests function as ... for organisms, hydrologic flow modulators, and soil conservers. 2) The major forested ... are rain forest (tropical and temperate), taiga, temperate hardwood forest, tropical dry forest. 3) Tropical rainforests contain a hugely rich ... of species of plants and animals. 4) Temperate zones support both broadleaf deciduous forests and evergreen coniferous ... . 5) Natural forests contain mainly natural patterns of biodiversity in established ... patterns. 6) Anthropogenic forests have been created by ... or sufficiently affected by them. 7) After millions of years of evolution, rainforests are the biologically rich ecosystems on our ... . 8) ... forests occupy the subarctic zone and are generally evergreen and coniferous.

### 2. Find the words and word-combinations in the text and Glossary (see Glossary in Appendix 1. Guidelines) that match the definitions given below.

#### What is it?

1. ... is a cold-temperate forest dominated mostly by conifers (spruce, fir, etc.). It may also contain some broad-leaved deciduous trees such as birch. This type of forest is circumpolar-it stretches around the globe. It is located between the northern tundra and the southern temperate mixed forests or steppe. Winters are long and cold here, lasting from 6 to 9 months.

2. ... is a forest type with widely spaced trees and an understory of grasses and other forbs that require high levels of light.

3. ... is large, dry, level, grassland having few or no trees.

4. ... occur in the lowlands around the equator. They are characterized by many vines and epiphytes (plants that live on other plants), and trees that flower, fruit, and have leaves all year.

5. ... is a grassy plain in the arctic and antarctic dominated by sedges, rushes, and wood rushes, perennial herbs, small woody shrubs, mosses, and lichens.



6. ... is a place of dense, shorter plants, including shrubs and grasses. Because hardly any trees grow in a field, plants that need a lot of sunlight are able to grow. A farmer's field has only the plants that the farmer wants to grow; a wild field, such as a meadow, has many different plants and animals.

**3. Read the text below and choose the best word (a, b or c) for each gap (1-8).**

### What is a leaf?

The leaf is the food-producing part of a plant. Leaves grow on the (1) ... and produce food for the whole tree. There are as (2) ... kinds of leaves as there are trees and plants. The stuff that makes leaves (3) ... is called chlorophyll. It captures light energy from sunlight and (4) ... it into the chemical energy sugar in a process called photosynthesis. Food-making, or photosynthesis, begins when the sun's warmth and light is trapped by green chlorophyll in the leaves.

Using this process, plants (5) ... food and energy to live. (6) ... the shorter days of winter, leaves are exposed to less sunlight and water. This means that photosynthesis slows (7) ... and leaves produce less food and carbon dioxide. The bright green chlorophyll in the leaf also disappears which causes the leaves to change colors in the (8) ....

- |   |            |
|---|------------|
| 1 | a) crown   |
|   | b) roots   |
|   | c) twigs   |
| 2 | a) many    |
|   | b) much    |
|   | c) less    |
| 3 | a) red     |
|   | b) green   |
|   | c) yellow  |
| 4 | a) turns   |
|   | b) makes   |
|   | c) touch   |
| 5 | a) get     |
|   | b) give    |
|   | c) become  |
| 6 | a) through |
|   | b) in      |
|   | c) during  |
| 7 | a) down    |
|   | b) up      |
|   | c) away    |
| 8 | a) spring  |
|   | b) fall    |
|   | c) autumn  |



## **SECTION 3** **SPEAKING PRACTICE**

### **Debates. Deciduous or Coniferous?**

Debates. Group work (see *Discussion. Debates. Appendix.1. Guidelines*). Divide into two teams. Discuss the importance of deciduous and coniferous trees.

The first team: Deciduous trees are important because....

The second team: Coniferous trees are important because....

Be ready to answer the questions of the opposite group.

Remember to say:

- How people use these tree species.



## SECTION 4 VIDEO WATCHING



Watch the video "Old-growth forest and second – growth plantation" .  
<https://www.youtube.com/watch?v=XIs0W0IQsos>

*Pre - Viewing activity.*

Answer the questions:

- 1) What is an old – growth forest?
- 2) What is a second – growth forest?

*Post -Viewing activity.*

- 1) Fill in the table below, using the terms: large trees, small trees, live trees, dead trees.

<i>Old-growth forest</i>	<i>Second - growth forest</i>

- 2) Compare an old-growth forest and a second - growth forest (use the table above and the information from the video).



## SECTION 5 PROJECT WORK



### Case

#### **“A park or a forest?”**

A local forest belongs to the town. It is mostly unmanaged and therefore not used much. It houses a rare biodiversity system. An investor has offered to buy the land at a good price and remove the forest to build an amusement park, with attractions and rides that would be used by local people. This could also draw large crowds of tourists from all over the world. Should the town citizens vote yes or no on the project? Would they choose an amusement park or the forest? The task is to organize debates and give your arguments for or against the project, depending on which side you are given.



## SECTION 6 DISCUSSION. SAYINGS AND PROVERBS





Here is an “Advice from a tree”.  
Who is this advice recommended to?  
Why do you think so?  
Can you continue the list and give your piece of advice?

*ADVICE FROM A TREE*




STAND TALL AND PROUD  
SINK YOUR ROOTS INTO THE EARTH  
BE CONTENT WITH YOUR  
NATURAL BEAUTY  
GO OUT ON A LIMB  
DRINK PLENTY OF WATER  
REMEMBER YOUR ROOTS  
ENJOY THE VIEW!



**SECTION 7**  
**INDEPENDENT READING**



1. Read the texts (*Part III Texts for independent reading*):

-  Conifers
-  Broadleaves
-  Temperate forest

2. Be ready to discuss the texts with your groupmates.



**SECTION 8**  
**WRITING**



**Write an essay on one of the following topics.**

1. Are old-growth forests worth protecting?
2. Should people try to preserve old-growth forests or replace them with young plantings?

## Unit 3 SUSTAINABLE FOREST MANAGEMENT

*"Each generation takes the earth as trustees. We ought to bequeath to posterity as many forests and orchards as we have exhausted and consumed."*

### SECTION 1 TEXT WORK

#### 1. Discuss the following questions with your groupmates.

1. What does the saying of J. Sterling Morton about the forest mean?
2. What is a forestry?
3. Why do forests need in managing?
4. What do you know about sustainable forest management?

#### 2. Read the texts.

##### **Sustainable 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. The most modern aspects of the science of forestry are collectively called forest management. These aspects of forestry involve much more than just using the trees nature provides. Forest management is concerned with the complete life cycle of the trees and the forest, from getting trees off to a better start to making sure trees are harvested in a way that protects the future of the forest.

Forest management usually involves doing the same sorts of things nature does, but in a more planned and organized fashion. Nature plants trees, thins forest stands, and kills trees, but nature's efforts sometimes seem haphazard. Forest managers do these same things with a plan that benefits the forest stand and people, too. Forest management may be defined in principle as the management of forests to insure maximum benefit to mankind.

Forest management 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 prac-

tice sustainable forest management focus on the integration of ecological, social and economic 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 natural environment are taken into consideration during all stages of the forest's growth. Likewise in forest regeneration, the alternatives now chosen have the farthest-reaching effects on both wood production and environmental protection.

Forests are a major component in Earth's life support system, and they provide essential habitats for innumerable organisms. Less than 40% of terrestrial carbon stores are found in forests, but wood products account for even more. Forests, in addition to sequestering carbon, are net producers of oxygen. Forests represent different things to different people, most people value forests in many different ways. Even in the new millennium people find jobs, a quality of life, recreation, subsistence living, and a myriad of cultural and spiritual values based on the forest resources. Forests are as dynamic as the human societies dependent on them. There are many forces of global change that has made the search for sustainability more imperative. Population growth, lifestyle choices, increasing demand, and human conflict – all exact their toll on the resource. These are some of the global human impacts we can identify on forests: clearing of forest for agriculture, fuelwood gathering, livestock grazing, altered fire regimes, unsustainable harvests, water diversions, heavy recreation, urbanization, alien species introduction and native species extinction, air and water pollution, forest fragmentation. Forces of change will present an ever-changing context for sustainability. The challenge in forestry will be to keep forest lands in forest use and keep the diversity of values, uses, products, benefits, and services of forest ecosystems productive and resilient in the face of forces of global change.

### **Forest regeneration**

Regeneration is an inseparable aspect of sustainable use of forests. Generally conifer stands are regenerated at an age of 60 – 120 years (depending on growth site) in the central 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 regenerated 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 regeneration. It is the least expensive and easiest alternative – when it succeeds. In the event of enough seedlings failing to spring up spontaneously, expensive and labor-intensive efforts to redress the matter – such as supplementary planting and removing grass and other undergrowth – must be resorted to. Site preparation is of decisive importance in forest regeneration. Exposing 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 practiced are still small.

The species balance in young tree stands is regulated by means of cleaning and thinning. This involves removing 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. 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 trees 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 nowadays rarely used. There is growing interest in using biomass obtained when older seedling stands and young forests are thinned as fuel. The purpose of thinning is to control the amount and distribution of available growing space, to replicate the forest's natural development 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 and species, a stand is usually thinned 1-3 times during a rotation. The frequency of thinning has been reduced to improve the economy of these operations and lessen the damage done to standing trees. 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, as a silvicultural practice, refers to the removal of the lower branches of the young

trees so clear knot free wood can subsequently 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.

**3. Answer the following questions after reading the texts.**

1. What is a forestry?
2. What implications does sustainable forest management have?
3. What is a forest regeneration?
4. How is natural forest regeneration done? What are the benefits of natural regeneration? What should a forester do if natural regeneration does not succeed?
5. What does site preparation include? Why is it necessary? How is it done?
6. What is the purpose of thinning? How many times is it done? What are the resulting densities?
7. What is the purpose of pruning?

**4. Write out key words and word-combinations (5-8 words) from the texts. Write summary of these texts (40-50 words).**

**5. Retell Text « Sustainable forest management» or Text «Forest regeneration».**



**SECTION 2  
WORD STUDY**

**1. Complete the sentences with the right word from the box.**

a clearing saw	deep plowing	first thinings	dominant	fertility	tree trunks
final treatment	density	growing conditions	integration	pruning	wildlife habitat

1. Foresters who practice sustainable forest management focus on the ... of ecological, social and economic values. 2. The recommendation for birch stand regeneration is 60—80 years, but it can be regenerated earlier if the ... are stout enough. 3. In most cases, regeneration is intended to create a mixed forest, in which the ... species is pine or spruce, with birch in a complementary role. 4. The main tree species and regeneration meth-

od used are chosen primarily on the basis of soil type and ... . 5. Gentler soil-preparation methods have been adopted in recent years and ... has been almost completely abandoned. 6. The main changes in tending stands are that now the aim is to have more hardwoods and to delay ... of the young stand. 7. Undergrowth is removed with a ... ; herbicides are nowadays rarely used. 8. Depending on ... and species, a stand is usually thinned 1—3 times during a rotation. 9. ... ought to be carried out considerably more often than at present. 10. Second and subsequent thinnings cut the ... to 450—550 trees per hectare and these trees are allowed to grow on until harvesting. 11. Ecological thinning is to increase growth of selected trees, favoring development of ... (such as hollows) rather than focusing on increased timber yields. 12. ... is the removal of the lower branches of the young trees so clear knot free wood can subsequently grow over the branch stubs.

**2. Complete the definitions with the following words and word-combinations:** natural reforestation, human-assisted natural regeneration, sustainable forest management, forest regeneration, managed reforestation, silvicultural regeneration methods, reforestation.

### What does it mean?

- 1) ... means following ecologically sound practices that maintain the forest ecosystems' integrity, productivity, resilience and biodiversity. That involves sustaining a wide range of ecological processes through which plants, animals, microorganisms, soil, water and air interact. As a result of these processes, forests maintain the chemical balance of soil, air and water, stabilize the climate, recycle nutrients, break down pollutants, clean the air and water, and are vital to watershed protection, soil formation, carbon storage and the habitat for wildlife.
- 2) ... means renewing tree cover by establishing young trees naturally or artificially, generally promptly after the previous stand or forest has been removed. The method, species, and density are chosen to meet the goal of the landowner. Forest regeneration includes practices such as changes in tree plant density through human-assisted natural regeneration, enrichment planting, changes in tree genetics or tree species.



- 3) ... means establishment of a forest age class from natural seeding or sprouting after harvesting through selection cutting, shelter (or seed-tree) harvest, soil preparation, or restricting the size of a clear-cut stand to secure natural regeneration from surrounding trees. Enrichment planting means increasing the planting density (i. e., the numbers of plants per hectare) in an already growing forest stand.
- 4) ... means both the harvest of the timber on the stand and re-establishment of the forest. The proper practice of sustainable forestry should mitigate the potential negative impacts, but all harvest methods will have some impacts on the land and residual stand. The practice of sustainable forestry limits the impacts such that the values of the forest are maintained in perpetuity.
- 5) ... means the natural or intentional restocking of existing forests and woodlands (forestation) that have been depleted, usually through deforestation. It can be used to rectify or improve the quality of human life by soaking up pollution and dust from the air, rebuild natural habitats and ecosystems, mitigate global warming since forests facilitate biosequestration of atmospheric carbon dioxide, and harvest for resources, particularly timber, but also non-timber forest products.
- 6) ... can occur naturally if the area is left largely undisturbed. Native forests are often resilient and may re-establish themselves quickly. Conceptually, it involves taking no active role in reforesting a deforested area, but rather just letting nature take its course.
- 7) One of the contentious issues in ... is whether the next forest will have the same biodiversity as the original forest. If the forest is replaced by only one type of tree, and all other vegetation does not grow again, the result will be a monocultural forest similar to crops. However, most reforestation involves planting different seedlots of seedlings from the area. More often planted as several species. In some countries, such as Canada, the wood and pulp and paper industry is systematically replacing many of the trees it is cutting.

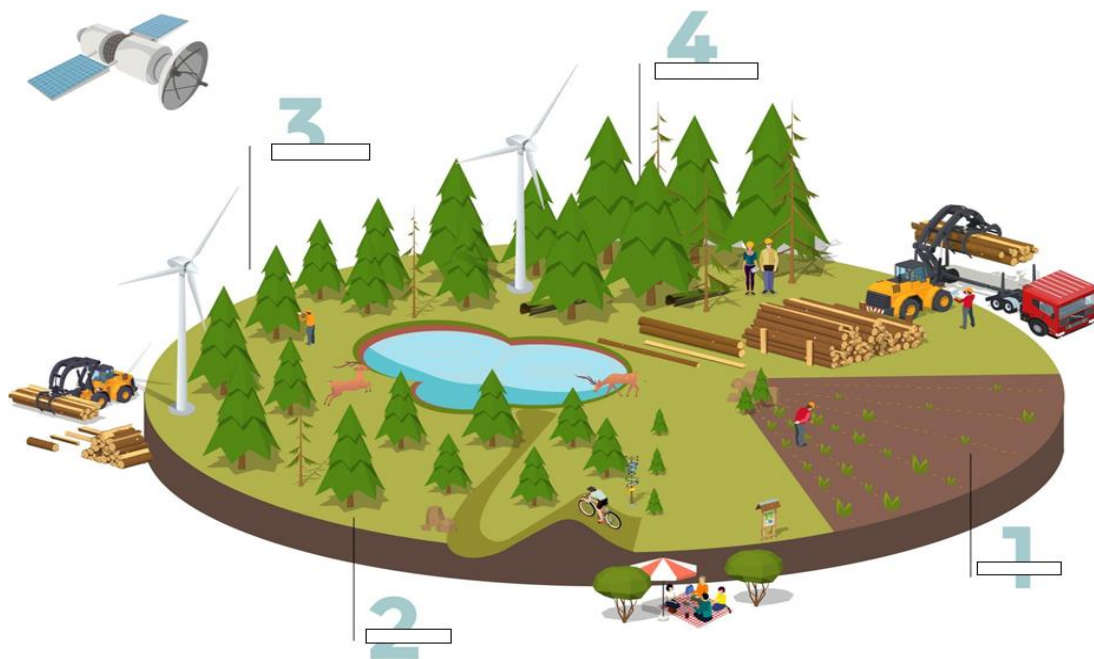


### SECTION 3 SPEAKING PRACTICE



1. ***Put the headings in the gaps. Use Figure 1 Forest cycle with your headings and tell about each step in forest management:***

MANAGING	GROWING	PLANTING	HARVESTING
----------	---------	----------	------------



**Figure1 Forest cycle**



## **SECTION 4 VIDEO WATCHING**



Watch the video "Tree thinning"

46. [https://www.youtube.com/watch?v=Hj\\_S1A6rqXU](https://www.youtube.com/watch?v=Hj_S1A6rqXU)

Answer the questions:

*Pre -Viewing activity.*

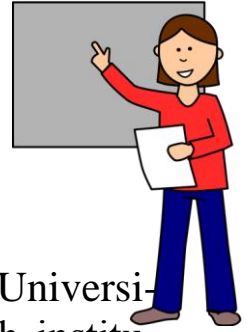
1) What is thinning?

*Post -Viewing activity.*

- 1) Professor Julian Evans tells about two reasons of thinning woodlands. Name them.
- 2) How do foresters identify which tree should be removed?
- 3) Who comes and cuts trees? How do they find trees selected to extract?
- 4) What is the frequency of thinning?
- 5) Have you ever taken part in thinning operations?



## SECTION 5 PROJECT WORK



### Case

#### “Forestry Conference”

Several students of the College of Forestry at Oregon State University, one of the world’s premier education, research, and outreach institutions that focuses on broad areas related to forest resources, terrestrial systems, wood products, ecosystem service, have been to the Bashkir State Agrarian University as participants of a Student Exchange Programme.

You have spent most of the time in Oregon, the most forested state of the country, and learnt much about the forests in that part of the country.

Organize Scientific Forestry Conference at the University, ask the students of the USA prepare presentations about Oregon forests.

Remember to tell about:

- Biodiversity
- Forest problems
- Forest management

At the same time, some students of the Bashkir State Agrarian University should prepare presentations about the forests of the republic of Bashkortostan.

#### **Presenters:**

Prepare the text of your presentation, visual aids and necessary equipment.

**Chairman:** Open the proceedings by pointing out the importance of the event, introduce each presenter giving him/her a floor, conduct all the discussions and close the conference.

#### **Other conference participants:**

Listen to the presentations, ask questions to the presenters.



## SECTION 6 DISCUSSION. SAYINGS AND PROVERBS

Do you believe this promise? Why/why not?





## SECTION 7 INDEPENDENT READING



1. Read and translate the texts (Part III *Texts for independent reading*):

- + Principles of Sustainable Forestry
- + Forests of Russia
- + Institutional organization of forest management
- + Nursery
- + Forests of the republic of Bashkortostan

2. Be ready to discuss the texts with your groupmates.



## SECTION 8 WRITING

Write an essay on one of the following topics.

1. Reasons for sustainable forest management.
2. What are global human impacts on forests?



### *Unit 4 FOREST THREATS*

*"Man has been endowed with reason, with the power to create, so that he can add to what he's been given. But up to now he hasn't been a creator, only a destroyer. Forests keep disappearing, rivers dry up, wild life's become extinct, and the climate's ruined and the land grows poorer and uglier every day."*

*Anton Pavlovich Chekhov*



## SECTION 1 TEXT WORK

**1. Discuss the following questions with your groupmates.**

1. What does the saying of Anton Pavlovich Chekhov mean? What can we do to be creators?
2. What forest threats can you name?
3. What do you know about pest management in forestry?
4. Think of possible causes and consequences of wildfires.



## **2. Read the texts.**

### **Forest disturbances and threats**

In ecology, a disturbance is a temporary change in average environmental conditions that causes a pronounced change in an ecosystem. Forest ecological disturbances include fires, flooding, windstorm, insect outbreaks, as well as anthropogenic disturbances such as forest clearing and the introduction of exotic species. Such disturbances can have profound immediate effects on ecosystems and can greatly alter the natural forest community.

Insects and diseases are integral components of forest dynamics. However, under certain conditions they have adverse effects on many aspects of forests such as tree growth and survival, yield and quality of wood and nonwood products, wildlife habitat, recreation and scenic and cultural value. Pest outbreaks can contribute either directly or indirectly to economic and environmental losses. They may compromise national economies and, especially in some developing countries and countries with economies in transition, these problems can threaten local economic stability, livelihoods and food security. Invasive plant species can also cause damage through competition and prevention of regeneration of native tree species, posing new challenges especially to the in situ conservation of forest biological diversity. Insects and diseases influence the health of natural and planted forests, trees outside forests and other wooded lands. Globally, these ecosystems are under increasing threat, as the periods between sequential outbreaks are rapidly decreasing because of a range of factors including climate change and lack of proper forest and plantation management. Movement of insects and diseases has been facilitated by increased long - range air travel and reduced travel time, increased international trade of agricultural and forest products, and the exchange of plant material. 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. Introduced forest pests can be extremely destructive, as seen in recent years in both developed and developing countries.

Poisons are the simplest large-scale means of forest treatment, but these need repeated application and may also harm innocent species. Biological control 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 ichneumon fly – a natural and destructive parasite of the wood wasp.

Forest scientists continually search for ways to control enemies of the productive forest. They have created many special chemicals to help control forest pests and diseases. Much ecological research is being done to encourage natural enemies of insect pests in order to control destructive populations.

### **Forest fires**

Fire is one of natural disturbances. Periodic fires caused by lightning have shaped and altered forests for millions of years. A wildfire, also known as a forest fire, brush fire, vegetation fire, grass fire, peat fire, or hill fire, is an uncontrolled fire often occurring in wildland areas. Common causes include lightning, human carelessness, arson, volcano eruption, and pyroclastic cloud from active volcano.

Forest fires move in varying and often unpredictable ways, so there are several types of forest fires. Ground fires creep through the duff, and fires may smolder below the surface for long periods. Surface fires are another form of forest fire, and move along at up to 1.3 meters in height. Crown fires occur higher in the trees (in the upper branches known as the "crown" of a tree), and can be of several different varieties. These include "dependent crown fires", which use convection to pre-heat the crown, and most dangerous of all, independent crown fires which leap from tree to tree. Often the battle is won only when heavy rain falls or the fire reaches a natural obstacle such as a river or mountain range.

Controlled fire, also known as controlled or prescribed burn, hazard reduction burning, backfire, swailing, or a burn-off, is a wildfire set intentionally for purposes of forest management, farming, prairie restoration or greenhouse gas abatement. Controlled burn may also refer to the intentional burning of slash and fuels through burn piles. Fire is a natural part of both forest and grassland ecology so controlled fire can be a tool for foresters. Hazard reduction or controlled burning is conducted during the cooler months to reduce fuel buildup and decrease the likelihood of serious hotter fires. Controlled burning stimulates the germination of some desirable forest trees, and reveals soil mineral layers which increases seedling vitality, thus renewing the forest. Some cones, such as those of Lodgepole Pine and Sequoia, are serotinous, as well as many chaparral shrubs, meaning they require heat from fire to open cones to disperse seeds.

In general, a disturbance changes forests significantly. Afterwards, the forest floor is often littered with dead material. This decaying matter and abundant sunlight promote an abundance of new growth. In the case of forest fires, a portion of the nutrients previously held in plant biomass is returned quickly to the soil as biomass burns. Many plants and animals benefit from the conditions created by disturbances. Habitats are most often destroyed, as well as the food source which means that even if the animals escape the flames, they have to find new territory. Other animals, which live in the surrounding forest, come to feed on the new seedlings and young plants growing in a recently burned area.

Fast and effective detection is a key factor in wildfire fighting. Recently, there have been significant efforts to create automatic solutions for early wildfire detection. An integrated approach is best, based on a practical combination of different detection systems depending on wildfire risk and the size of the area. A careful GIS data analysis will suggest how to divide the area in subcategories based on different risk level and human presence (which imply a higher wildfire risk and a need for earlier intervention). A small high risk area (thick vegetation, strong human presence or close to critical urban area) could be monitored using a local sensor network. Although it is a relatively new approach, it seems to be the only solution able to penetrate thick vegetation and guarantee early detection without false alarms, as well as detecting crawling wildfires. The main limitation of this technology is its high cost, which at this time limit its application to small areas. A larger medium risk area could be monitored by infrared scanning towers. Satellite and aero monitoring can provide a wider view and may be sufficient to monitor very large and low risk areas.

***3. Answer the following questions after reading the texts.***

1. What is a disturbance? What kind of disturbances do you know?
2. Is there a remedy against pests?
3. What causes forest fires?
4. How do uncontrolled forest fires differ?
5. How do forest fires affect wildlife?
6. Read the text and find the statements to prove that forest fires may be important for maintaining ecosystems health.
7. How do disturbances change forest ecosystem?
8. What is the key factor in fire fighting? How is the monitoring done?

4. Write out key words and word-combinations (5-8 words) from the texts. Write summary of these texts (40-50 words).

5. Retell the texts.



## SECTION 2 WORD STUDY

1. Complete the passage “Acid rain” using these words: coniferous, trees, forests, branches, leaves, trunk, danger, pollution, disease, deciduous.

### Acid rain

Millions of years before animals lived on land, there were ... on the Earth. But today trees are in serious .... In the 1970<sup>th</sup>, many of the elm trees were killed by Dutch elm .... Now an even greater danger is threatening the ... and woods of Europe from northern Sweden to southern Italy. This new danger attacks all trees – ... trees like oak, beech and birch as well as ... trees like fir and pine. First the ... turn yellow end brown. Then the trees needles or ... fall. The roots and the ... shrink. Finally the trees die. But what is killing the trees? It is air ... or acid rain.

2. Read the text “Save rainforests!” and choose the best word (a, b or c) for each gap (1-11).

### Save rainforests!

Rainforests wrap (1)... the equator of the earth like 1 a) about  
a green belt. After millions of years of evolution, b) around  
they are the (2)... biologically rich ecosystems on c) up  
our planet. Tropical rainforests contain a hugely rich  
diversity of species of plants and animals. They are 2 a) least  
also home to many different indigenous (3)..., who b) very  
have unique and treasured cultures. c) most

Rainforests are precious resources for all of us. 3 a) animals  
They provide vital ecosystem (4)... for the whole b) people  
world. They store water, regulate rainfall and (5)... a c) plants  
home to over half the planet’s biodiversity. But more  
importantly, they also play a crucial role in climate 4 a) benefits  
change. Rainforests absorb almost a fifth of the b) base  
world’s man-made CO<sub>2</sub> (6)... every year. But tropi- c) ways

cal deforestation releases an extra 17% of annual greenhouse gas emissions. So if the rainforests are destroyed, it's bad news on both counts. Cutting down and (7) ... tropical forests to clear the land in this way enables rainforest nations to provide globally traded commodities, such as timber, palm oil, beef and soy. The world's population is likely to increase from 6 billion to 9 billion over the next 40 years. This population (8), combined with rising incomes, will lead to a continual increasing demand for food, animal feed and fuel. And this, in turn, will lead to more destruction of rainforests – with devastating (9)... for everyone.

If we don't take action, we could lose another 100 million hectares of tropical forests over the next 10 years – that's an area the size of Egypt. Saving the rainforests will give the world a better chance to (10)... its goals of stabilizing climate change, while also preserving important ecosystem benefits, not to mention the fact that over one billion of the poorest people on Earth depend (11)... the rainforests for their livelihoods.

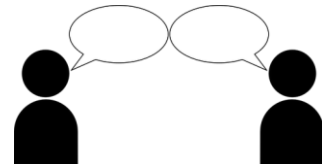
- 5 a) *make*  
b) *provide*  
c) *build*
- 6 a) *gas*  
b) *fumes*  
c) *emissions*
- 7 a) *burning*  
b) *planting*  
c) *clearing*
- 8 a) *expansion*  
b) *decrease*  
c) *growth*
- 9 a) *causes*  
b) *effects*  
c) *end*
- 10 a) *maintain*  
b) *set*  
c) *achieve*
- 11 a) *for*  
b) *on*  
c) *from*

**3. Choose the right word to be used in the following sentences:**

1. The *delicate* / *stable* balance may be upset by the introduction of a species into a new country where it has no natural enemy. 2. American Monterey pines, planted in Australia, suffered great damage from Sirex wood wasps *intentionally* / *accidentally* imported from Europe. 3. Timber, naturally *durable* / *fragile* material, provided by the forest, does not change or lose its nature, as result of age. 4. Under damp conditions and when in contact with the soil all *artificial* / *natural* materials decompose more or less slowly. 5. It is however the *parasites* / *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. 6. In ecology, a disturbance is a temporary / permanent change in average environmental conditions that causes a pronounced change in an ecosystem. 7. Seed-eaters might, in theory, destroy the forest by devouring all the nuts, but in

practice this often / rarely happens. 8. Coniferous / deciduous forests have a more restricted fauna comprising species better equipped to deal with their resinous bark.

### **SECTION 3** **SPEAKING PRACTICE**



#### **1. Discuss the problem.**

Illegal logging refers to any business practice in which trees are harvested or extracted without proper clearance or oversight. Though it may sound harmless, illegal logging is a leading cause of deforestation around the world, creating disruptions that can permanently destroy ecosystems. Thankfully, the past 40 years have seen major advancements in the fight against illegal logging, and there are many things you can do to keep the battle going.

What can you do to stop illegal logging?

#### **2. Discuss the question.**

*What is this tree thinking about?*



### **SECTION 4** **VIDEO WATCHING**

Watch the video "Rainforest".



<https://www.youtube.com/watch?v=z1Y8iOnIqHk>

*Pre -Viewing activity.*

1) Look at the map below and find the locations of rainforests.

*Post -Viewing activity.*

Answer the questions:

1) Why is it important to save rainforests?

2) What is the role of Prince Charles in the project “Save rainforest”?



## **SECTION 5** **PROJECT WORK**

### **Case**

#### **“Tasty apples”**


A big company “Tasty apples” wants to grow apples in large quantities for sale on the international market. The company has found out about a forest lot that does not seem to have a legal owner, which presents a good business opportunity. The company has informed the local authorities to obtain a legal document of ownership, as well as the right to clear the forest area to plant apple - trees plantation. However, it seems that not everyone agrees that this project is a good one. Therefore, in order to avoid bad publicity the company has agreed to a hearing of spokespeople representing the various groups involved.





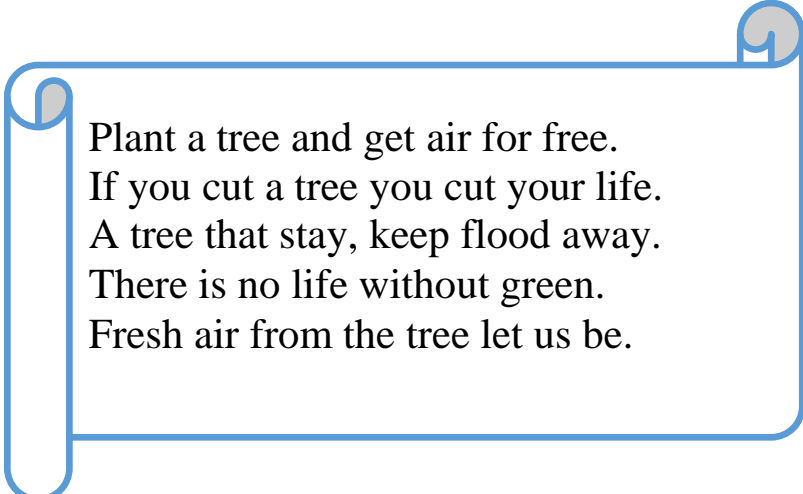
The task is to organize meeting of representatives of these groups and decide the fate of the forest:

- environmental activists – young students from a nearby town;
- local foresters – they born and grew up here and work in the forest;
- local authorities – they studied administration and want to be re-elected;
- authorities of the company “Tasty apples” – they want to make a maximum profit for the company;
- political decision makers – they are from a nearby town and want to develop the region (create jobs).



**SECTION 6**  
**DISCUSSION**  
**SAYINGS AND PROVERBS**

Comment on these sayings. Do you know other sayings about trees?



Plant a tree and get air for free.  
If you cut a tree you cut your life.  
A tree that stay, keep flood away.  
There is no life without green.  
Fresh air from the tree let us be.



**SECTION 7**  
**INDEPENDENT READING**



1. Read and translate the texts (see *Part III Texts for independent reading*):

- + Forest threats
- + Deforestation

2. Be ready to discuss the texts with your groupmates.



**SECTION 8**  
**WRITING**

Write an essay on one of the following topics.



1. Air pollution is a threat to the forest health.
2. Deforestation is happening in many parts of the world, what can be done to solve this problem?
3. Cutting down trees can benefit us greatly, but it has quite a few disadvantages, too.

## Unit 5 FOREST PRODUCTS

*Gold is more precious than wood, it is true.  
But you cannot and will not cook with or  
write on gold, you cook with 'wood' and write  
on wood.*

Paul Bamikole

### SECTION 1 TEXT WORK

#### 1. Discuss the following questions with your groupmates.

1. What does the saying of - Paul Bamikole about the forest mean?
2. What forest products do you know?
3. Have you ever heard about craft paper?

#### 2. Read the text.



#### Forest Products

Forests supply hundreds of products for people's daily lives. Fruits and nuts from trees are eaten, attractive woods are used for jewelry and art projects, and such practical items as canes and fences are made of wood. Wood is used as a fuel for both cooking and heating in stoves, fireplaces, and barbecue grills.

**Figure1 Lumber sections** Lumber is the principal framing material used in house construction. It is solid wood that has been cut into different shapes. It is also used to make cabinets, furniture, and sporting goods. Produced by sawing tree trunks into rectangular



pieces, solid wood products retain the grain and other characteristics of the tree from which they are cut (fig1.)

Wood is sometimes treated with chemicals to protect it against insects, water, and destructive organisms. Treated products serve as railroad ties, poles for telephone and electric lines, fence posts, and pilings for supporting docks and bridges and even tall buildings.

Sometimes the form of wood is so changed that it is not recognized as a forest product. One such form is a panel made from a pulp produced by breaking wood fibers apart. The heavy pulp is then glued into strong, thin panels for such products as pegboard and the bottoms of drawers.

Paper is also a major product of the forest. It is made from small trees and wood scraps that might otherwise go to waste. The first step in the process is to pulp the wood either hard- or softwood. Pulp is often bleached to make paper that is more suitable for printing. The ground-wood, or mechanical, pulping process grinds trees into a fine pulp, which is mixed with water and spread evenly over a screen. The water drains off, and the pulp mats together into a sheet of paper. One common bleached groundwood paper is the familiar newsprint.

Another process involves cooking wood chips with chemicals to separate the fibers from the natural chemical called lignin that binds them together. Southern pine and other woods with long fibers are pulped with strong alkalis to produce kraft (from the German word for strength) paper. A familiar form is used for grocery bags and cardboard boxes, but it is also found in such products as facial tissues.

Another way of using wood is to laminate, or layer, many pieces together with glue. Sometimes lumber is laminated with the grain of all the layers running the same way to create a beam much larger than could be cut from a single tree. Such beams are often used in churches and other buildings with high ceilings or wide rooms.



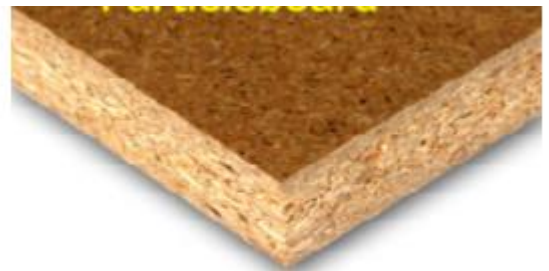
**Figure2 Plywood**

Plywood is a laminated product. Plywood panels are made by gluing several veneers, or thin sheets, of wood together, alternating the direction of grain with each sheet (fig.1). They are glued with an odd number of veneers so that the grain of both bottom and top veneers lies in the same direction. Plywoods have been made from hardwoods and some softwoods for many years. In 1963, however, a process was perfected for making plywood from softwood trees with high resin content, thus enabling the use of such wood as southern pine. Plywood is

economical for use in subfloors and wall and roof sheathing, or underlayers. Plywood with a thin veneer of hardwood or plastic on top is used in furniture, decorative paneling, and cabinets. Products such as tongue depressors and toothpicks also are made of veneer.

Veneer is usually produced by one of two methods. Expensive woods such as walnut, rosewood, and cherry are sliced one sheet at a time from the face of a log that has been debarked and squared. Less expensive woods such as pine, fir, poplar, and sycamore are usually peeled. Here the debarked log is put in a lathe, and the whole log is rotated against a long blade. Veneer is cut off to the core just like the peel might be cut from an apple.

Other panels are made using techniques developed in the 1970s. Particleboards are manufactured as panels from drywood particles that have been sprayed or dusted (speckled) with a binder resin, and are bonded together with pressure heat. Particles for the boards can be made



**Figure3 Particleboard**

from almost any type of wood, whether whole logs or wood residues such as trimmings and shavings from lumber or plywood manufacturing. The term “particleboard” includes a number of different panel types sometimes referred to variously as “chipboard,” “flakeboard,” “strandboard,” or “waferboard,” depending on size and shape of the wood particles used.

Flakeboard, for example, is made by chipping wood. Usually pieces that are too small to be used for other products into flakes and gluing the flakes into large sheets under great pressure.

Many plastics and chemicals come from wood. Turpentine and rosin are natural products. Rosin gives traction when applied to the bottom of a dancer’s shoes and to the bowstrings of violins and other stringed instruments. Maple syrup is a natural product the sap of the sugar maple tree that has been boiled down to make it thicker. Sometimes it is dried completely to make maple sugar. Natural rubber is another product of a tree’s sap.

Chemists have developed many useful items from the storehouse of chemicals in trees. Some of these, such as alcohols and binders, are used in chemical or manufacturing processes, in medicines, and in explosives. Acetylene is used as a fuel. Wood products such as rayon are also used in clothing, automobile tires, photographic film, bowling balls, and many other items. Wood is even the source of an artificial vanilla flavoring for

foods. Barks and roots have been used for beverages and medicines for generations.

**3. Answer the following questions after reading the text.**

1. What fiber products can you name?
2. What glued products are mentioned in the text?
3. Where are lumber and timbers used?
4. How are plywood panels made?
5. Have you known any new information from the text?

**5. Write out key words and word-combinations (5-8 words) from the texts. Write summary of these texts (40-50 words).**

**6. Retell the text.**

 **SECTION 2**  
**WORD STUDY**

**1. Complete the sentences with the right word from the box.**

chips	chippers	chipping	chips
-------	----------	----------	-------

... in the forest has many advantages. There are tree ... which lift up the tree, swallow it at one end, spew ... at the other end. There are a few disadvantages in this operation. In the swallowing of the whole tree, the bark, which is undesirable for pulping, is also ground up into .... This causes darker and dirtier pulp and makes the bleaching problem more difficult.

**2. Read the text "Cellulose" and choose the best word (a, b or c) for each gap (1-8)**

**Cellulose**

Sixty percent of the wood of a (1) ... is cellulose - by far the most important ingredient. The structure of cellulose is well understood and is rather simple: molecules of dextrose are (2) ... in pairs to form a more complex sugar, cellulose, and these units are hooked up to form long (3)... of cellulose molecules.

- 1 a) tree  
b) vine  
c) moss
- 2 a) associated  
b) linked  
c) divided
- 3 a) lines  
b) rows

This structure of cellulose may be easily changed by action of even a weak acid, cellulose then falls (4) ... into the original dextrose molecules, providing an enormous source of sugar that can be used for many (5) ..., from fattening hogs to production of industrial alcohol. (6) ... of the cellulose used at present, however, is converted into pulp and paper. The rest of the (7) ... 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 (8) ... valuable products will be made from it.

- 4 c) chains  
a) behind  
b) together  
c) apart
- 5 a) purposes  
b) aims  
c) drives
- 6 a) more  
b) many  
c) most
- 7 a) wood  
b) lumber  
c) forest
- 8 a) then  
b) that  
c) though



### SECTION 3 SPEAKING PRACTICE



**1. Skim the text and answer the question below.**

#### **Russian timber industry development prospects**

The Russian timber industry can and must become one of the economic growth drivers along with the oil and gas sector. There is every reason for this. The industry's resource base is very much similar to that of the oil sector. Russia is in the lead in terms of the majority of indicators which characterize the availability of timber resources. If we take a look at the distribution of timber resources worldwide we will see that Russia accounts for 82 billion cubic meters of the most valuable softwood. This is the highest indicator. Next comes Brazil with 81 billion cubic meters. The USA is in third place with 35 billion cubic meters. The high quality characteristics of our softwood and hardwood have won international acclaim.



### **Question:**

What prospects of Russian timber industry development are mentioned in the text? Express your opinion on the timber industry development in the region you live.

## **SECTION 4** **VIDEO WATCHING**

Watch the video "The future of Russia's forests"

[https://www.youtube.com/watch?v=YIZD\\_gDoMPw](https://www.youtube.com/watch?v=YIZD_gDoMPw)

*Post -Viewing activity.*

Answer the questions:

1. Who are these persons:  
Marina Smatanina  
Anatoly Petrov  
Anatoly Chernovol  
Renat Khalimov  
Elena Kulikova  
Martin Hermansson?
2. What did they say about the future of the Russia's forests?  
Do you agree with their opinions? Why?



## **SECTION 5** **PROJECT WORK**

### **Case**

#### **"Goods from woods"**

Trees are considered to be natural renewable resources (substances that can be replaced). Besides growing wood, trees have many functions including removing excess carbon from our environment, providing shade and shelter, anchoring soil, reducing water and air pollution, and providing beauty and recreation for us. Therefore, unlike fossil fuels, metals, and plastics, wood can be harvested, used, regrown, and then harvested again. This cycle can continue indefinitely as long as the trees harvested are replaced with new plantings. With proper management, our forests can provide us with thousands of products and still have plenty of trees for wildlife habitats today and in the future. Through research and advanced technology, we have learned how to convert tree fibers and paper-pulping residues into more than 5,000 products!



There are several products that you probably use everyday that are made from wood products and by-products and you don't even realize it. Below is a short list of some of these products. Remember, there are over 5,000 products made from wood and its by-products!

Do you know?

Lignosulfonates are created from spent sulfite pulping liquid. It is a major ingredient in artificial vanilla, which is a product used in making ice cream, cookies, and cakes. Lignosulfonates are also found in cleaning products, pharmaceuticals, insecticides, hair spray, deodorant, and laundry stain remover. The bark of a tree is used in anticancer drugs, shoe polish, cosmetics, spices, and garden mulch.

### **The task**

Read the text "Goods from woods".

Divide in three groups.

Students of the first group will record examples of wood products and wood by-products that they see in the classroom.

Students of the second group will record examples of wood products and wood by-products found in their homes.

Students of the third group will record examples of wood products and wood by-products found in the street along their way to the university.

The members of all groups will discuss their observations with one another. Try to illustrate your points of presentation.

If you want to check up some information or for additional information visit [www.woodmagic.vt.edu/PDF/GoodsWoods.pdf](http://www.woodmagic.vt.edu/PDF/GoodsWoods.pdf).

[www.woodmagic.vt.edu/PDF/GoodsWoods](http://www.woodmagic.vt.edu/PDF/GoodsWoods). You may use the list "What are different woods used for?"(Appendix 3)

What wood product was most surprising to you? What had you originally thought the product was made from?



## **SECTION 6 DISCUSSION SAYINGS AND PROVERBS**

*I don't want to protect the environment.  
I want to create a world where the environment doesn't need protecting.*


*Unknown author*

## **SECTION 7** **INDEPENDENT READING**



1. Read the texts (see *Part III Texts for independent reading*):

 Wood Production

 The Russian woodworking industry from a European perspective

2. Be ready to discuss the texts with your groupmates.

## **SECTION 8** **WRITING**

**Write an essay on one of the following topics.**

1. The forest sector is not a priority of national forest policy. Russia counts for over 20 percent of the world forests, but its share of world forest products trade is below 4 percent. What is your opinion?
2. What do you think when you see a white sheet of paper?
3. What are some advantages and disadvantages to using wood as opposed to other raw materials?



### *Unit 6 FOREST ENGINEER*

*The altruism of foresters can serve as a motto for humanity in general: "We reap what we have not sown. We sow what we do not reap."*

*Leo Errera*

## **SECTION 1** **TEXT WORK**

**1. Discuss the following questions with your groupmates.**

1. What does the saying of Leo Errera about the forester mean?
2. Why have you chosen the career of a forest engineer?



## **2. *Read the text.***

### **A forest engineer**

A forest engineer needs a solid foundation in civil, mechanical and forest engineering to work in industries such as forestry. Forest engineers plan and design various projects that affect forests, including forestry management, the clearing of logs from timberland and the construction of roads and other structures that allow access for forestry projects. These engineers also do surveying, manage projects and, in some cases, deal with the public. They also may work as consultants giving advice during construction.

A forest engineer needs to have a bachelor's degree or a master's degree before he or she begins work. Analyzing survey reports; reading maps, drawings and blueprints; and interpreting aerial photography and other geologic data is part of the job for a forest engineer. Other skills that are learned in school include how to use drawing tools and design software to plan and design hydraulic or transportation systems that conform to government and construction standards.

There are many structures that have an impact on forests, and a forest engineer may be in charge of ensuring that society's needs are met while the natural environment also is protected. Forest engineers are in charge of planning and directing the construction of water and sewage systems, culverts, bridges, equipment shelters, loading docks and campsites. They also may be in charge of planning are railroads, roads, airports, harbors, dams, irrigation projects and power plants on or near forested land. Structures, machines and operations for forestry and wood product manufacturing also are overseen by forest engineers.

Overseeing projects can involve managing and directing staff or estimating how much a project is going to cost and staying within that budget. Many forest engineers who oversee projects also are in charge of ensuring that the projects are progressing according to schedule. Safety and sanitation standards have to be met. Everything about a project must follow regulations and the forest engineer is in charge of ensuring that each project does.

A forest engineer is often in charge of surveying and may do the survey himself. Surveying is done to establish grades, reference points and elevations that will aid in construction and in installation layouts. Tests may be done during surveying to check soil and other materials to make sure foundations, asphalt, steel and concrete are strong and stable enough for the project.

By law, the public has the right to know what is being built, when it is being built and where. Forest engineers study such issues as environmental conditions and traffic patterns to see what sort of impact a new project may have. An engineer may then prepare or present a report to the public. These reports can range from bid proposals to environmental impact statements.

Forest engineers engage in a broad range of activities including timber harvesting, ecological restoration and management of protected areas. They also work within town and city environments to manage the trees in urban green space. Some work in tree nurseries growing seedlings for woodland creation or regeneration projects. Others are involved with tree genetics or developing new building systems as forest engineers. The profession has expanded to include a wide diversity of jobs, typically requiring bachelor's degree up to the PhD level for highly specialized areas of work.

Today a strong body of research exists regarding the management of forest ecosystems and genetic improvement of tree species and varieties. Forestry also includes the development of better methods for the planting, protecting, thinning, controlled burning, felling, extracting, and processing of timber. One of the applications of modern forestry is reforestation, in which trees are planted and tended in a given area.

In topographically severe forested terrain, proper forestry is important for the prevention or minimization of serious soil erosion or even landslides. In areas with a high potential for landslides, forests can stabilize soils and prevent property damage or loss, human injury, or loss of life. Forest engineer must know how to prevent and combat insect infestation, disease, forest and grassland wildfire; weed control, fertilization, measuring and modeling the growth of trees (forest mensuration). In many regions the forest industry is of major ecological, economic, and social importance.

***3. Answer the following questions after reading the text.***

1. What is a forest engineer?
2. What are forest engineers busy with?
3. Is forest industry important today?
4. Does this text give you sufficient information about your future work?
5. What questions would you like to ask the author of the text?

4. Write out key words and word-combinations (5-8 words) from the text. Write summary of these text (40-50 words).

5. Retell the text.



## SECTION 2 SPEAKING PRACTICE



1. Discuss in small groups the following points:

- your knowledge about forestry;
- your knowledge about the profession of a forest engineer;
- the related sciences.

2. Speak on the topic: «I have chosen the job of a forest engineer because...».

Highlight a few points that make this job attractive to you. The following phrases will help you:

- to like working outdoors;
- to travel across the countryside because of the job;
- to plant trees and watch them grow;
- to improve the appearance and health of trees;
- to see the results of the work gradually;
- to have attractive surroundings full of living trees, bushes and grass;
- to remain fit and healthy.

3. Discuss the following statements.

Do you agree with the statements? Why/Why not?

1. A forest engineer may provide study and expertise when roadways are planned for wooded areas
2. Forest engineers always work for logging companies
3. Forest engineers make sure that the natural environment is protected.



### SECTION 3 **VIDEO WATCHING**



Watch the video "Find your path. Forest engineer"

<https://www.youtube.com/watch?v=ik5ZVethbjc>

Answer the questions:

*Post -Viewing activity.*

1. Continue the sentence: "A forest engineer makes sure..." Explain it.
2. What is Mary Castle?
3. Where is she from?
4. What can you say about her education?
5. Where does Mary Castle work? What does she design?
6. What new technologies does she use in her work?



### SECTION 4 **PROJECT WORK**

#### **Case**

#### **"Visiting a forestry company"**

A group of Russian foresters and forest researchers have come to Canada to study the techniques of forest protection and management. They are on a visit to a world-famous forestry company that manages a few million ha of forested land. The task is to study the state of the Canadian forests and compare it with the state of Russian forests.

Divide into two groups:

Group 1: you are representatives of the Canadian Forestry Company.

Group 2: you are foresters and forest researchers from Russia.

Each student: invent some information about your individual role, introduce yourself.

Students of Group 1: Make a presentation about your company, tell your Russian colleagues about the ways of forest protection and management that are used in your company.

Students of Group 2: Question your Canadian colleagues about their methods of work and current affairs in the company, ways of protecting the environment and preserving the main ecosystem types.

The whole class: Compare the state of the Canadian and. Share the experience. Discuss the advantages and disadvantages of both Canadian and Russian approaches to forest management.



## SECTION 5 **INDEPENDENT READING**



1. Read the text (see *Part III Texts for independent reading*).

+ Forests and forestry in different countries.

2. Be ready to discuss the text with your groupmates.



## SECTION 6 **WRITING**



**Write an essay on one of the following topics.**

1. The path of a forest engineer.
2. New technologies in Forestry.

# Part II Business English

## Unit 1 CAREER OPTIONS

*You will find a job, if you are willing to work.*  
*Lailah Gifty Akita*

### SECTION 1

Career decision is some of the most important you will make in your lifetime after the graduating from the University. You should prepare some papers to begin with: Resume, CV.

#### RESUME

Your resume is a marketing tool created to market you. It may be your first contact with an employer, whether applying for an internship, co-op or job opportunity. Resumes may also be requested for leadership opportunities, graduate school, scholarship, and fellowship applications. Employers often review resumes and cover letters in 10 seconds or less. Therefore, your resume must be well-written, concise, extremely organized, and easy to read in order to be effective. Customize your resume for the reader, looking for opportunities to match your accomplishments and interests to their needs. Tailoring your resume and cover letter to the specific employer is a key component of a successful resume and cover letter!

There is not one correct way to organize a resume. It depends on your unique education, experiences, and skills. It is a good idea to have different versions of your resume depending on the job type/industry that you'd like to target.

#### *Curriculum Vitae (CV)*

A CV is used by those with graduate degrees (i.e., M.S., Ph.D) to apply for positions in academia or for scientific or research positions. CVs are very inclusive; therefore; they tend to include all experiences not just selective experiences. CVs are longer than resumes and focus on education,

publications, presentations, research, classes taught, and other professional activities. CVs are also used in European countries for all positions.

*Your resume could include the following sections:*

1. Contact information
2. Resume objective
3. Education
4. Work experience (if you've got none, let's skip this section for now)
5. Skills
6. Additional Sections, for instance:
  - Honors and Awards
  - Volunteer Experience
  - Certifications and Trainings
  - Hobbies and Interests

## **Resume**

**Name:** James Preston

**Address:** 123 Main Street, San Francisco, USA 94122

**Date of birth:**

**Tel:** (222)-832-6385

**E-mail:** preston@email.com

### **Job Objective:**

Experienced forest technician with five years in the field studying forest conditions and characteristics assisting ecologists and conservative scientists in the sustainability improvement and protection of forests looking for new opportunities in the field.

### **Professional Experience:**

**06/2016 – Present**      Forestry Technician  
Public Administration Department  
Charlotte, North Carolina

- Supported scientists foresters and programs in the management of forest resources
- Involved in the design and implementation of reforestation
- Part of program that planted trees in order to replace destroyed and logged land
- Assisted foresters examining trees for infestation and tree diseases and implementing protective and preventative measures



- Proactively supported forestry research programs and initiatives
- 06/2013 – 05/2016**                      Forestry Technician  
    Critch & Critch Logging  
    Leicester, North Carolina
- Supervised team that marked trees for logging and thinning
  - Managed operation of forest nursery activity of land usage and timber harvesting
  - Worked with local contractors and company executives in the design and monitoring of forest roads and access routes
  - Tested measured and regulated forest areas to be designated for harvesting
  - Kept documentation of measurements for establishing locations and distances

**Education:**

- 09/2011- 05/2013**                      Bachelor of Science in Forestry and Conservation  
    University of Virginia, VA, USA
- 09/2007 – 08/2011**                      Associate Degree in Forestry  
    University of Virginia, VA, USA

**Special skills:**

- Basic knowledge of ArcGIS or similar mapping programs
- Ability to interact well with the public and provide accurate information about stand conditions to other forestry staff
- Knowledgeable in forest management planning and its application
- Proficiency in verbal and written communication skills
- Excellent time management skill
- Judgment and decision making skills
- Strategic and critical thinking skills
- Bilingual: English and Spanish

**Volunteer work:**

Worked as a volunteer at school in three summer vacations

**Certification:**

Microsoft Office Specialist 2016

**Practice 1. Write your own resume.**

# SECTION 2



## **JOB APPLICATION LETTER**

A job application letter, also known as a cover letter, should be sent or uploaded with your resume when applying for jobs. While your resume offers a history of your work experience and an outline of your skills and accomplishments, the job application letter you send to an employer explains why you are qualified for the position and should be selected for an interview.

### *General Content for Cover Letter*

Your Present Address  
City, State, Zip Code  
Date  
Mr./Ms. Name of Individual  
Job Title of Individual  
Company or Organization Name  
Street Address or P.O. Box Number  
City, State, Zip Code

Dear Mr./Ms./Dr. \_\_\_\_\_:

The first paragraph indicates why you are writing. State the position you are applying for and how you learned of it. Emphasize what you offer to the employer related to the position you are seeking (not what they can do for you). Cover letters are usually three to five paragraphs long, centered on one page, and written in a conversational style with short sentences.

The middle paragraphs highlight the most significant information the employer will find when they read your resume. Briefly state your qualifications. Describe your education, highlighting your specialized training, related courses, and class projects.

Describe your work experience, activities, and skills which are related to the job you are seeking. Provide specific examples of accomplishments and situations where you demonstrated job related skills. You may also add information about your experiences or personal work characteristics not listed on your resume.

Summarize your qualifications and interest in the employer. Close the letter with an appropriate request for action. (Ask the employer to contact you and provide your phone number, OR indicate when you will contact them to arrange a mutually convenient time to meet.) Thank the employer for their consideration.

Sincerely,  
(your signature in black ink)  
Full typed name

**Forester Resume Cover Letter Sample (for candidates with no experience)**

Ms. Emily E. Ayala  
1355 Pine Garden Lane  
Atlanta, GA 30328  
emily.ayala@email.com  
Ph no: 888-725-2516

---

To,  
Ms. Marina Leblanc  
Chief Forest Manager  
Independent Order of Foresters  
PO Box 227  
Atlanta, GA 31057

**Sub: Application for the position of Forest Officer - Forestry Research**

Dear Ms. Leblanc,

I noticed your advertisement for a job vacancy in your organization posted in [www.forestryjobs-us.org](http://www.forestryjobs-us.org) and hereby present my application for the position of Forest Officer in the department of Forestry Research. I have always been inclined to conservation of the forest lands since my high school and hence decided to offer my contribution in environmental preservation and restoration for the benefit of the society as well as the wild inhabitation.

I graduated from the Warnell School of Forest Resources in September this year and have been placed in grade A after my final assessments. In the course of my education, I acquired essential knowledge pertaining to preservation of forest resources and environmental restoration by plantation and protection and effective management of flora and fauna within the wild. Besides I also developed special interest in other aspects of forest management like carbon sequestration and maintenance of air quality for a healthier atmosphere.

Given an opportunity to be a part of your forestry team, I pledge to utilize the best of my skills and knowledge to manage the forest lands for biodiversity and protection of the wild inhabitation. I wish to contribute to preserve our land from deforestation and prevent environmental degradation thereby helping your organization to improve their efficiency in forest management and assist you in the evidently difficult task of forestry research.

You will find details of my Academic history in my resume attached herewith. Kindly consider my application favorably. You may contact me anytime in order to discuss my profile in detail.

Thanking you.  
Yours sincerely,  
**Emily Ayala**

***Practice 2. Write your own letter of application on the advertisement given below.***

*Southeast Conservation Corps (SECC) & Great Smoky Mountains National Park selects young adults to complete conservation work projects on public, private and municipal lands throughout the Southeast. SECC fosters the personal development of corps members through environmental stewardship projects and experiential learning.*

*The primary **mission** of the Great Smoky Mountains National Park Resource Management and Science Division (Inventory & Monitoring Branch) is to protect and conserve natural resources throughout the park for both current and future generations. Protection and conservation are accomplished primarily through day-to-day resource management and science activities.*

*The Great Smoky Mountains National Park Resource Management and Science Division (Inventory & Monitoring Branch) is recruiting qualified **Monitoring Intern** to assist with fieldwork, data collection, taxonomic identifications, data entry, and other tasks as needed related to several ongoing and long-term field projects.*

*Compensation:*

*Interns are paid a living stipend of \$125 per week (direct deposited biweekly) before taxes, via direct deposit. Dorm housing within the park is also provided to interns. Upon successful completion of their term, interns will receive a Segal AmeriCorps education award for tuition at Title IV accredited learning institutions, AmeriCorps approved non-traditional continued education or paying off student loans.*

*Job Location: Gatlinburg, Tennessee, United States*

***Responsibilities include:***

- *Rare plant monitoring, wetland inventories, and forest plot monitoring.*
- *All projects will involve GPS-assisted navigation, field sampling, and detailed data collection.*

***Qualifications:***

- *Applicant should be self-motivated, highly organized, and able to follow detailed protocols.*
- *Preferred knowledge and skills in ecology/botany/forestry, map reading and orienteering, and GPS.*
- *Must be able to hike in mountainous terrain in hot humid or inclement weather conditions, carrying a backpack and other field equipment.*
- *Good fitting hiking boots and raingear are important items to have prior to arrival.*

- *Stinging insects, poison ivy, slippery footing, ticks, and venomous snakes are known field hazards.*
- *Intern will be a part of a team that operates safely and communicates effectively.*
- *Frequently required to drive an SECC vehicle, and must be able to speak, understand, write and read English.*

***This program is available to all eligible applicants, without regard to race, color, national origin, disability, age, sex, political affiliation, sexual orientation or religion.***

*Please send your resume to: [becky\\_nichols@nps.gov](mailto:becky_nichols@nps.gov)  
A cover letter is encouraged but not required.*

## SECTION 3



### INTERVIEWING

A job interview is a question-and-answer exchange between an employer and a potential employee. Employers use interviews to evaluate candidates for positions to know whether they are good enough for the job.

#### *Pre-interview phase*

Before going to the interview, you will have already completed a number of steps in the job application process; this is known as the "pre-interview phase." During this phase, you will have sent a cover letter, resume, and any other required application materials to the hiring manager.

*Here is a list of interview skills that will help you get hired.*

- The interview is your opportunity to shine! Be confident and put your best foot forward.
- Be prepared to share related experiences, skills, and accomplishments.
- Offer detailed and specific examples that demonstrate your "fit" for the position.

- Dress to impress (most industries prefer business suits).
- Know the industry standards and company history.
- Remember that regardless of how much experience you have, what your GPA is, who you know, or how great your resume appears, if you are not able to interview successfully, you will not get the job. Your resume gets you to the interview, and your interview gets you the job.

*What not to ask!*

Salary, you will never mention salary unless you have officially been offered the position. Please see a career advisor as to how to best navigate the, “ So how much money do you need to make?” question. Time off, lunch breaks, and other compensation issues. These items will be addressed if a job offer is made, and you’ll have a chance to address them at that time.

***Career-specific dialogues***

**Dialogue 1**

***Interviewee:*** Good morning, I am here for my interview.

***Interviewer:*** Hello, nice to meet you. I'm Mr. Gotcha. Have any trouble finding the place?

***Interviewee:*** No problem.

***Interviewer:*** So why don't you tell me why you are interested in changing positions?

***Interviewee:*** Unfortunately, our company is shutting down due to the economy.

***Interviewer:*** What would you consider your strengths?

***Interviewee:*** I am probably best at researching for marketing purposes.

***Interviewer:*** What is your biggest weakness?

***Interviewee:*** I tend to get bored easily and so love to keep myself challenged.

***Interviewer:*** We have a position where that could work out well.

***Interviewee:*** Thank you for taking the time to interview me.

**Dialogue 2**

***Interviewer:*** Hi there, I'm Bill Gotcha, the owner of Gotcha Enterprises. Did you find your way here OK?

***Interviewee:*** Your assistant gave wonderful directions.

***Interviewer:*** Why are you switching jobs at this point in your career?

***Interviewee:*** Our company is moving overseas and I wish to stay in the United States.

***Interviewer:*** What are you best at?

***Interviewee:*** I am good at organizing systems that have been having prob-

lems.

**Interviewer:** *What is your biggest challenge in terms of skills?*

**Interviewee:** *I don't like to sit around and so like to always find things to do to keep myself busy.*

**Interviewer:** *That is good to hear!*

**Practice 3.** *Work with your partner. Role-play the dialogue, substituting the different expressions below. Then reverse roles.*

<p><b>My name is Jane Phillips.</b> I'm Jane Phillips</p>	<p><b>I'm the personal director.</b> I'm in charge of hiring. I'm the manager.</p>	<p><b>I'm pleased to meet you.</b> I'm happy to meet you. It's nice to meet you.</p>
<p><b>Please have a sit.</b> Please sit down.</p>	<p><b>According to your resume, you have several years of office experience.</b> Your resume tells us, you have several years of office experience.</p>	
<p><b>Tell me about your qualifications.</b> What are your qualifications? What qualifications do you have?</p>	<p><b>I can type 100 WPM.</b> I am able to type 100 WPM.</p>	<p><b>I am proficient in many computer programs.</b> I am able to use many computer programs.</p>
<p><b>I have excellent interpersonal skills.</b> I get along very well with people.</p>	<p><b>Do you have any questions about the position? Would you like to ask anything about the job?</b></p>	
<p><b>What are the responsibilities in this position?</b> What are the duties?</p>	<p><b>We're looking for someone to supervise two office clerks.</b> We want someone who can manage two office clerks.</p>	
<p><b>Have you had any supervisory experience?</b> Have you ever been supervisor?</p>	<p><b>What are your salary expectations, Mrs Stevans?</b> What salary do you expect?</p>	
<p><b>I expect to be paid the going rate for this type of position.</b> I expect to get the usual salary for this type of work?</p>		
<p><b>That's very generous.</b> That's very good.</p>	<p><b>When is the position available?</b> When does the job start?</p>	<p><b>We'll contact you next week.</b> We'll get in touch with you next week.</p>
<p><b>It's been a pleasure meeting you.</b> I've enjoyed meeting you.</p>	<p><b>I hope to hear from you soon.</b> I look forward to hearing from you soon.</p>	



### ***Practice 4. Group work. Write your own dialogue.***

Write a dialogue with a partner using phrases from the practice 1 and 2. Present the dialogue to your group.

## **SECTION 4**

### **Business etiquette**

Business etiquette is all about professionalism and appropriate behavior. You will never have a second chance to make a first impression. First impressions are often lasting impressions with a potential employer.

*Here are a few tips:*

- Do your homework. You'll be more confident and prepared if you go into a business situation knowing what's expected of you, and knowing about the company and the position you're interviewing for. Bring multiple copies of your resume and references, and make sure they're kept neat and unwrinkled in a folder, preferably leather bound portfolio.
- Be on time! In fact, plan to arrive 15 minutes early. That way, you won't be rushed and will give your interviewer the sense that you're punctual and prepared.
- Dress professionally. It's always better to be overdressed and more traditional than too trendy or casual. If possible, find out the expected dress code. In an interview, a business suit is usually a safe choice. In most industries, conservative one is better.
- Send thank-you notes. This small gesture can make a world of difference when you're being considered against other candidates. Anytime an employer gives you their time, whether it's a formal or informal setting, be sure to email them within a day and follow up with a hand-written thank you note. You want them to know that their time was appreciated and valued, and that you enjoyed learning more about their company and the open position.

If part of your interview or meeting with an employer includes a meal, good manners are essential. Remember to use utensils, working from the outside in if you're faced with several forks or spoons, and eat slowly. A meal is a chance for your potential employer to see how you act in a more relaxed environment than the interview room, but that doesn't mean you can be casual. Treat the meal as part of the interview process, and if you're unsure about what to order or how to conduct yourself, take your cues from your host.

# SECTION 5



## Video Watching

Watch the video "12 things that ruin a first impression immediately".

<https://www.youtube.com/watch?v=JrbnTZPjg0k>

*Pre -Viewing activity.*

1. Name things that you shouldn't do during the interview.

*Post -Viewing activity.*

Fill in the table

Things that ruin the first impression	Things that make the impression positive
1	
...	

# SECTION 6



*Write an essay on the following topic.*

- 1) You will find a job, if you are willing to work (Lailah Gifty Akita).

# Part III

## Texts for independent reading

### 1. Biomes or plant formations

The broad units of vegetation are called plant formations by European ecologists and biomes by North American ecologists. The major difference between the two terms is that biomes include associated animal life. Major biomes, however, go by the name of the dominant forms of plant life. Biome is a large ecosystem characterized by similar vegetation, animals, and climate. Abiome's abiotic (non-living) factors, such as light intensity, wind, soil quality, amount of rainfall, temperature, and nutrients, determine what plants and animals inhabit the zone. There are various terrestrial and two aquatic (freshwater and saltwater) biomes. While scientists do not agree on the number of land-based biomes, the six most widely accepted biomes are: 1) tundra; 2) taiga; 3) grassland; 4) deciduous forest; 5) desert; 6) tropical rain forest. Influenced by latitude, elevation, and associated moisture and temperature regimes, terrestrial biomes vary geographically from the Tropics to the Arctic and include various types of forest, grassland, shrub land, and desert. These biomes also include their associated freshwater communities: streams, lakes, ponds, and wetlands. Marine environments, also considered biomes by some ecologists, comprise the open ocean, littoral (shallow water) regions, benthic (bottom) regions, rocky shores, sandy shores, estuaries, and associated tidal marshes. A more useful way of looking at the terrestrial and aquatic landscapes is to view them as ecosystems, a word coined in 1935 by the British plant ecologist Sir Arthur George Tansley to stress the concept of each locale or habitat as an integrated whole. A system is a collection of interdependent parts that function as a unit and involve inputs and outputs. The major parts of an ecosystem; are the producers (green plants), the consumers (herbivores and carnivores), the decomposers (fungi and bacteria), and the non-living, or abiotic, component, consisting of dead organic matter and nutrients in the soil and water. Inputs into the ecosystem are solar energy, water, oxygen, carbon dioxide, nitrogen, and other elements and compounds. Outputs from the ecosystem include heat of respiration, water, oxygen, carbon dioxide, and nutrient, losses. The major driving force is solar energy.

## **2. Layers of the rainforest**

There are four very distinct layers of trees in a tropical rain forest. These layers have been identified as the emergent, upper canopy, understory, and forest floor.

- Emergent trees are spaced wide apart, and are 100 to 240 feet tall with umbrella-shaped canopies that grow above the forest. Because emergent trees are exposed to drying winds, they tend to have small, pointed leaves. Some species lose their leaves during the brief dry season in monsoon rainforests. These giant trees have straight, smooth trunks with few branches. Their root system is very shallow, and to support their size they grow buttresses that can spread out to a distance of 30 feet.

- The upper canopy of 60 to 130 foot trees allows light to be easily available at the top of this layer, but greatly reduced any light below it. Most of the rainforest's animals live in the upper canopy. There is so much food available at this level that some animals never go down to the forest floor. The leaves have "drip spouts" that allows rain to run off. This keeps them dry and prevents mold and mildew from forming in the humid environment.

- The understory, or lower canopy, consists of 60 foot trees. This layer is made up of the trunks of canopy trees, shrubs, plants and small trees. There is little air movement. As a result the humidity is constantly high. This level is in constant shade.

- The forest floor is usually completely shaded, except where a canopy tree has fallen and created an opening. Most areas of the forest floor receive so little light that few bushes or herbs can grow there. As a result, a person can easily walk through most parts of a tropical rain forest. Less than 1% of the light that strikes the top of the forest penetrates to the forest floor. The top soil is very thin and of poor quality. A lot of litter falls to the ground where it is quickly broken down by decomposers like termites, earthworms and fungi. The heat and humidity further help to break down the litter. This organic matter is then just as quickly absorbed by the trees' shallow roots.

## **3. A tree**

A tree is a woody plant with a single stem more or less branched and taking on what is commonly known as the tree form. The most evident parts of a tree are roots, stem, or trunk, branches, buds, leaves, flowers, fruit, and seed. The stem, branches, and roots are made up of inner bark, outer bark, sapwood, and heartwood. The outer bark, sapwood and heart-

wood are made up of concentric circles termed annual rings. During each period of growth two new rings are formed – one on the outside of the sapwood and another on the inside of the outer bark, and as we seldom have more than one season of growth each year but one ring is formed on the wood in a year; so that by counting the rings of wood in the stem we can determine very closely the age of trees. The age of trees could be told by the rings of the outer bark nearly as well as by those of the wood were it not for the fact that the outer layers of bark fall off as the tree grows older. Wood once hardened never changes, and the branches are practically always at the same height from the ground. They might be raised a little by the thickening of the main roots. In some experiments the bark of rapidly growing branches was peeled back in the spring for a few inches, the wood covered with tin-foil and the bark replaced. At the end of the season there was found a ring of wood outside of the tinfoil, thus showing where the annual growth of the tree was made.

A tree has three major parts: crown, trunk and roots. The crown of a tree contains of leaves/needles, branches, limbs, twigs, buds, flowers and fruit. Leaves and needles are food factories in the tree's crown. Food-making, or photosynthesis, begins when the sun's warmth and light is trapped by green chlorophyll in the leaves. This energy is used to combine carbon dioxide from the atmosphere with water drawn from the roots to create sugar and starch. The inner bark then carries this food to all living parts of the tree. In turn, oxygen and water are released into the atmosphere as by-products of photosynthesis. The trunk is the main stem of the tree. It supports the crown of branches, leaves/needles and transports food and water throughout the tree. The roots act as an anchor, holding the tree firmly in place. They grow and spread out underground from the root tips, forming a huge network that draws nutrients to the tree and protects the soil from erosion.

#### **4. Conifers**

Conifers, or softwood trees, form a distinct group, which has become very important in the world's economy, because they grow fast on poor soils even under harsh climates, and yield timbers that are very suitable for industry. They are now being planted on a growing scale in most countries as a source of wealth. Distinctive characters of the conifers include: a) narrow, needle-like or scale-like leaves; b) foliage usually evergreen (the only common exception being the larches); c) scaly buds; d) regular almost geometrical, branching habit; e) resinous fragrance of foliage, buds, bark and

timber; f) male and female flowers always borne separately, though usually on the same tree; g) flowers always wind-pollinated, and therefore cat-like, lacking showy petals or nectar, h) fruit in the form of a woody cone (rarely, as in yew and juniper, a flesh berry). Most conifers flower in spring, their cones may ripen during the following autumn, the following spring, or in some species eighteen months after pollination. In natural forests conifers grow readily from seed, unaided by man. In cultivation they are raised in nurseries nearly always from a seed, since most kinds are very hard to grow from cutting. The timber of conifers is always called softwood, though in a few species it is quite hard. On the whole, however, it is softer and easier to work than the hardwood yielded by broadleaved trees. Today the great bulk of timber used in house building, fencing, packing cases and boxes of all kinds, and as railway sleepers, telegraph poles, or pitprops, is softwood. For paper making, which uses about half of the output of wood in the main timber-growing countries, softwood is more suitable than hardwood because, amongst other features, its fibres are substantially longer. Soft wood is very suitable for the manufacture of most kinds of artificial board, an expanding industry that gives us wood chipboard, hardboard, and insulation board. At the present time about nine-tenths of all the timber used in Britain, whether in the unaltered state or made up into paper or manufactured board, comes from coniferous trees.

## **5. Broadleaves**

The broadleaves, or hardwood trees, are the leading feature in the British landscape of woods and hedgerows. In the past they were the country's main source of building material, fencing and fuel. Today, when there are other sources of heat and power, and steel and concrete play so large a part in building, the hardwood timbers of these attractive trees are less important to the British economy. But there is still a very substantial trade in good sound oak, beech, ash, sycamore and elm, for the better classes of furniture making and the joinery, while poplar is used in matches, and willow for cricket bats. To a growing extent, the country's needs of timber in bulk are now days met by the conifers, or softwood trees. Most forest planting today is done, inevitably, with these conifers. But the landscape, shade and shelter values of the broadleaves are so great that they are always likely to play the larger part in hedgerows, as street trees. Most of them are natives, and these are firmly established in old natural or semi-natural woodlands throughout the British Isles. Our broadleaved trees form

part of the vast natural broadleaved forest of Northern Europe. The key feature of all these woods and trees is, as the name implies, the broad leaf, which is shed each autumn as the colder weather approaches. Every leaf holds in its tissue a remarkable substance called chlorophyll, which gives it its green colour. In sunlight and in the presence of sufficient moisture and mineral salts, this chlorophyll 'fixes' some of the carbon dioxide gas that is always present in the air. Once fixed, the carbon dioxide is transformed by intricate chemical processes into sugars, and eventually into all the other complex materials that make up the tree's substance – wood, roots, flowers and seeds as well as the leaves themselves.

## **6. Temperate forest**

Temperate forests are located almost entirely in the Northern Hemisphere, although they do occur in the Southern Hemisphere at the tips of Africa, South America and Australasia.

The rainfall in this biome averages 80-150 cm a year and is fairly evenly spread over the year. The summers are typically warm and the winters are cold, often falling below zero degrees Celsius.

Temperate forests usually consist of two layers - the canopy and an understorey of shrubs. Unlike in the rainforests where little light penetrates to the forest floor, in temperate forests there is enough light for herbaceous plants and moss to grow. There are also less tree species in temperate forests than in the rainforest. The perennial plants that grow on the forest floor tend to die away in the winter and come up again in the spring.

There are several different types of temperate forest. These are:

- Broad-leaved deciduous woodland (western Europe, eastern North America), including oak, beech, chestnut and ash.
- Coniferous forest (Pacific coast of North America), made up of redwood, red cedar and hemlock.
- Mixed conifer and deciduous (Great Lakes region), containing birch, oak, hemlock, pine and maple.
- Broad-leaved evergreen forests (Japan and Tasmania), include southern beech and chinquapin.

At higher latitudes the forests are typically coniferous, and in warmer regions they tend to be deciduous.

The leaves of deciduous trees change colour in the autumn, as chlorophyll, the green pigment, breaks down. The leaves turn golden, red or brown before falling off the branches. This is because water is in short



supply, and so to conserve this precious resource, the trees sacrifice their leaves in the winter.

This is one of the most heavily populated biomes. If it were not for the long history of forest clearance for agriculture, industry and cities, a great deal more of the temperate world would be covered by woodland. Much of the ancient forest has been replaced by heathland and moorland. Ten thousand years ago the UK was almost entirely covered by forest, with coniferous pines in the north and oak, lime, elm, hazel, birch, alder and ash in the south.

## **7. Principles of sustainable forestry**

The Sustainable Forestry Partnership integrates ecological, social, and economic principles to conserve forests and maintain their productivity now and into the future without degrading the environment. Sustainable forestry will change the face of forestry through its research, education and outreach programmes that emphasize: (1) new ways of collaboration among all forestry stakeholders, (2) protection of forest ecosystems at all time and space scales, and (3) viable long-term forest products and equitable outcomes.

Ecological principle of sustainable forestry means that foresters must protect, maintain and, when necessary, restore the aesthetics, vitality, structure and functions of the natural processes of the forest ecosystem and its components at all landscape and time scales. This includes a holistic approach to research and management planning with long-term objectives, such as:

- to protect or restore surface and groundwater quality and quantity, including aquatic and riparian habitats
- to maintain or improve natural processes of soil fertility, productivity and stability
- to keep balance and diversity of native species and their gene pools, including flora, fauna, fungi, and microbes
- to safeguard rare, threatened, and endangered species and habitat
- to preserve ancient forests
- to assess, reduce and eliminate adverse environmental impacts of forest management, such as from the use of artificial chemicals and pesticides, exotic species, and genetically engineered organisms.

Social principle of sustainable forestry means that foresters must develop and use innovative links among managers, scientists, decisionmakers and the various public stakeholders about the values and the impacts of

their activities to determine appropriate and acceptable forest management practices. These links should be:

- Participatory (high degree of power sharing among those involved)
- Collaborative (building in coordination and communication)
- Educational (collective learning)

Economic principle of sustainable forestry means that foresters must recognize and work towards viable, long-term markets and other outcomes for timber and other forest products. Comparing current forestry and sustainable forestry it is important to emphasize that there exist certain distinctions:

<b>Current Forestry</b>	<b>Sustainable Forestry</b>
Biological and human environments are seen as separate spheres of interest. Biological and social components are studied separately. Human centered view of the world.	Biological and human environments are seen as one sphere of interest. Biological and social components are studied as parts of one complex ecological system. Activities are consistent with a bio-centered view of the world.
Complex systems are too difficult to be studied as wholes and can be understood through a study of the parts.	Complex systems must be studied as wholes and cannot be fully understood through a study of separate parts. Approaches need to be holistic, generalist, and rely on synthesis.
Research is based on a project driven analytical process. Forest plans and environmental impact statements are the projects.	Ecological system (biological and human) viability driven analytical process. Research is driven by need to understand how systems change in order to remain viable.
Low priority is given to understanding of the role of external forces and influences on forest management. Management is seen as localized and influenced by local systems	A conscious attempt is made to understand the role of external ecological and social forces on forest management decisions. Impacts of local, regional, national, global decisions and events on forests are to be studied. Recognition of interactive effects is vital.
Impact assessments are local in nature. Environmental and social impact statements refer only to geographically local areas.	A conscious attempt is made to understand the impacts of forest management decisions on external biological and social systems (local, regional, national, global). Recognition of cumulative impacts is vital.
Environmental resources are infinite and renewable. Research directed at understanding "wise use" and sustained yields.	Environmental resources are finite. Limits of systems must be understood.
A relatively short-term (10 years) planning frame is most practical.	A relatively long time frame is necessary for understanding of generational and cumulative effects.
Planning is based on a slow rate of	Faster rates of change in forest technology, de-

change in forest technology and demand for forest products and services.	mand for forest products and services, and ecological changes must be taken into account.
Professionalism often leads to resistance to changing public demands and professional primacy in decision making arena.	Recognition that more decisions about forests are being made in public arenas. Increasingly lower forest-professional primacy in decision-making. Professional stewardship includes responsiveness to changing societal demands and expectations.
Values implicit, seen as givens.	Values explicit and conscious.
Commodity orientation to management.	Asks if nature should be treated as a commodity or resource.
Research is mostly intradisciplinary; unit of analysis is discipline specific.	Research focuses on interconnections, is interdisciplinary; unit of analysis is the system.

## **8. Forests of Russia**

In relation to the rest of the world, Russia possesses more than one fifth of the world's forested area. Coniferous volume accounts for 80 per cent of the total. The most widespread genus is larch. Next follow pine, spruce, birch, fir, aspen, oak and beech.

Geographically, our forest resources have an extremely disproportional distribution as to population and conversion facilities. The main softwood reserves are concentrated in the Urals, Siberia, Far East, in Northern European regions of Arkhangelsk and Vologda and in the Komi and Karelian Autonomous Republics.

The taiga occupies two-fifths of European Russia and extends across the Urals to cover much of Siberia. Much of the taiga also has permafrost. This vast zone is made up of coniferous trees, but birch, poplar, aspen, willow and other deciduous trees add to the diversity of the forest in some places. The taiga contains the world's largest coniferous forest, representing about one-third of the world's softwood timber. There are various species of pine in taiga. Larch, a deciduous conifer, becomes dominant throughout the mountains of eastern Siberia. Some regions, however, have stands of trees that are made exclusively of birch. Throughout the taiga zone, trees are generally small and widely spaced. A mixed forest, containing both conifers and broad-leaved deciduous trees, occupies the central portion of the Great European Plain between Saint Petersburg and the Ukrainian border. The principal broad-leaved species are oak, beech, maple and hornbeam.

Russian forests have changed considerably because of reformation of

the land use system and depleting felling over the last three centuries. From 1700-1900, about 70 million ha were deforested in European Russia; the forest area shrank from 19% to 10%. Over the past 40 years, afforested lands have increased by 79.9 million ha. This revival is owing to forests' great capacity for self-renewal, to significant reduction of fires during this period, and to vast plantations of trees (e.g., 18.3 million ha of forest plantations were registered as of 1 January 2000). At the same time, forest quality worsened considerably, mainly in the regions of intensive logging, when the most productive standing trees of valuable coniferous species were felled.

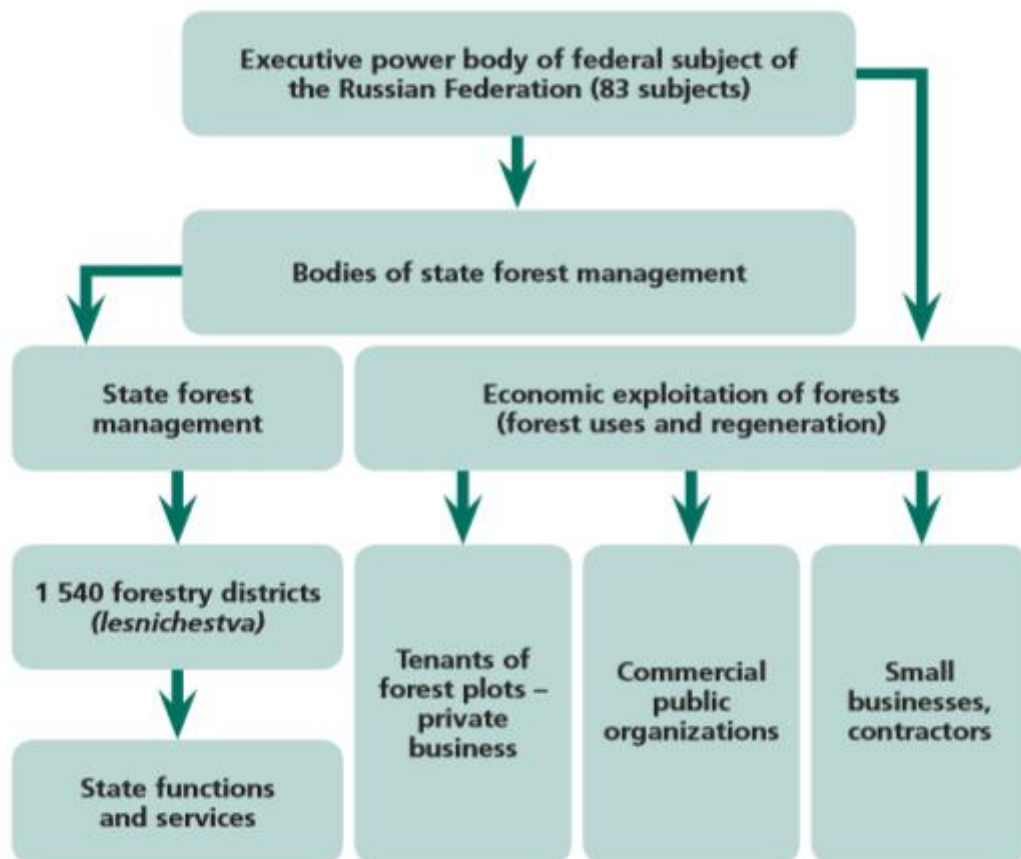
### **9. Institutional organization of forest management**

Two decades of political and economic reforms in the Russian Federation have demonstrated that the forest sector is both slow and has difficulty in adapting to market relations and international requirements related to sustainable forest management. Moreover, the sector is not a priority for national economic policy. Several features characterize forest sector development in Russia. First, the absence of a coordinated forest policy adopted at the federal level on the basis of consent of state institutions, business and society. A draft forest policy document is presently the subject of national discussion in Russia. A second feature is the instability of legal regulation governing forest relations. Over the last twenty years, federal forest legislation has changed several times. A third feature is the unstable position of the federal executive body within the sphere of forest relations.

The sphere of competence of the Federal Forestry Agency includes: (1) control and supervision in the area of forest relations, except for forests in protected areas; (2) rendering public services; and (3) management of state assets in the area of forest relations. The Federal Forestry Agency renders the following services: (1) state forest inventory and forest husbandry; (2) forest pathology monitoring; (3) seed growing; (4) aerial forest fire protection operations; (5) scientific research; and (6) additional vocational education. These services are provided by institutions and enterprises subordinated to the Federal Forestry Agency or through tenders on the basis of state purchase. The Federal Forestry Agency does not have territorial bodies in the subjects of the Russian Federation. Federal plenary powers in the area of forest relations at the regional level are implemented through forestry departments in eight federal districts and the 83 federal subjects of the Russian Federation. The following plenary powers have

been transferred to government authorities of the subjects of the Russian Federation: (1) elaboration and validation of forest plans, legal forestry regulations, implementation of state expertise on forest exploitation projects; (2) lease and concession of forest parcels, conclusion of contracts for purchase and sale of wood stock, organization and carrying out of wood auctions; (3) issuance of permits for undertaking geological works on forest land; (4) organization of management, conservation, protection and regeneration of forests; (5) maintenance of state forest register; (6) implementation of federal forest supervision; and (7) establishment of lists of officials authorized to perform federal forest supervision. These plenary powers are implemented by state structures within the bodies of executive power of the subjects of the Russian Federation. At the field level, the structures are represented by forestry districts (*lesnichestvo*). The institutional organization of state forest management at the level of the subjects of the Russian Federation is indicated in figure 1.

**Institutional organization of forest management in the Russian Federation**



**Figure 1**

Private business carries out forest management in accordance with

lease contracts. The leasing of forests was introduced for the first time by the “Basic Forestry Legislation of the Russian Federation” in 1993. Subsequent legislative acts modernized lease relations and changed time periods, procedure, and the rights and obligations of the parties. According to the Forest Code of 2006, forest parcels are conceded in tenancy to legal and natural persons in accordance with: (1) lease contracts for the period of 10 to 49 years, otherwise (2) in accordance with contracts for the purchase and sale of wood stands for a period not exceeding one year. Contracts for the purchase and sale of wood stock are mainly directed at forest use for local needs and meeting the wood demand of the local rural population. Rights to conclude forest parcel lease contracts and contracts for purchase and sale of wood stands are acquired by legal and natural persons through wood auctions. An exception is made for priority investment projects, which are subject to selection and validation through a tendering procedure. Priority investment projects are considered those related to the setting up and modernization of wood-processing infrastructure to the amount of no less than 300 million roubles. The Ministry of Industry and Trade of the Russian Federation (Minpromtorg) keeps records of investment forest projects aimed at innovative development of the forest sector. Tenants carry out forestry operations on leased land accounting for over 14 percent of forest estate land (lesnoy fond). Authorized unitary enterprises and autonomous entities carry out forestry operations on unleased land.

## **10. Nursery**

Nursery. This term is applied to a plot of land used for raising plants that are intended for planting elsewhere for their land growth. Soil and Cultivation. The best soil for a general nursery is a deep, rich reasonably level, retentive upland. It is customary to grow most of the nursery crops in rows, so that they may be readily cultivated. The land should be ploughed deeply when the crop is planted and the surface soil kept loose and fine during all the early part of the growing season, or until about the middle of July. If the land that has to be used for a nursery is rather shallow, it should be gradually deepened by ploughing from year to year, and if inclined to dry out the addition of large quantities of organic matter, together with constant cultivation, will do much to remedy these defects. The cultivation of a nursery or young forest plantation, provided the latter is planted in rows, should be much the same as for garden crops and consists in keeping the land stirred to the depth of three inches, thus giving a dust blanket, which will protect from drought. Grades of Nursery Stock

Nursery stock of different kinds has come to be known by such convenient names as seedlings, transplants, street trees, forestpulled seedlings, etc. Seedlings are young plants, grown from seed, that have never been transplanted, and are generally designated by their size or age. They form the cheapest class of nursery stock, and are used largely for starting wind-breaks. Transplants are seedlings that have been at least once transplanted, and are designated by their size and the number of times they have been moved. They are higher in price than seedlings, but with some kinds of trees they are much more likely to grow, and may be well worth the extra price. Evergreens, especially Pines, will seldom do well unless once transplanted before being set in a permanent place. Street trees include the trees of large size which are used for street, shade, and ornamental purposes. To be of the best quality they should have been transplanted two or more times and have received some attention in the way of pruning so as to give them a good form. Such trees vary much in quality and price, but the best are necessarily rather expensive. Forest-pulled Deciduous Trees of small size can often be obtained at a very low price, and may be as desirable as those that are nursery grown. Forest-pulled Evergreen Seedlings of Small Size may also be desirable, but too often they have poor roots, or have been so injured by poor handling that they are worthless. They should have their roots carefully protected at all times. Forest-pulled Shade Trees sometimes grow very well, but they are always inferior to good nursery-grown trees. They are generally improved by having their roots shortened two years before they are to be removed, and when so treated grow very well.

### **11. Forests of the republic of Bashkortostan**

Forests, made up mainly of hardwood species, stretch over more than 40% of the territory of the republic of Bashkortostan. This was not always the case: up until the mid 19<sup>th</sup> century, 70% of the area of the republic was covered by forests dominated by conifers (pine and larch) and valuable hardwood species. Intensive logging, uncompensated by forest regeneration schemes, has led to the reduction of the forested area, which is now nearly 50% less than it used to be.

Bashkortostan has an uneven forest cover varying from 6 to 10% in the Blagovar, Davlecanovo, Kuurgazinsky and Sterlitamac districts to more than 81% in the Burzyansky and Beloretsk districts. The composition of Bashkortostan's forests includes 20 species. The stand composition is complex, sometimes reaching five to seven species.



Softwood species account for one fifth of the forested area and are concentrated primarily in the mountainous regions of the republic: the lower elevation is comprised by spruce forming an exuberant green ground cover of taiga plants. Pine forests are especially abundant in the central ridges of the Bashkortostan Urals, which contain 70% of pine stands. Large pine forests are located in the northwest of the republic.

Larch prefers areas with a pronounced continental climate, i.e. the central part and the eastern slope of mountainous Ural. The largest larch forests are located on the slopes of the Avalyak, Iremel and Uraltau ridges. Old larch stumps which have survived on the Irendyk ridge testify that this species used to grow here.

Dark coniferous forests dominate the mountainous part of the Bashkortostan Urals, concentrated in two large habitats – the Ufimscoe plateau and the northern Beloretsk district. These forests, like pine ones, have suffered severely from intensive logging. Their area was reduced by more than 25% in the last 50 to 60 years alone.

Eighty percent of the forest area of the republic is occupied by hardwoods: broad-leaved (lime, oak, maple, elm) and small-leaved (birch, aspen, black and white alder and various willow species).

Broadleaved forests make up one third of all of Bashkortostan's forests. Among these, the lime forests occupy the most area. They occur in the European part of the region. The rest of the lime stock forms outliers scattered over the territory of the republic. Its high reproduction rate makes it an expanding species.

Oak is concentrated in western Bashkortostan on the low western slope of the Southern Urals and occurs in the form of small stands on the Ufimskoe plateau. It grows mainly on highlands and in floodplains.

Maple is constant representative of the broadleaved forests. By nature, the maple is a minor species in the broadleaved forests, though it may dominate in stands located in low shadowy couloirs in the northern and northwestern slopes. Witch elm and European white elm commonly accompany forest-forming broadleaved species, though they are able to make up pure stands or stands with admixture of other species.

## **12. Forest threats**

By now, it is a well-known fact that forests everywhere are facing a range of threats. The forests that remain today cover a fraction of the area that was forested even a few hundred years ago. And the speed of destruction is only increasing. Everything from the direct and obvious effects of

over-cutting to the more subtle effects of climate change are threatening to destroy the last of the remaining natural forests. Threatened forests are more than just threatened trees. When the trees disappear, so does everything that depends on them, from fungi and microorganisms to tigers and bald eagles. Each species has its own particular requirements for habitat, and therefore preserving only certain forest ecosystems, which in many cases aren't prime sources of timber, does not protect the habitat of all forest species. When a forest is cleared and new trees are planted, the diversity of animals is not brought back. A plantation of one or a few kinds of trees does not support as many life forms as a natural forest. These plantations will not produce as much high-quality timber. The trees in natural forests have been growing for hundreds and even thousands of years. Planted trees are cut as soon as eighty years after they are planted. Planting trees and logging, then planting and logging again in continuing cycles can degrade soil and water. Water often washes soil away on cleared slopes, making the area unsuitable for new trees, and destroying riparian zones below. Plantations are also much more susceptible to pests and diseases. Pest controls and fertilizers are often used on plantations, which may have other unfavorable effects on soil and water.

Much of the human-caused forest destruction stems from overpopulation. In many places, there are too many people trying to make a living from too few forest resources. Trees are cleared not only for wood and other products, but so that the land they once grew on can be turned into pastures for cattle and agricultural fields to feed growing numbers of people. As cities expand, forests are cleared to make room for housing developments, shopping malls, golf courses, and other structures that require large amounts of land. Other threats to the health of forests are more indirect. In certain areas, including much of Europe and the eastern United States and Canada, forests are declining because of air pollution. This pollution is from the fossil fuels burned in vehicle – cars, trucks, buses – and from industry. Carbon dioxide (CO<sub>2</sub>), a gas which contributes to "global warming", is a well known emission from these sources, but vehicles and industry also produce sulphur dioxide and nitrous oxide gases, which create acid rain. Acid deposits can kill trees directly by leaching nutrients from them, resulting in the death of leaves and needles. The most damage, however, is caused when acid gets into the soil and releases poisonous heavy metals, which are naturally present but usually inaccessible. At the same time as the acid rain releases these poisons, it also dissolves and washes away vital nutrients in the soil. People have been destroying for-

ests for hundreds of years, but the rate of destruction has been increasing so rapidly that some forests won't last much longer.

### 13. Deforestation

Deforestation began thousands of years ago for building ships and houses. However, over the last 20 years, more than 300 million hectares of tropical forests (an area larger than the size of India) have been cleared for plantations, agriculture, pasture, mining, or urban development. Today forests cover only half of the area they did when agriculture began 11,000 years ago. This earlier loss of 50% of the Earth's forests is sufficient, in itself, to severely disrupt the global carbon cycle.

"God has cared for these trees, saved them from drought, disease, avalanches, and a thousand tempests and floods. But he cannot save them from fools." *John Muir*

Janet Larsen of Worldwatch Institute says that the amount of global forest cover is a key indicator of the health of the planet. "An intact forest cycles nutrients, regulates climate, stabilizes soil, treats waste, provides habitat, and offers opportunities for recreation." Forests also help regulate local and regional rainfall, are sources of food, medicine, clean drinking water and they provide immense recreational, aesthetic, and spiritual benefits.

World Resources Institute estimates that, at current deforestation rates, about 40 percent of today's intact forests will be gone within 10-20 years. The loss of these trees results in fewer trees to absorb carbon dioxide, and the cut trees release the carbon that had been stored in them.

"Rainforests cover 2% of the Earth's surface, or 6% of its land mass, yet they house over half the plant and animal species on Earth. They originally covered at least twice that area." Rainforest Action Network [http://www.ran.org/info\\_center/about\\_rainforests.html](http://www.ran.org/info_center/about_rainforests.html)

Removing forests (and their natural functions) causes many serious problems.

- *Loss of trees makes global warming worse.* Through photosynthesis, trees remove carbon dioxide from the air, produce oxygen, and store carbon as wood. One ton of carbon in wood or forest biomass represents 3.67 tons of atmospheric carbon dioxide recycled. We are creating warming, not only by putting more CO<sub>2</sub> into the air, but also by getting rid of trees that absorb and remove carbon from the air.

- *Impact on Ecosystems.* Forests preserve water, soils, plants and wildlife. Their destruction aggravates droughts, soil erosion, and pollution

of watercourses, and causes extensive flooding, and increased pest populations due to the ecological imbalance.

- *Loss of Species.* Tropical forests contain at least half the Earth's species, so their loss causes a dramatic loss of biodiversity. *Clearing and destructive logging of forests is the single greatest cause of species extinction worldwide.*

- *Harm to Water.* Forests are natural dams that catch rainwater in their canopies and in leaves and litter on the forest floor, retaining and purifying rainwater. Forest logging allows rapid run-off and destroys the ability of the soil to absorb water.

#### **14. Wood production**

The wood production function of the forests is a very important factor for the economy of both the Republic of Buryatia and the Irkutsk Oblast. It provides employment for many people and produces roundwood logs for export as well as raw materials for several wood processing industries. There are 2 pulp mills in the area, and hundreds of saw mills and other wood processing industries (e.g. furniture, window and door frames, prefab houses). Siberia, including the Baikal region, has always been a net exporter of wood, primarily to western Russia, but recently markets are developing in the south and east (Mongolia, China, Japan).

Large scale industrial forest utilisation started after the second world war, and was mainly geared at producing high volumes of wood. The common harvesting method consisted of clear felling areas from 50 up to 200 ha, using the tree length method. Thinning and intermediate felling are hardly practised at all: these are considered more as silvicultural tasks under the responsibility of the leskhoz. The logging companies (lespromkhoz) were primarily interested in cutting old growth by final felling through clear cutting. Their harvesting and logging machinery was too heavy and robust to be used for more delicate selective felling operations. Furthermore, clear felling is dominating in the leasing system, although also other systems for final felling are recommended in the instructions. As a result, much of the forests are characterised by an unbalanced forest utilisation, with heavily cut forests along the main transport networks (rivers, roads and railways) and practically untouched old growth forests in remote and inaccessible areas. Much of the heavily cut forests were subject to natural regeneration with a large share of undesirable soft broad-leaved species (aspen and birch), due to the large size of clear cuts and the absence of seed trees. Gradually, following natural succession, these areas have de-

veloped into mixed forests of 30 to 50 years of age, which require heavy thinning operations in order to produce saw logs in the future. One of the main issues in Russian forestry is the single focus on cutting old growth forests while neglecting the young re-growth on these cutting areas, which are all located adjacent to transport networks.

As a result, logging companies have to go ever farther into remote areas with old growth forests to satisfy the wood demand.

In the long run Russian forestry cannot continue to base its entire wood raw material supply on harvesting old growth forests. It is essential to increase productivity (through pre-commercial and commercial thinning) of the nearby located logged forests.

This also transpires in the concepts of “main use” and “intermediate use” of the forests. Until recently, some 95% of all wood production were obtained by main use, which means something like: using the old growth forest mainly for wood production by final felling of the forest cover.

### **15. The Russian woodworking industry**

Russia is one of the main players in the forest – based sector. Russia is an important global player, its forest resources and forest industry also have a vital role to play on the regional level within the European and Russian forest – based sector. Chiefly as a raw material supplier, Russia plays an important role for the European woodworking industries, mainly in the Baltic Sea region.

Strong positive economic development has created and will further create good business opportunities. The Russian market is an interesting market for Europe to invest and, vice-versa, Europe is an excellent market for roundwood exports from Russia. Furthermore, Russia’s historically strong wood culture can create opportunities for Europe and Russia to introduce wood-based solutions in construction and interior applications, as well as in packaging.

Russia is a member of the European Confederation of woodworking industries (CEI-Bois), the European Organization of the Sawmill Industry (EOS) and the European Federation of the Plywood Industry (EFIC). Active cooperation within the organizations and their projects can be an excellent and fruitful opportunity. It can also prove to be beneficial for Russia in supporting the development of the regional common market as well as improve their markets in Asia, as Europe is actively involved in standardization and marketing on Chinese and Japanese markets.

In view of future developments, both for the Russian and European woodworking industries, it is necessary to have clear and proactive policies that stimulate developments favouring a strong woodworking industry and create investment opportunities. Policies (e.g. export taxes) should avoid impacting negatively on the existing flows of raw material and products in order to develop an innovative and growing woodworking sector in the European-Russian region.

In addition, for the wood – based panel industry, the Russian and European markets are increasingly interlinked. In the first instance, Russia Europea’s biggest supplier of broadleaved plywood. For many decades, Russia has considered plywood to be a key-industry, exporting an important part of the production to Europe. One of the main reasons for this is that the quality of Russian plywood on the European market is quite close to European standards. The serious involvement of the Russian plywood sector in the European market is demonstrated by the fact that four leading Russian plywood producers are members of the European Federation of the Plywood Industry (FEIC).

## **16. Forests and forestry in different countries**

### **A. Great Britain**

In prehistoric times, Britain was well-covered with trees. But as the population changed and grew, as agriculture developed and the need for timber increased, the forest areas gradually disappeared. The grazing of cattle and sheep prevented much natural regeneration of trees. By 1905, after centuries of woodland clearance, Britain had less than 5% tree-cover. This area has now doubled, although two-thirds of our present woodland is coniferous and mainly evergreen. Britain is still one of the least wooded countries in Europe. Today only 6% of the total area remains wooded. Oak, elm, ash and beech are the commonest trees in England, while Scotland has much pine and birch.

But in spite of the two wars the Forestry Commission has now planted 1.5 million acres of trees in the 500 forests of the country. The annual programme in recent years has been 100 million new trees planted each year. Of these, 90 per cent are conifer trees because they are quick growing. The softwood they provide represents practically 90 per cent of timber needs of Britain. The Forestry Commission, with their scientific and financial resources, advises and assists private landowners who have between them 2.5 million acres of woodland.

There is a number of forest schools which train the men who look after Britain's forests. A number of universities have specialist courses which provide a steady flow of men who will occupy various positions both in state and private woodlands. Forest officers manage forests and woodlands for the production of timber, and for conservation and recreation purposes. They:

- plan an annual programme of forestry work
- organise the planting, thinning and harvesting of trees
- arrange for the sale of timber
- plan and supervise general maintenance work in the forest
- manage supervisors, employees and contractors
- make sure that health and safety regulations are followed
- are responsible for the conservation of the forest
- manage the recreational aspects of the forest
- deal with neighbouring landowners, subcontractors, timber merchants, local authorities, members of the public and others
- are responsible for financial planning, keeping records and other office tasks.

Most forest officers work between 37 and 44 hours a week. All may have to work overtime when required, including evenings and weekends. Part-time work is possible. Forest officers spend much of their time in an office. They also work outdoors in all weather conditions. Work can be dusty, noisy and muddy. Salaries range from around £21,792 to £28,385 a year.

A forest officer should:

- have an interest in the natural environment
- have strong scientific ability
- enjoy working outdoors
- have practical ability
- be able to lead and supervise other people
- have good planning and organising skills
- work well as part of a team
- have good communication skills, both written and spoken
- be physically fit.

There are around 17,000 people employed in forestry in the UK. Some are self-employed. Others work for the Forestry Commission of Great Britain, private forestry companies, consultants and contractors, estates, charities, some statutory bodies and local authorities. Entry as a forest officer is usually with either a Foundation degree, Higher National Di-



ploma or degree in forestry. It may be important to have had relevant work experience. There is no upper age limit for entry to this work. On starting work, forest officers are usually trained by their employers. Promotion can be to a specialist area of work or may involve responsibility for a larger geographical area. There may be opportunities to work abroad.

## **B. China**

China, once well-covered with forests, has a forested area covering only 9 per cent of the country. This still constitutes a considerable forest area, of which three quarters is productive forest land. Half of this is covered by coniferous forests, mainly concentrated in the north-eastern part of the country. The South, South-West and central regions contain a considerable part of hardwood forests.

There are three main forest zones in China, namely the subtropical, the warm-temperate and cool-temperate. In the subtropical zone (Taiwan, Hainan and Southern part of Southern provinces) evergreen broadleaf trees, such as several species of oak, occur together with palms, tree ferns and bamboos. The warm-temperate zone includes the rest of China south provinces along the Yangtze River. Its forests contain deciduous broadleaf species such as oak, maple, poplar, and even some conifers, such as pine.

The cool-temperate zone to the north is the most important one. It comprises forests of pine, spruce, hemlock, fir, larch, birch, maple etc.

China's forest market is one of the largest in the world in terms of production, consumption, and imports of wood products. Its large forest estate and massive population has meant that it has also for some time been a leading nation in terms of the number of processing plants, number of people employed in the forestry sector, the scope of its non-timber forest markets, and the overall level of contributions of forest enterprises and markets to local livelihoods. However, despite this importance the exact nature of China's forest market has long been a mystery to the outside world, as well as to most Chinese. Until recently there has been limited interest, or capacity, to seek a more detailed picture but this has changed in the last few years with China's booming forest imports and rapidly expanding domestic market.

The State Forestry and Grassland Administration (Chinese: 国家林业局) is an administration of the People's Republic of China, in charge of the national forestry affairs. It was founded in 1949 as Ministry of Forestry and Farming. On November 5, 1951, it changed to Ministry of Forestry, and the farming section was transferred to Ministry of Agricul-

ture. On March 10, 1998, it was renamed State Forestry Administration. On 10 April 2018, following a wider national institution reform, the name was changed to State Forestry and Grassland Administration.[1] The administration is under management of the Ministry of Natural Resources.

China's forestry authority has made a plan to boost the domestic forestry industry and increase its forest resources to the world's average by 2050. The plan unveiled by Zhang Jianlong, chief of State Forestry Administration, at a conference which closed on Jan 5, is the latest move taken by government sectors to implement the ruling party's modernization blueprint. At its 19th National Congress in November, China's ruling party decided to make the country prosperous, strong, democratic, culturally advanced, harmonious and beautiful by 2050.

Zhang said that by 2050, China's forest stock will expand to 26.5 billion cubic meters, and 72 percent of the growth of forestry industry will come from technological advancement. Although China has seen its forest resources growing fastest in the world in the past five years, Zhang said that forestry remained "a weak link" of China's modernization drive.

"Inadequate forestry resources were a significant cause of China's fragile ecology and the lack of ecological products," Zhang said.

To improve the situation, the administration has broke down the country's forestry modernization goals into different phases. In the first phase from now until 2020, China's forest coverage rate is expected to reach 23.04 percent from 21.66 percent, while the volume of forest resources will expand from 15.137 billion cubic meters to 16.5 billion cubic meters. From 2020 to 2035, the percentage of forest coverage will grow further to 26 percent while forest stock will rise to 21 billion cubic meters. Over the same period, the greening rate in the rural area will surge from 30 percent to 38 percent. By 2050, the figure will reach 43 percent.

### **C. Canada**

Canada is one of the five countries with the largest amount of forest, along with Russia, Brazil, China and the US; together, these countries control more than half of the world's forested land area. The most important forest trees in Canada are the spruces (figure 2.4). About one third of Canada's timber is spruce. Its wood is used for pulpwood, lumber and plywood. Second only to the spruces are two-needled pines. These pines furnish 11 per cent of Canada's standing timber volume. Third in importance are the true firs, of which the most distributed is the balsam fir. Its wood is

commonly cut as pulp-wood and to a lesser extent, as sawn goods. Next is a family of broad-leaved deciduous trees - aspen and poplar.

Fifth among Canada's forest trees is the hemlock. Western hemlock is a valuable pulpwood species; eastern hemlock is the main commercial source of tannin, while the wood is used for railroad ties, lumber and pulp. Douglas fir is used extensively for lumber, plywood and construction timber. Next in order are the cedars. Their wood is light and resistant to decay. In virgin forests they reach heights of 150-200 feet and diameters of 8 to 10 feet. Their wood is used for lumber, poles and posts. Finally there are the birches. Most distributed is the white birch which grows widely throughout Canada. The most important hardwood tree in eastern Canada is the yellow birch. Its wood is much in demand for flooring, furniture veneer and railroad ties. Canada is indeed fortunate to possess such a variety of useful tree species. The pine and spruce in the east, and Douglas fir, cedar and hemlock have won for Canada its position as the world's leading nation in forest products trade. The sugar maple is one of the Canada's best known symbols and the leaf appears on the country's flag.

Forests and forestry in Canada are managed by Department of Natural Resources (applied title Natural Resources Canada) which controls natural resources issues, and the Canadian Forest Service, which conducts research and coordinates forestry policy at the national level.

Under the Canadian constitution, responsibility for natural resources belongs to the provinces, not the federal government. However, the federal government has jurisdiction over off-shore resources, trade and commerce in natural resources, statistics, international relations, and boundaries. The Canadian Council of Forest Ministers, composed of 14 ministers representing the federal government and the various provinces and territories, is the main tool for dissemination of national and international policy throughout the country.

#### **D. The USA**

The amount of timber resources of the USA is second only to Russia. Forest land occupies one third part of the United States area.

There are over one thousand species of trees in the United States. In Europe (without Russia) there are less than one hundred. England has about thirty and France thirty-five. Out of the one thousand kinds of trees in the USA only about one hundred have much commercial value as lumber. Of these about sixty are hardwoods and about forty are softwoods, but only fifteen hardwoods and fourteen softwoods are extensively used for

lumber, plywood, pulpwood and construction timber.

The softwoods are the oldest family of trees in the United States. The commercial softwoods of importance are: southern yellow pine, Douglas fir, hemlock, Sitka spruce, larch, and white fir. Hardwoods which are broad-leaved and usually shed leaves in autumn furnish about 20 per cent of US commercial wood products. They are oak, maple, birch, beech and others. Most part of the forest land is privately owned and consists of small parks and farms. The care of these forests lies on the small owner. There are 146 national forests furnishing 159 million acres in the United States.

In the United States a large part of the forestland belongs to the federal government. Most of this is managed by the Forest Service, a branch of the Department of Agriculture, to perpetuate the forest and provide all the benefits of timber supply, wildlife management, watershed management, and recreation. The Forest Service protects the trees from natural enemies and manages their harvests. Many state governments own forests. These are managed by forestry agencies that also help private landowners develop the forests on their lands.

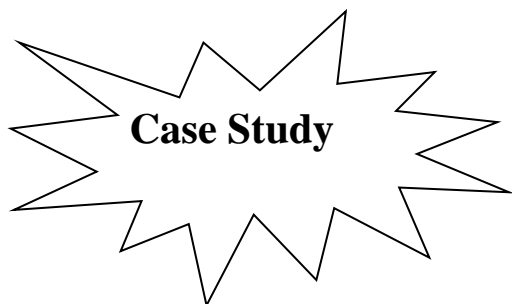
Forest industry companies practice good forest management and encourage their neighbors to do the same. In the United States the industry established the American Tree Farm System in 1941 to do just that. Company and state foresters seek landowners doing a good job of planning, protecting, and harvesting their forests and certify them as members of the system. The foresters also work with people who want to improve their management, helping them with tree planting and fire and insect control.

These three groups of landowners, working in harmony and taking advantage of modern forestry developments, assure that the forests of the United States continue to provide wood products and all the other benefits of well-managed stands. Similar groups are active in many of the developed countries.

# APPENDICES

## Appendix 1

### Guidelines



A case study is the study of a particular situation. It is a collection of facts and data based on a real or hypothetical business situation. The goal of a case study is to enhance your ability to solve business problems, using a logical framework. In all case studies, you must analyze what is presented and state which specific actions best resolve major issues.

### *Different types of case studies*

Because case studies are used by many professions to examine many different subjects, it stands to reason that several different types of case studies would have evolved with time. There are currently three main different types of case studies that researchers can employ:

- Illustrative case studies.

These are primarily descriptive studies. They typically utilize one or two instances of an event to show the existing situation.

- Exploratory (or pilot) case studies.

These are condensed case studies performed before implementing a large scale investigation. Their basic function is to help identify questions and select types of measurement prior to the main investigation.

- Cumulative case studies.

These serve to aggregate information from several sites collected at different times. The idea behind these studies is that the collection of past studies will allow for greater generalization without additional cost or time being expended on new, possibly repetitive studies.

A case study analysis requires you to investigate a business problem, examine the alternative solutions, and propose the most effective solution using supporting evidence.

### **Preparing the Case**

Before you begin writing, follow these guidelines to help you prepare and understand the case study:

1. Read and Examine the Case Thoroughly

- Take notes, highlight relevant facts, underline key problems.
- 2. Focus Your Analysis
  - Identify two to five key problems.
  - Why do they exist?
  - How do they impact the organization?
  - Who is responsible for them?
- 3. Uncover Possible Solutions/Changes Needed
  - Review course readings, discussions, outside research, your experience.
- 4. Select the Best Solution
  - Consider strong supporting evidence, pros, and cons. Is this solution realistic?
- 5. Drafting the Case

### **Structure of a case study**

Many case studies use a structured approach.

Sections include:

1. Introduction
  - Identify the key problems and issues in the case study.
  - Formulate and include a thesis statement, summarizing the outcome of your analysis in 1–2 sentences.
2. Background
  - Set the scene: background information, relevant facts, and the most important issues.
  - Demonstrate that you have researched the problems in this case study.
3. Evaluation of the Case
  - Outline the various pieces of the case study that you are focusing on.
  - Evaluate these pieces by discussing what is working and what is not working.
  - State why these parts of the case study are or are not working well.
4. Proposed Solution/Changes
  - Provide specific and realistic solution(s) or changes needed.
  - Explain why this solution was chosen.
5. Recommendations
  - Determine and discuss specific strategies for accomplishing the proposed solution.

- If applicable, recommend further action to resolve some of the issues.

### **Well-Known Case Study Examples.**

- **Little Hans and a Phobia of Horses (1909)**

A pioneer in the field of psychoanalysis, in 1909 Sigmund Freud conducted a well-known case study on a 5-year-old boy. Little Hans had a phobia of horses and Freud's case study was designed to primarily determine: What led to this phobia? How could it be cured? After observations and interviews with the boy in question and his family, Freud's case study analysis concluded that Hans had a latent fear of his father, and the horses were symbolic representatives of his father. His recommended treatment (involving reassurances from the father) led to the phobia being cured.

- **Malden Mills PR Study (1995)**

A popular case study with business schools, the Malden Mills fire, just two weeks before Christmas, left 3,000 people jobless. The company CEO continued full wages for all employees for three months and staff benefits for a full six months. Once rebuilt, the company experienced an increase in production of 40%, credited to the hard work of grateful employees. But the company later went bankrupt as a result. Case studies relating to Malden Mills typically examine questions such as: Did moral principles cloud business judgement? Was the initial PR exposure worth the eventual company downfall? This case study example is now considered a textbook sample of excellence theory.



Discussion is a thoughtful consideration of relationships involved in the topic or the problem under study. These relations are to be analysed, compared, evaluated and conclusions are drawn. The discussion requires a statement or enumeration of the facts to be analysed.

In this method the effective participation of students, is made possible, in the teaching-learning situation. As usual both the teacher and the students discuss the pros and cons of the problem and then arrive at some tangible conclusion.

#### *Types of Discussion*

Mainly there are two types of discussion:

### *(1) Spontaneous Discussion*

It generally starts from students question about some current event that may be related to the topic under study. Such a discussion is quite helpful to students as it helps them to understand current events to analyse and relate facts to real life situations In such a discussion the knowledge of facts is reviewed and an understanding is developed.

### *(2) Planned Discussion*

Such discussion may be initiated by the teacher by asking one student to present reports and others to discuss them in detail. This technique needs a careful planning by the teacher by including pertinent facts to the class and uniting them in the form of conclusions. An extensive list of questions is made by the teacher and these should be injected into the discussion at appropriate time. The teacher should at times emphasise a point and should see that all relevant points are covered during discussion.

Discussion may be organized with the *whole-group* or *the group may be* divided into small groups of 2-4 students, then give each group a focused assignment, with specific objectives and roles that they should each take on in order to complete the assignment. Usually working in small groups students do brief writing assignments, such as writing a set of questions or a brief reflective piece that will serve as the basis for in-class discussions. Small group discussions are a beneficial way for students to share ideas in an informal atmosphere that is, perhaps, not as intimidating as whole class discussions.

Additionally, small group discussions are increasingly being used in the job market during interviews and selection procedures. These can take a variety of formats, but the key skills remain very similar. Small group discussions offer an opportunity for extended speaking (and listening!) practice by all of the contributors. Group discussion practice and skill development is therefore useful for all students.

## **Classroom debate (Karen Reynosa)**

Karen Reynosa has developed a format for a classroom debate, which she has refined over the years while teaching Chemistry at Venice High School. An Invitation To Virtually Debate The ISSUES has borrowed extensively from Karen's development of this very interesting tool. Debate facilitates a person's displaying the progress in understanding issues related to important controversies with which our society is presently engaged, and to which this website is focused.

TOPIC: \_\_\_\_\_  
Opposition: \_\_\_\_\_ Proponents: \_\_\_\_\_



You are now a member of your selected team. Your team will be graded as a whole. This means that you will be as strong as your weakest link. Be sure that you work together so that all members of your team have an adequate background of the positions and arguments that you will be proposing.

1. There will be an opening statement made by your team. This should be 3-5 minutes long and should state your team's position and the arguments/solutions you will be proposing.

Responsible Members: \_\_\_\_\_

2. You should have at least 15 questions that can be asked of each of your 3 opponents. These should be on separate sheets of paper or on notecards for easy reference. The questions should be specifically directed to your opponents and should be concise and clear.

Responsible Members: \_\_\_\_\_

3. You should have answers prepared which will be used to respond to your opponents questions. Imagine that you are from the other teams and determine what questions may be asked of your team.

Responsible Members: \_\_\_\_\_

4. You should have a final conclusive argument/statement drawn up which will be written at the end of your debate. This should be no longer than 7 minutes. You should take notes during the entire debate so that you may refer to these in your final presentation of your team's views.

Responsible Members: \_\_\_\_\_

When you have determined who will be responsible for each portion of your team's debate, it is up to you to prepare yourself for the challenge that lies ahead. Only one team will win this debate. The winning team will:

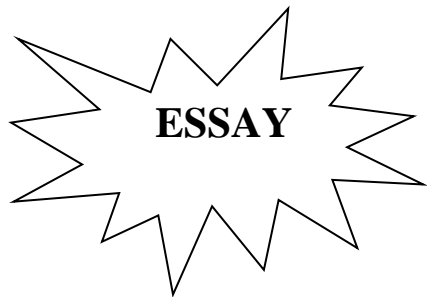
- have a solid background regarding all material
- have plenty of evidence to back up claims
- use teamwork to teach all in group the important concepts behind specific positions
- be creative/psyche out opponents
- outclass opponents/never give an answer of "uh...."

Good luck! This assignment is worth \_\_\_\_\_ points and will be graded based upon your ability to debate this issue and convince the judges that you are indeed deserved of your claim.

## *Useful phrases for discussion*

<b>Opinion</b>	<b>Facts</b>
<p>It seems to me that ...            In my opinion, ...            My personal view is that ...            In my experience ...            As far as I understand...            From my point of view ...            I might be wrong but ...            If I am not mistaken ...            I believe one can (safely) say ...            It is claimed that ...            I must admit that ...            I cannot deny that ...            I can imagine that ...            I think/believe/suppose .....            I am sure/certain/convinced that ...            I am not sure/certain, but ...            I am not convinced that ...</p>	<p>The fact is that...            The (main) point is that ...            This proves that ...            What it comes down to is that ...            It is obvious that ...            It is certain that ...            One can say that ...            It is clear that ...            There is no doubt that ...            There are many reasons for ...            There is no doubt about it that ...            To agree to a certain degree            It is only partly true that...            That seems obvious, but ...            That is not necessarily so.            It is not as simple as it seems.            Under certain circumstances ...</p>
<i>To link arguments</i>	
<p>First of all, I think ...            Not only that, but I also think that ...            Not only are they ..., they are also ...            There are various/several/many reasons for this.            First, ... / Firstly, ...            Second, ... / Secondly, ...            Moreover, ... / Furthermore, ...            Another significant point is that ...            Finally, ...            On the one hand, ...            On the other hand, ...            In contrast to this is ...            Because of ...</p>	<p>That is why ...            After all, ...            The reason is that ...            In that respect ...            The result of this is that ...            Another aspect/point is that ...            It is because ...            That may sometimes be true, but ...            One could argue that ..., but ...            Take for example (the case of) ... Look at ...            For instance ... / For example ...            Let me give you an example.</p>
<i>To disagree</i>	<i>Ending</i>
<p>The problem is that ...            I (very much) doubt whether ...            This is in complete contradiction to ...            What is even worse, ...            I cannot share this / that / the view.            I cannot agree with this idea.</p>	<p>Most probably ...            It appears to be ...            It is important to mention that...            I am most concerned about ...            I should like to emphasise that ...            (In) summing up it can be said that ...</p>

What I object to is ... Unlike many people I think ...	Weighing the pros and cons, I come to the conclusion that ...
---	---



Essays are brief, non-fiction compositions that describe, clarify, argue, or analyze a subject. An essay is defined as "a short piece of writing that expresses information as well as the writer's opinion."

The first step to writing an essay is to decide what kind of essay to write. Essays can be grouped into several main structures:

<i>Type</i>	<i>Characteristic</i>
<i>Narrative</i>	Tell a story or impart information about your subject in a straightforward, orderly manner.
<i>Descriptive</i>	Focus on the details of what is going on. For example, if you want to write a descriptive essay about your trip to the park, you would give great detail about what you experienced: how the grass felt beneath your feet, what the park benches looked like, and anything else the reader would need to feel as if he were there.
<i>Persuasive</i>	Convince the reader of some point of view.
<i>Comparative</i>	Compare two or more different things.
<i>Expository</i>	Explain to the reader how to do a given process. You could, for example, write an expository essay with step-by-step instructions on how to make a peanut butter sandwich.
<i>Suggesting solutions to problems</i>	Essays suggesting solutions to problems, in which the problem(s) associated with a particular issue or situation are analysed and possible solutions are put forward, together with any expected results/consequences. The writer's opinion may be mentioned, directly or indirectly, in the introduction and/or conclusion.

### Essay writing details

There are basic recommendations that can help you in the writing process of essay.

Components of an essay include:

1. Introduction (What is a problem? What has caused?)
2. Main body (What are your suggestions-first, second...? What are the results and/or consequences?)
3. Conclusion (How would you summarize your suggestions? What is your opinion?)

**Introductory paragraph** is of great importance. The introduction has the great influence to the reader's understanding and perceiving, it serves as an outline for the rest of the paper. Present your central points in the introduction, but avoid detailed explanation. To draw the reader's attention you should try to present your topic in an interesting, unusual way. For example, to make your introduction more interesting, you may add some quotation by a famous writer in the head of the introduction.

### **Essay body paragraphs**

The paper turns around the axis of the body. All the facts you have, including your arguments, opinions and viewpoints should be placed within this section. You should tie everything together so that every reader could have a clear understanding of your essay topic. You can point out pros and cons (but not at any rate) and even give a short example. What you will include depends on the topic. Keep in the mind that each paragraph should flow into the next one. Proceed in the same way with the second argument. The nature of essay' topic dictates the number of body paragraphs.

### **Conclusion**

The main body part should take the largest amount of your essay. When it is completed, you should sum up all the arguments you talked about in the previous parts. Finalize all your thoughts in the conclusion paragraph. You should restate your central thesis, refer to the opening sentence and let your reader a notice that your discussion is going to wrap up. On the whole, in the conclusion you are expected to express your opinion very clearly and to the point.

### **Language**

The language you use should be fairly neutral. Avoid contractions and colloquial words and phrases. It's very important to use proper linking devices. Linking words are also called transitional words or connecting words .

### **Linking words**

<i>Presenting your opinion</i>	<i>Agree / disagree</i>
In my opinion	I agree
I think	I concur
In my view	I disagree
I believe	I cannot agree

I admit	I oppose the idea I cannot accept
<i>To cite an example</i> For example For instance Namely To illustrate One clear example In other words To give an example	<i>Listing points</i> First/ Firstly To begin with Second/ Secondly Third(ly)... Fourth(ly) Lastly Finally Last but not least
<i>Reasons and causes</i> Since Because As Due to Owing to	<i>Adding information</i> Additionally Moreover In addition Furthermore And Also As well as
<i>Results and consequences</i> As a result Hence Therefore Thus Consequently For this reason	<i>Highlighting and emphasizing</i> Especially Clearly Obviously Specifically Of course In particular
<i>Presenting contrast</i> Despite In spite of By contrast Alternatively Another opinion could be On the other hand Still However Although But	<i>Presenting comparison</i> In comparison Admittedly Similarly Likewise In the same way <i>Conclusion</i> To sum up In conclusion To conclude To draw the conclusion

## Example of essay: suggesting solutions to problem

### *Essay*

#### *How to prevent Deforestation?*

***Introduction Paragraph 1***  
***state the problem and its causes***

Trees and plants are one of the best gifts that God has given to mankind. Perhaps to thoroughly understand a rainforest's beauty, one would have to see a rainforest with his very eyes. One would also believe that the many majestic trees and amazingly exotic animals that live there would probably be enough to keep any person from wanting to harm the forests in any way. Unfortunately, like all good things, the biggest rainforests are being destroyed everyday, which is a tremendous loss considering the importance of this particular forest. For instance, the Amazon rainforest contains many species and plants not found anywhere else, and considering one-third of all the species in the world live there, it has the greatest biodiversity on earth. Although the destruction of rainforests is a growing problem, much is being done to resolve the problem.

#### ***Paragraph 2 Suggested solution***

*Deforestation could be slowly stopped* if people would be more environmentally conscious. That means, to accelerate efforts in stopping deforestation, initiatives have to be started by you. For example, Instead of using firewood, use coals to heat up your fireplaces during the winter season.

#### ***Paragraph 3 Suggested solution***

*Another solution* is recycling programs. Paper is made from barks of trees that are in turn, mostly coming from forests. There are industries that are focused at recycling paper. Old and used paper would just be processed and turned into new paper products. If the practice becomes world-wide, and the number of trees that has to be cut down would be reduced.

#### ***Paragraph 4 Suggested solution***

*Also ecotourism can help* to solve the problem. This programs minimize the negative aspects of conventional tourism on the environment. Because Ecotourism relies on healthy ecosystems, it provides a powerful incentive to protect our rainforests.

#### ***Paragraph 5 Suggested solution***

*Other way is reforestation.* It is the opposite of deforestation. If deforestation can be considered wounding of nature, reforestation is the sought-after healing process. In reforestation, forests are replanted with trees. For each cut tree, a new one should be replanted. In years, the forests would be much alive again.

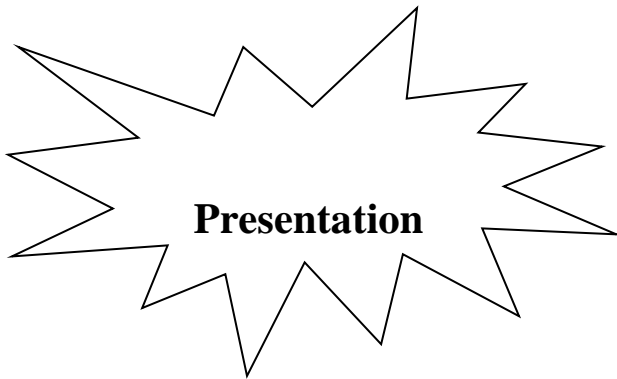
#### ***Conclusion***

#### ***Final Paragraph***

#### ***summarise your opinion***

Nowadays there are a lot of organizations of environmentalists, for exam

ple, Greenpeace, that everyday save the Endangered Forests. But if you want to save our Mother Nature, start do it by you. Some time when you want to pick a beautiful flower, just think about a fact that an area of forest equal to 20 football or rugby fields is lost every minute. Deforestation can be prevented and you can be an active force in achieving that.



A presentation is the process of presenting a topic to an audience. By giving a presentation, you can gain visibility and inform others of the results you have achieved. This may enable you to increase your chances of getting feedback on your work, establishing new contacts, collaborating with other research groups.

**Below are stages in preparing a presentation that you can follow.**

1. Find out about the potential audience.  
It is very useful to find out how much the audience already know about your topic. If you are too technical you may alienate those who are potentially interested in the topic but are not experts. However, if you are too general you will bore the experts.
2. Identify your key points/messages (what problem you wanted to resolve/investigate and why this was important for the scientific community)
3. Prepare your talk
4. Record and transcribe your talk
5. Create the slides
6. Practice with colleagues
7. Cut redundant slides, simplify complicated slides

### **Making a Presentation**

Most presentations are divided into 3 main parts (+ questions):

1. Introduction
  2. Body
  3. Conclusion
- + Questions

## Introduction

The introduction is a very important - perhaps the most important - part of your presentation. This is the first impression that your audience have of you. You should concentrate on getting your introduction right. You should use the introduction to:

1. Welcome your audience
2. Introduce your subject
3. Outline the structure of your presentation
4. Give instructions about questions

The following table shows examples of language for each of these functions. You may need to modify the language as appropriate.

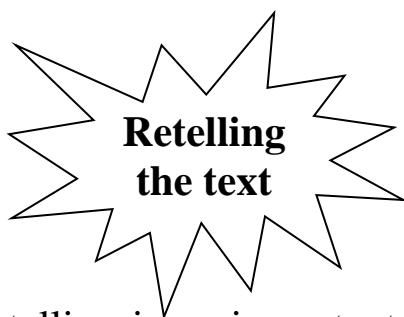
	<b>Function</b>	<b>Possible language</b>
<b>Introduction</b>	1. Welcoming Your audience	Good morning, ladies and gentlemen Good afternoon, ladies and gentleman Good afternoon, everybody
	2. Introducing Your subject	I am going to talk today about... The purpose of my presentation is to introduce our new range of... The subject /topic of my presentation is ... In this presentation i am going to discuss some findings of our project I would like to give an analysis of/explore the meaning of.... I am going to review /describe... I will take ...minutes of your time.
	3. Outlining your structure •	To start with I'll describe the progress made this year Then I'll mention... After that I'll consider ... Finally, I'll summarize my presentation
	4. Giving instructions	Do feel free to interrupt me if you have any questions I'll try to answer all of your questions after the presentation, about questions I plan to keep some time for ques-



		tions after the presentation.
<b>Body</b>		<p>Firstly... secondly...</p> <p>To begin, let's look at...</p> <p>I'd like to emphasize...</p> <p>Let's move on...</p> <p>Let me start by looking at ...</p> <p>So first I'd like to...</p> <p>That concludes the first part of my presentation...</p> <p>Let me now move onto the question of ...</p> <p>This brings me to my next point ...</p> <p>Next I would like to examine ...</p> <p>Now we're going to look at...</p> <p>Now I'd like to talk about</p>
<b>Conclusion</b>	1. Summing up	<p>In conclusion...</p> <p>Now, to sum up...</p> <p>So let me summarize</p> <p>I'd like to finish my presentation with...</p> <p>Well that brings me to the end of the presentation...</p>
	2. Giving recommendations	<p>My recommendations are...</p> <p>I suggest the following...</p>
	3 Thanking your audience	<p>Many thanks for your attention</p> <p>Thank you very much.</p> <p>It was very nice to meet you.</p> <p>Hope to see you around.</p> <p>I am afraid our time is up...</p>
	4. Inviting questions	<p>Now, I'll try to answer your questions</p> <p>Are there any questions?</p> <p>Do you have any questions/</p> <p>Does anyone have any questions on this?</p> <p>Id be really interested in hearing your questions on this.</p> <p>I think we have time for just one more question....</p>

## **How you can attract and hold your audience's attention:**

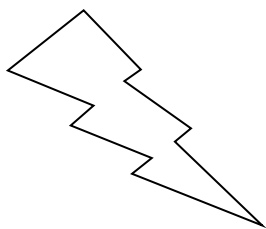
1. Have a clear idea who your audience are, don't assume that they are naturally going to be interested in your topic.
2. Have an agenda and a clear structure with clear transitions so that the audience know where you are going.
3. Make it easy for the audience to follow you and your slides.
4. Help the audience to understand why you are showing them a particular slide.
5. Involve your audience and give them lots of examples.
6. Make frequent eye contact.
7. Avoid too much text on your slides.
8. Use simple graphs and tables.
9. Make your text and visuals big enough for everyone in the audience to see clearly.
10. Avoid entering into too much detail (i.e., just select those things that the audience really need to know about the topic).
11. Avoid spending more than a couple of minutes on one specific detail
12. Have a variety of types of slides (not just all bullets, or all text, or all photos).
13. Speak reasonably slowly and move from slide to slide at a speed that the audience will feel comfortable with.
14. Sound interested and enthusiastic about your topic.
15. Vary your tone of voice.
16. Inject some humor.
17. Move around occasionally rather than being static.



Retelling is a great way to share information about a text with other people. It is a good way to remember what you've read and helps to make sure that you really understand a text.

Retelling is an important foundational skill for language learners. It promotes story comprehension and helps students develop expressive vocabulary. When students can retell a story, they are activating their thinking skills, and their imagination. They are also developing sequencing skills as they work to explain and retell the events of a story in the order they read them.

## Steps in retelling



Look through the text. What is its main topic? What field is it in? What is its main idea? You may start with “It’s an abstract from the (research) work of a famous/well-known/major/ scientist(historian, linguist, economist, theorist, analyst, practitioner, etc.)”

### *Useful words and phrases:*

I am going to tell you about the text that I’ve just read...

I’ll try to say a few words about the text that I’ve read...

The article I’ve just read deals with the problems of ...

The article might be regarded a part of a bigger research which deals in...

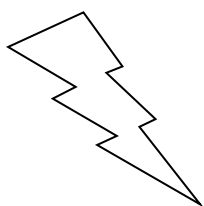
The main topic of this article is...

This chapter is devoted to...

The main questions touched upon by this chapter/article/work are numerous. They are...

The aim of the article is to investigate/explore/show/help understand/ some of the issues of ...

This chapter/article provides an outline of the theoretical basis of...



Now read the text more carefully. What parts can you divide it into? How many parts are there? Work on each part of the text (the parts the text falls into may show as paragraphs). What is the main idea of each part? Try to find the key statements in each part and put them down. They may be 1-2 sentences from each paragraph/part of the

### *Useful words and phrases:*

First of all, the author draws our attention to the fact that ...

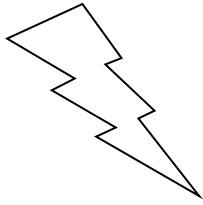
In the next passage the authors attention is focused on ...

The examples are shown in this article illustrate well enough ...

Several paragraphs of the article investigate ...(the distinction, the features, characteristics of..)

In (the) other part(s) of the article/chapter the author explores.. ( the role of the theoretic notion of...)

Some of the central issues dealt with in this part are.....



Make conclusions

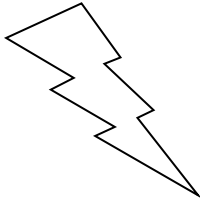
*Useful words and phrases:*

The author comes to the conclusion that ...

In conclusion the author shows.../ combines ideas of.../stresses...

To sum up...

To conclude...



Your opinion of the text

*Useful words and phrases:*

I agree/I don' agree...

I think the text is useful / boring...

We have learned about...

I found the text interesting (amusing, funny, important, dull, of no value, informative, too hard to understand).

In my opinion ...

As far as I am concerned ...

To my mind

As for me

I think

It seems to me



A summary is the shortest account of the main content and conclusions of the original text. In fact, it is enumeration of the main thematic point of the original paper, which is made up of the words and phrases borrowed from the text, and your own wording of them into a very small number of sentences.

When writing a summary, you may adhere to the following plan:

- 1) the heading and the author;
- 2) the theme of the paper;
- 3) the key problems (thematic points) discussed;
- 4) the conclusion at which the author arrives.

---

# A Glossary of Common Forestry Terms

---



*The following is an alphabetical listing of some forestry terms.*

**A**

**Advance reproduction**

young trees that are already established in the understory before a timber harvest.

**Afforestation**

establishing a new forest onto land that was formerly not forested; for instance, converting row crop land into a forest plantation

**Agriculture**

the cultivation of land, including crop raising, stock-raising and forestry.

**Agroforestry**

the combination of timber production and agriculture on the same land; farming activities, such as livestock and cropping, are undertaken between widely spaced trees usually cultivated for timber, firewood and/or fodder.

**Allowable cut**

volume of wood that can be cut during a given period without exceeding the forest's net growth.

**Alluvial**

pertaining to material that is transported and deposited by running water.

**Angiosperms**

flowering plants; plants which produce seeds enclosed in an ovary.

**Annual growth**

the yearly increase in wood volume, usually expressed in terms of board feet or tons per acre.

**B**

**Bareroot seedling**

small seedlings that are nursery grown and then lifted without having the soil attached.

**Basal area**

A. Cross-sectional area (in square feet) of the trunk of one tree at breast height (4.5 feet above the ground.) For example, the basal area of one tree 14 inches in diameter at breast height is approximately 1 square foot.

B. The sum of basal area of the individual trees on an acre of forest. For example, a well stocked mixed redwood stand might contain (a total of) 500 square feet of basal area per acre

**Basal spray**

a method of controlling woody vegetation whereby herbicide is applied directly to the lower portion of the plant and is absorbed through the bark

**Biomass**

plant components that are used as a raw material for processing into energy or fuels

**Board foot**

a unit of measure for wood volume equaling 144 cubic inches, commonly used to measure and express the amount of wood in a tree, sawlog, veneer log or individual piece of lumber. For example, a piece of wood 1 foot by 1 foot by 1 inch or one measuring 1 foot by 3 inches by 4 inches both contain 1 board of wood.

**Bole**

the main tree trunk

**Buffer**

a strip of trees or other vegetation that is intentionally left undisturbed (or disturbed lightly) in order to mitigate the visual impacts of logging or to minimize pollutants that result from logging from entering adjacent water bodies.

**Breast height**

1.3m above the ground. This is the standard height at which a tree diameter is measured.

**Butt**

the base of the tree. Once felled, the butt log is the one that was attached to the stump.

**C**

**Cable logging**

logging method used where slopes are too steep for conventional logging machinery. Overhead cables are set up and the felled logs are attached and pulled up the slope to log landings.

**Canopy**

the uppermost level of foliage formed by the branches and leaves of a tree.

**Cant**

the interior lumber that remains after the boards are sawn from the sides of a log.

**Catface**

the scar that results from a healed (or partially healed) wound on a tree or log caused by abscised branches, equipment damage or wildfire.

**Cellulose**

a large molecule made up of glucose units naturally produced by plants, provides the strength of plant cell walls.

**Certified forest**

a forest enrolled in a voluntary system that promotes sustainable forest management that is assessed by an independent third party.

**Chip-n-saw**

a process, normally with conifers, where small logs are cut in such a way that the outside of the log is converted directly into chips, leaving the inside, square-edged cant (which can be used as a post or sawn into lumber).

**Chlorophyll**

the pigment that gives plants their green colouring; it is required for the absorption of light during photosynthesis.

**Clearfelling**

the removal of all or most of the tree cover and associated understorey from a forested or vegetated area, method used in the final harvesting of a pine plantation.

**Clearing**

open sites of non-forest lands located within a forest, covered with grasses and herbs, where all or most of the tree cover and associated understorey have been removed and the land use changed eg. for agriculture or urban and industrial development.

**Closed forest**

a forest with a canopy cover of greater than 70 per cent.

**Complete cut**

any cutting scheme that removes all the trees in a stand.

**Commercial cut**

a cutting on a forested property that yields a net income (when product sale receipts exceed cutting cost).

**Competition**

the struggle for environmental resources among trees that require the same resources on the same land area, usually at the same time. Crown: Competition above ground for light, heat, carbon dioxide, space, and perhaps, oxygen. Root: Competition for soil, water, nutrients, oxygen, and space.

**Cone**

the fruit of coniferous trees, contains the seeds of the plant.

**Conifers**

evergreen trees and shrubs which produce naked seeds usually in cones.

**Conk**

a hard, spore-bearing fruiting body of a wooddestroying fungus that projects beyond the bark of a tree.

**Controlled burning**

post – logging burn.

**Coppice**

regrowth that grows from dormant buds under the bark of tree stumps after the tree has been felled.

**Cord**

a stack of wood that has a gross volume of 128 cubic feet. A cord measures 4 feet by 4 feet by 8 feet and contains approximately 80 cubic feet of solid wood, with the remainder being air space

**Coupe**

a small area of forest within a compartment that is harvested in a single operation.

**Crook**

an abrupt bend in a log, considered a defect.

**Crop tree**

a tree identified as mature and ready for final harvest cut. Usually selected on the basis of its location to other trees and its quality.

**Cross-tie**

a cant used as a cross member supporting railroad rails.

**Crown**

the top of a tree or group of trees; the leaves and living branches of a tree.

**Crown closure**



the point in forest development when the lateral branches from adjacent trees touch, significantly reducing growing space and the amount of sunlight that reaches the forest floor

**Crown cover**

the area covered by the crowns of trees growing closely together, often expressed as a percentage for the combined crown cover of trees in a defined area.

**Cruise**

the act of inventorying a forest to arrive at an estimate of wood volume and value and/or to make forest management recommendations.

**Cubic foot**

A cube of wood measuring 12 inches on each side. One cubic foot of wood in a log usually produces from 3 to 7 board feet of lumber because of the cylindrical log shape and losses to sawing.

**Cull**

a tree or log of merchantable size, which, because of defect, is useless for the intended purpose of timber production. Culls can have significant wildlife or aesthetic value.

**Cutting cycle**

the time interval between successive harvesting operations on the same area or within a given management area.

**D**

**DBH**

abbreviation for the diameter of a tree at breast height (1.3 metres above ground level).

**Deciduous**

plants which shed their leaves annually.

**Deforestation**

clearing of forested areas.

**Den tree**

a tree that contains cavities, often caused by abscised limbs, that are used by wildlife for nesting and protection.

**Dendrology**

the study of tree identification.

**Density**

the quantity of trees per unit of area, usually expressed as trees per acre.

**Diameter-limit cutting (DLC)**

a harvest based on cutting all trees in a stand over a specified DBH, regardless of tree vigor, species or spatial distribution. DLC usually results in the long-term degradation of the stand.

**Dieback**

the eventual death of trees from environmental stresses, such as pest attack, exposure to fungal disease, increasing soil salinity; general name for a significant decline in tree health and numbers, especially native trees; caused by a variety of agents, including insect attack, disease, pollution and other human-induced changes in the environment.

**Diameter tape**

a measuring tape calibrated to determine tree diameter when stretched around the circumference of a tree bole or log.

**DIB (diameter inside bark)**

diameter inside the bark, often measured at the small end of a log and used to estimate board foot volume in logs.

**Dibble bar**

a flat or round metal tool used to make a hole for planting bareroot seedlings.

**Dioecious**

a botanical term whereby male and female flower parts are on separate plants (e.g., persimmon).

**Direct seeding**

the process of regenerating a forest by sowing seed (as opposed to planting seedlings or allowing for natural regeneration).

**Directional felling**

careful tree cutting to ensure that trees fall in a predetermined direction in order to protect the residual trees from logging damage and to allow for easier log skidding.

**Dote**

the early stage of tree rot having discolored and/or often soft wood.

**Doyle rule**

a log rule commonly used with hardwoods in southern and eastern US. Its use underestimates lumber volume in small logs and overestimates volume in large logs.

**Ecotourism**

nature-based tourism which is ecologically sustainable.

**Dry rot**

a wood decay caused by specialized fungi that has some ability to transport water. The term implies that wood will rot when dry, which is not true. The term is also sometimes used to refer to the (dried) residue of wood decay.

**Duff**

various stages of decaying organic matter found on the soil surface.

**Earlywood**

part of the annual wood growth ring formed early in the growing season that is differentiated from latewood in that the wood is often less dense and lighter in color.

**E****Endangered species**

a plant or animal vulnerable to extinction in all or a significant portion of its range that has been identified by the secretary of the interior in accordance with the Endangered Species Act (1973).

**Ephemeral stream**

a stream in which water flows in a diffuse manner over depressions in the forest floor, usually not within a well-defined channel, only in direct response to a major rainfall and only for a short period after rainfall ceases.

**Epicormic branch**

spontaneous branches that arise from a tree bole, often after exposure to increased light or stress.

**Erosion**

the loss of surface soil due to water, wind, gravity and/ or human activities.

***sheet erosion***

erosion that occurs in a very thin layer, often undetectable, caused by slight surface runoff or wind.

***rill erosion***

erosion that occurs in small channels that are only a few inches deep. Rill erosion can lead to gully erosion if not managed properly.

***gully erosion***

erosion that occurs in obvious channels, sometimes becoming deep and excessive.

**Even-aged management**

stand management that is designed to remove (harvest) all trees at one time or over a short period to produce a new stand with trees very close in age. Tree ages usually will range no more than 20 percent of the projected final rotation age.

**Exotic invasive**

a species that becomes established outside its natural range, forms a breeding population, and becomes a pest that may threaten biodiversity of the local ecosystem.

**F****Farm forestry**

commercial tree production on farmland.

**FAS (firsts and seconds)**

top (best) grade of hardwood lumber, formerly designated as firsts and seconds.

**Fauna**

the animal life of a region.

**Farmsteads**

plots of nonforest lands with service and residence buildings, of managerial and communal purposes for employees and workers of forest management (offices of FMUs and forest districts, stores, yards, garages, workshops, dwellings, as well as lands under settlement, rest facilities (campings, tents, rest bases, etc.), and those with elements of recreational facilities.

**Feller buncher**

a logging machine that fells trees, debranches, cuts to length and groups them ready to be removed with a forwarder or skidder.

**Fire**

the active principle of burning or combustion.

**Flora**

the plant life of a region.

**Forest**

an area of land covered by trees and understory vegetation, sometimes mixed with pasture; forests are described in terms of crown cover, such as closed forest, open forest, woodland and open woodland, and in terms of height of the tallest stratum, such as tall (over 30 metres), medium (10-30 metres) and low trees (under 10 metres).

**Forest cultures**

plots of artificial forest stands created by planting or sowing. This category also includes forest plots where one has finished the stands' reconstruction, done with the purpose of improving their species composition by introducing economically valuable tree species.

**Forest district**

primary territorial and operational subunit constituting the forest management unit. (Rus. lesnichestvo)

**Forest lands**

lands suitable and intended for forest growing, as well as natural scarce open woodlands and shrubs.

**Forest management unit (FMU), (Rus. Leskhoz)**

the basic element of the state management of forestry in the Russian Federation. Legal person. Subordinated to authorized bodies of the state forest management of the Federation's members.

**Forest mature stand**

forest stand that has reached the fixed cutting age.

**Forest maturing stand**

forest stand of one or two age classes preceding the cutting age.

**Forest nurseries**

plots of forest lands used for growing planting material (seedlings and transplants) for creating forest cultures.

**Forest plantations**

plots of forestlands used for growing tree and shrub species with the purpose of obtaining valuable timber assortments (plantations of maple, willow, cork tree, oaks, etc.).

**Forest products**

any raw material yielded by a forest, including timber, timber products and other forest materials (such as rock, stone, clay, sand, gravel).

**Forest stand**

totality of living trees that are the basic component of forest.

**Forest type**

a group of plants dominated by trees which has a general similarity in species composition and character; a forest containing specific types or species of trees, native forests are usually classified into one of the following types: coniferous, temperate (moist and dry eucalypt, deciduous), tropical (rainforest, moist deciduous, mangrove).

**Forester**

person involved and trained in forestry and forest management, usually with a degree in forest science.

**Forestry**

the management of forests for the benefit of the community

**Forest inventory**

the process of sampling a forest or forest stand, used to arrive at an estimate of wood volume and value and/or to make forest management recommendations. Forest inventories are also known as forest cruises.

**Forwarder**

rubber tyred vehicle that loads felled logs on to a trailer to remove them from the forest.

**Frill**

A cut made with a hatchet or axe through the bark and cambium of a tree where herbicide is applied, for deadening the tree, more shallow than a girdle.

**Frost crack**

a crack in the bark of a tree extending from near the base upward, occurring in winter when temperatures fluctuate below and above freezing.

**Frost heave**

When normal soil level is lifted upward due to freezing water, thereby causing seedlings to rise above, or even be pushed out of, the soil.

**G****Genus**

a class or kind of living things; a group of species very similar to one another and closely related; a sub-division of a family or subfamily.

**Girdling**

The severing of tree phloem and often sapwood that disrupts food and water transport, usually resulting in tree or tissue death

**Grading**

Evaluating and/or sorting standing trees, logs or lumber according to quality.

**Ground fuels**

Combustible materials located on the forest floor, including limbs, duff, stumps, dead and living vegetation, etc.

**Group selection**

An uneven-aged method of harvesting trees in small groups (usually 1 acre or less).

**Growing space**

The area occupied by a tree (or trees), where the above and below ground resources are utilized. Thinning frees up additional growing space. Stocking is a relative term describing growing space.

**Growing stock**

All the trees growing in a stand, generally expressed in terms of number, basal area or volume. Growing stock is often separated into acceptable or unacceptable based on species composition, health and form, and/or in reaching landowner goals.

**Growth ring**

Annual expansion of tree bole, branches and roots in (normally) visible concentric rings. A combination of earlywood and latewood is one year's growth.

**Gymnosperms**

non-flowering plants; seeds enclosed in a cone.

**H****Habitat**

the native environment where an animal or plant naturally lives or grows.

**Hardening off**

The process of plants preparing for stress brought on by cold or drought.

**Hardpan**

A dense soil condition that restricts root penetration and water movement, often created following many years of agricultural row-cropping. Prior to planting trees on sites with hardpans, the hardpans are often loosened by subsoiling.

**Hardwood**

timber from broad-leaved, flowering trees (angiosperms), short fibered woods, for example eucalyptus

**Harvesting**

the felling of trees, either as a group selection operation or a thinning or a clear-felling operation.

**Harvesting plan**

a detailed plan of a forest area to be logged, describing the forest area and planned operations, including details of flora and fauna species, cultural heritage sites, soil types, drainage lines, forest types and recreation sites in the area and environmental considerations.

**I****Integrated pest management**

managing forest pests by considering several methods, including cultural, chemical, biological and the use of genetically modified organisms.

**Intermediate treatment**

removing (or eliminating) immature trees between the stages of stand establishment and final stand harvest, to improve the quality of or reduce competition among the remaining trees. In contrast to a harvest cut, an intermediate cut may or may not generate income.

**Intermittent stream**

streams containing water within a well-defined channel and flow in response to seasonal variation in precipitation following a major rainstorm or as long as ground water is abundant.

**International 1/4" rule**

a log rule that is used to estimate board foot lumber volume in logs and standing trees. This log rule is generally considered the most accurate log rule and works well across a wide range of log diameters.

**Intolerant species (shade)**

trees that are incapable of establishing or growing in the shade of other trees.

**J****J-root**

the shape that a seedling root takes when it is improperly planted by forcing it into a planting hole.

**Juvenile wood**

the first 10 to 15 years of wood growth surrounding the center (pith) of a tree. This wood generally has poor properties compared with the "mature wood" formed subsequently.

**K****Knots**

common blemishes in trees, often causing lumps or holes within the trunk of the tree itself. In most cases knots are caused by the natural growth of the tree, though the specific circumstances under which they form determines how they will appear.

## **L**

### **Landing**

a place at a logging site where logs are assembled and loaded onto trucks for transport to mills.

### **Latewood**

part of the annual wood growth ring formed later in the growing season that is differentiated from earlywood in that the wood is often more dense and darker in color.

### **Leaf**

part of a plant which grows from the stem, makes up the plant's foliage; photosynthetic organ.

### **Leaf litter**

mixture of fallen and dead plant material on the forest floor, made up of leaves, bark, stems and branches.

### **Loess**

Wind-blown soil particles consisting primarily of silt that is highly erodible.

### **Log rule**

A formula that is used to estimate lumber volume (in board feet) based on log diameter and length.

### **Log scale**

The lumber content (in board feet) of a log as determined by using the log rule.

### **Lop**

The cutting up of tree tops that have been left following a timber harvest, generally for the purpose of improved aesthetics or for site preparation.

### **Lump-sum sale**

When a timber buyer and a seller (and/or forester) agree on a fixed price for designated timber that is paid in full prior to the timber being harvested. Often the timber to be harvested has been marked in advance of the sale.

### **Log**

a portion of cut tree trunk or branch

### **Logging**

the process of cutting down trees for timber.

## **M**

### **MAI (mean annual increment)**

The average annual growth of a tree (or the forest) over a given period, normally since inception. A 12-inch DBH tree that is 30 years old has an MAI of 0.4 inches (per year).

### **Marking timber**

The process of selecting and indicating, usually by painting, trees to be cut (or retained) in a harvest operation.

### **Mast**

tree fruits, either hard (hickories and oaks) or soft (persimmon and cherry)

**Matching species to site**

Prior to tree planting, the process that evaluates soil productivity and microclimate in order to select species more capable of healthy growth.

**Mature forest**

a term generally applied in an economic sense to indicate a forest that has attained the desired harvest size or age. The rate of forest growth diminishes once forests mature.

**MBF**

abbreviation for thousand board feet, a standard unit of lumber and log volume.

**Merchantable**

trees (or their parts) that can be manufactured into a salable product.

**Merchantable height**

the height above the ground level to which the tree bole can be cut and sold for commercial products. For hardwood sawtimber, merchantable height is normally reached when the DIB reaches 10 inches.

**Mesic soils**

soils having ample moisture, neither too wet nor dry, desirable for tree growth.

**Microclimate**

the climate of a small, specific area reflecting such local differences as soil surfaces, vegetation and atmospheric characteristics.

**Midstory**

the layer of vegetation existing between the smallest (understory) and tallest (overstory) plants (normally trees) in a forest.

**Monoculture**

a forest stand composed of a single species; for instance, a loblolly pine plantation.

**Monoecious**

a botanical term for plants that have male and female flower parts on the same individual (e.g., oaks).

**M (in soils)**

occurs when gray or black soil colors become mixed with the normal red, brown or yellow soil colors; gray colors indicate hydric soils and that periods of soil saturation are frequent.

**Multiple-use forestry**

forest land management for more than one purpose, such as wood production, water protection, wildlife habitat, recreation, cultural preservation and aesthetics.

**N**

**Natural regeneration**

trees that become established as a result of natural seeding or sprouting, as opposed to being planted.

**Noncommercial thinning**

cutting (or deadening) trees to improve growth conditions of the remaining trees. The practice does not produce income, usually because the trees cut are too small for marketability.

**O**



**Old growth forest**

an unlogged area of forest which is ecologically mature and characterised by relatively large old trees with extensive hollows, no significant increase in biomass, stable nutrient cycle, high litter levels, slow rates of change in composition, structure and function;

**Open forest**

a forest with a canopy cover of between 30 and 70 per cent; the most abundant forest form in New South Wales.

**Open woodland**

lightly wooded country, with tree canopy covering an average of less than 10 per cent of the area.

**Overmature trees**

trees which are well beyond the age of full development.

**Overrun**

the excess lumber sawn from logs that exceeds the estimate of the log scale.

**Overstocked**

a stand or forest condition indicating more trees than are desired for the intended objective.

**Overstory**

That portion of the trees in a stand forming the upper crown cover.

**P****Partial cutting**

any cutting scheme that does not remove all the trees in the stand (i.e., a clearcut). Examples of partial cutting are selection and group selection, shelterwood and diameter limit.

**Pay-as-cut sale**

when a timber buyer agrees to pay, and a landowner (and/or forester) agrees to receive, a price for designated timber that is paid on a per unit basis as the timber is being harvested. This is opposed to a lumpsum sale, where the timber is paid for in full prior to being harvested.

**Perennial stream**

streams containing surface water within a well-defined channel. These streams flow essentially all year under normal weather conditions and usually provide permanent habitat for aquatic plants and animal life.

**Phloem**

the new or inner bark of a tree with living cells that carries and stores food (sugar) produced by the leaves.

**Photosynthesis**

the process in trees and other plants of creating sugar using water, air and the sun's energy.

**Pioneers**

shade-intolerant species that are the first trees to invade a freshly disturbed or abandoned site.

**Plantation**

a planted forest of either native or exotic species.

**Plot**

an area where data are collected to provide information about the forest. Several plots constitute a cruise

**Post-logging burning**

a forest management technique practiced to remove logging debris which could fuel a bushfire it also stimulates regeneration in the logged area.

**Prescribed burn**

a fire intentionally set under appropriate weather, soil moisture, wind and supervision, in order to accomplish specific silvicultural, wildlife or fire-hazard-reduction goals.

**Prism wedge**

a small glass wedge through which light refracts that is used in a timber cruise. A prism wedge helps determine which trees are to be included in a plot when estimating basal area and timber volumes.

**Pulpwood**

fiber processed to make paper. 'Pulp' logs are processed into wood chips or pulp for wood based panels, paper and paper products.

**R****Rainforest**

a dense evergreen forest which grows in tropical and temperate areas of high humidity with heavy rainfall occurring throughout the year.

**Recruitment**

the process of smaller trees growing into larger size classes.

**Reforestation**

replanting of a forest on cleared or destroyed forest areas.

**Regeneration**

new growth, naturally or as a result of management practices, such as natural regeneration from seed fall, coppice or lignotuber growth or artificially from sowing seed on prepared seedbeds or planting stock raised from local, regional or imported sources.

**Regeneration cutting**

a harvest technique that provides for stand regeneration, such as clearcutting or forest openings.

**Release cutting**

improving the composition in young stands by cutting inferior trees, thereby releasing the desired trees from competition.

**Reproduction**

young trees, seedlings and saplings in a forest setting.

**Residual**

trees remaining in a stand after cutting.

**Regrowth**

a forest stand established by natural regeneration after logging.

**Riparian**

pertaining to the area along the banks of a river, stream or lake, normally offering some protection from forestry activities via the use of buffers.

**Rotation**

the cycle of a plantation from planting of one stand (group of trees), through the growth period to final harvesting.

**Root**

the part of a plant which grows in soil.

**Root collar**

on a seedling, the transition between the stem and the root, usually recognizable by a slight swelling.

**Rotation**

the number of years required to establish and grow trees to a specified size, age, product or condition of maturity.

**Roundwood**

wood products that are round, such as pulpwood, posts, pilings, utility poles and fencing material.

**S****Salvage cut**

harvesting damaged trees (i.e., from tornado or fire) to gain their economic value, often benefitting the residual stand.

**Sanitation cutting**

a harvest done as a precautionary mechanism to remove potentially highly susceptible trees from oncoming insects or disease before trees become infected by the pest organism.

**Sapwood**

the light-colored section of the tree between the heartwood and the bark also known as xylem. Contains some living cells and conducts water to the crown for photosynthesis.

**Sawlog**

a log large enough to produce a sawn product — usually at least 10 inches in diameter and at least 16 feet in length (although 8-foot half-logs are sometimes included).

**Scaling**

estimating the usable wood volume in a log or standing tree that follows fundamental rules.

**Scarify**

scratching or cutting a surface, for instance, to disturb the forest floor for regeneration or to break down a seed's protective coat for germination.

**Sawlog**

a log considered suitable in size and quality for producing sawn timber, veneer, poles or sleepers

**Seed**

the viable part of a plant from which a new plant can grow.

**Seral**

a biotic community which is a developmental transitory stage in an ecologic succession.

**Shelterwood harvest system**

removal of trees on the harvest area in a series of two or more cuttings so that new seedlings can establish and grow in the partial shade and protection of older trees.

### **Shrub**

a shrub is a woody plant with several perennial stems. It will usually have a height less than 13 feet. a woody perennial plant, smaller than a tree, Shrubs are any sort of woody, perpetual, thick plant that branches into a few stems or trunks at the base and is littler than a tree. Shrubs are easy to spot, they are generally short and bushy and one does not see a significant part of the stem. Shrubs are otherwise called bushes.

### **Silviculture**

the science and art of the cultivation of forests; the growing and tending of trees.

### **Skidder**

a rubber tyred tractor for dragging felled logs to a loading area.

### **Softwood**

generally refers to trees of the botanical group gymnosperms, for example conifers; also refers to the softer and longer fibered structure of the wood produced by such trees; does not relate to the texture or density of the timber.

### **Species**

the lowest taxonomic classification in use; a group of organisms with some identifiable common characteristics, they are capable of reproducing and producing fertile offspring.

### **Stand**

a group (or cluster) of upright trees.

### **Stem**

part of a plant; a stalk which supports a leaf, flower or fruit.

## **T**

### **Taper**

the gradual reduction in diameter of a tree bole progressing from the base upward.

### **Thinning**

the removal of poorer and mature trees from a forest to improve the growth, hygiene or composition of the remaining trees.

### **Timber**

the general term used to describe sawn wood suitable for building and other purposes.

### **Tree**

a tree is a woody plant with a single stem more or less branched and taking on what is commonly known as the tree form. The most evident parts of a tree are roots, stem, or trunk, branches, buds, leaves, flowers, fruit, and seed. The stem, branches, and roots are made up of inner bark, outer bark, sapwood, and heart-wood. The outer bark, sapwood and heart-wood are made up of concentric circles termed annual rings

### **Tree farm**

a privately owned woodland in which producing timber is a major management goal. May be recognized as a certified forest by the American Tree Farm System.

## **U**

**Underplanting**

the act of planting seedlings under an existing stand of trees, often with the intent of later releasing the seedlings by removing/harvesting the overstory. Also referred to as enrichment planting.

**Uneven-aged management**

managing a forest by periodically harvesting trees of all ages to maintain a broad age (or size) class distribution. A greater number of trees are maintained in the smaller age class than in each of the next older age classes. Typically leads to a forest composed of shade-tolerant species.

**Understorey**

the layer of forest vegetation between the overstorey or canopy and the ground layer.

**Unforested lands**

lands suitable for forest growing, but not occupied by productive trees.

**V****Virgin forest**

an imprecise term suggesting a forest largely uninfluenced by human activity, including harvesting.

**Volume table**

a table estimating the volume of wood in a standing tree based on diameter and merchantable height.

**W****Whole tree harvesting**

processing an entire tree on-site, normally by chipping, for pulp or biomass products.

**Widowmaker**

a limb, top, leaning tree or other material in the forest that is in danger of falling to the ground without warning, thus creating a safety hazard

**Wolf tree**

a living tree occupying more space in the forest than its economic value justifies. Usually older, larger or with more branches than other trees in the stand

**Wood**

the hard, fibrous inner part of tree trunks, branches and stems; tissue that lies underneath the bark of a plant; a source of timber.

**Woodland**

plant communities dominated by trees whose crowns shade less than 30 per cent of the ground.

**X****Xeric soil**

soils that experience prolonged periods of dry conditions, resulting in low moisture availability, negatively impacting the growth of many plants.

**Xylem**

the wood of a tree through which water is conducted from the soil.

**Y****Yield**

the amount of material that may be removed annually or periodically from a forest.

**Yield table**

A tabulation of volume, basal area, and DBH for forest stands of specified site and age, showing its growth pattern.

**Yield tax**

created by the “Forest Taxation Reform Act” of 1976, yield tax is a one-time tax on timber when it is harvested. The tax rate is applied to the value per volume harvested in different timber value areas throughout the state. For example, if the tax rate is 2.9 percent for each 1,000 board feet (MBF) of timber harvested and valued at \$500 per thousand board feet on the stump, the yield tax would be \$14.50. The tax is based on the IHV.

### What are different woods used for?

A forest is more than trees. It's a complex ecosystem of plants and animals. Humans are part of that ecosystem, and our actions affect everything else. The job of the people who work in the forest is not just to harvest trees to provide our wood products. The great majority of their time, energy and money is spent maintaining and protecting the plants and animals that live there. How well they succeed is the key to preserving our forests for generations to come.

Acetate	Crossing gates	Lacquer	Rolling pins
Acetic acid	Crutches	Laxatives	Roof gutters
Acetone	Darning eggs	Lighting fixtures	Roofing compounds
Activated charcoal	Decoys	Linoleum	Roofs
Adhesive	Desk pads	Liquid soaps	Rubber agents
Alcohol	Desks	Loading platforms	Rubber tires
Algaecides	Diapers	Log houses	Rulers
Altars	Diplomas	Lubricants	Sailboats
Anti foaming agents	Display cases	Luggage	Salad sets
Arrows	Disposable clothing	Lumber	Salt shakers
Art pens	Diving boards	Magazines	Sandboxes
Artificial snow	Doll houses	Mallets	Sausage casings
Asbestos replacement	Doors	Manure spreaders	Sawhorses
Ash trays	Draperies	Map tubes	Seeding pots
Asphalt	Drilling compounds	Maple syrup	Seesaws
Atlases and maps	Drums	Masking tape	Sewing tables
Auto undercoating	Easels	Matches	Shades
Award certificates	Egg cartons	Medicated hog feed	Shelf paper
Axe handles	Elevator cabs	Medicine	Shutters
Baking cups	Epoxy resins	Medicine	Signs
Bar tops	Eyeglass frames	Metronomes	Skis
Barns and sheds	Feed bins	Milk containers	Sleds
Barrels	Fences	Models	Snow fences
Baseboards	Fertilizer	Moldings	Snowshoes
Basketball courts	Fiber tubes	Mousetraps	Soil additives
Bats	Fire ladders	Nail polish	Space craft re-entry shields
Bean poles	Fireplaces	Name tags	Stables
Beds	Fish feed	Napkins	Stage sets
Bedspreads	Fishing boats	Newspaper	Stationary
Beverage cartons	Flagpoles	Novelties	Steering wheels
Billiard tables	Flashlight cases	Oars and paddles	Stereo cabinets
Boat caulking	Flooring	Organs	Stirrups
	Flume and piping	Paint	
	Flypaper	Paint remover	

Boats	Football helmets	Pallets	Surveyor stakes
Book ends	Foundry cores	Panel board	Swings
Bookcases	Freight cars	Paneling	Tackle
Bowling alley lanes	Fruit crates	Paper	Taffy sticks
Bowling pins	Fuel	Paper plates and cups	Tar remover
Bread wrapping	Fungicides	Paper towels	Telephone books
Bridges	Game pieces	Paperboard houses	Telephones
Broom handles	Garden furniture	Parallel bars	Tennis rackets
Buckets	Garden stakes	Park benches	Tent poles
Buttons	Garment bags	Particle board	Tires
Camera cases	Gift boxes	Pencils	Tissue
Candlesticks	Goal posts	Penetrating oil	Toboggans
Candy boxes	Golf balls	Phenolic resins	Toilet seats
Canoes	Golf club heads	Photographic film	Toothpicks
Carpenter tools	Greenhouses	Piano keys	Totem poles
Carpeting	Grocery sacks	Pianos	Toys
Cattle feed	Guitars	Pictures frames	Trellises
Ceiling timbers	Gummed tape	Pine oil disinfectants	Tripods
Cellophane	Gun stocks	Pipe racks	Truck bodies
Cement dispersant	Gun tracks	Planters	TV trays
Ceramics	Hair spray	Plaster additives	Typewriter stands
Chairs and tables	Hammers	Plywood	Umbrella handles
Charcoal	Hand cleaners	Podiums	Vacuum bags
Chemicals	Hand rails	Polish	Vanilla flavoring
Chocolate cups	Hardboard	Polo mallets	Varnish
Church pews	Highway surfaces	Pool cues	Venetian blinds
Church pulpits	Horse jumps	Popsicle sticks	Vinegar
Cider	House foundations	Postage stamps	Violins
Cider presses	Humidors	Poultry feed	Wagons
Cleaning compounds	Hurdles	Poultry houses	Wall carvings
Clipboards	Incense	Power poles	Waste receptacles
Clocks	Industrial toweling	Price tags	Water treatments
Clothes racks	Insecticides	Printing ink	Waterproofing
Coasters	Insoles and heels	Puzzles	Wax
Confetti	Instrument panels	Rafts	Windmills
Cooking utensils	Javelins	Railroad ties	Window frames
Corks	Jewelry	Rakes	Wine racks
Corrosion inhibitors	Kennels	Rayon	Wood stains
Cosmetics	Kitchen cabinets	Record covers	Work benches
Crepe paper	Kites	Reservoirs	World globes
Cribs			Yardsticks
Croquet balls			Yeast



## REFERENCES

1. Ковальчук М.А. Дискуссия как средство обучения иноязычному общению / М.:Высш.шк.,2008.- 144с.
2. Полат, Е.С. Новые педагогические и информационные технологии в системе образования: учеб. пособие для студ. пед. вузов и системы повыш. квалиф. пед. кадров [Текст]/ Е.С. Полат, М.Ю. Бухаркина, М.В. Моисеева, А.Е. Петров// М.: Академия, 2000. – 272 с.
3. Стрекалова, Н. Д., Беляков, В. Г. Разработка и применение учебных кейсов: практическое руководство / Санкт-Петербургский филиал Нац. исслед. ун-та «Высшая школа экономики». — СПб.: Отдел оперативной полиграфии НИУ ВШЭ — СанктПетербург, 2013. — 80 с.
4. Aas G., Reidmiller A. Trees of Britain and Europe. – Harper Collins Publishers, 1994.
5. Akinyemi R. Rainforests. – Oxford Bookworms Factfiles. – Oxford University Press, 2002. – 22 p.
6. Cambridge dictionary  
<https://dictionary.cambridge.org/ru/%D1%81%D0%BB%D0%BE%D0%B2%D0%B0%D1%80%D1%8C/%D0%B0%D0%BD%D0%B3%D0%BB%D0%B8%D0%B9%D1%81%D0%BA%D0%B8%D0%B9/>
7. Case studies  
[https://www.cengage.com/resource\\_uploads/downloads/0170186288\\_243676.pdf](https://www.cengage.com/resource_uploads/downloads/0170186288_243676.pdf)
8. Collection of case studies on examples of good practice in Teacher Education with a focus on organisational aspects and integrated concepts of language education Richard Easton// <http://www.new-views.eu/resources/collection-of-case-studies.pdf>
9. Collins dictionary  
<https://www.collinsdictionary.com/dictionary/english/needle-bearing>
10. Discovering forests/ Food and Agriculture Organization of the United Nations Rome, 2018/  
<file:///C:/Users/user/Desktop/СБОР%20УП%20ЛЕС/a-i6207e.pdf>
11. Encyclopedia Britannica  
<https://www.britannica.com/search?query=Forest>
12. Forests of Russia. – Encyclopedia, 1995. – Under the general editorship of Utcin A.I.

13. Forester Job Description/  
<https://careers.stateuniversity.com/pages/61/Forester.html>
14. Glossary of Forestry Terms // <https://www.forestinvest.com/glossary-of-forestry-terms/>
15. Glossary of Terms Used in Timber Harvesting and Forest Engineering// <http://glossary-of-terms.ru/?do=g&v=43>
16. Hutchinson, Tom. Introduction to Project Work [Text] / Tom Hutchinson // – Oxford University Press, 1991. – 23 p. [Electronic resource] – URL: <http://docplayer.net/4759964-Tom-hutchinson-introduction-to-project-work.html/>
17. In the English-Speaking World. – Chancere International Publishers, 1998.
18. Lundberg C. C. and Enz C., ‘A framework for student case preparation’, Case Research Journal, 13, p. 144, 1993
19. Maclean, Norman. Young Men and Fire. – Chicago: Chicago University Press, 1992.
20. Merriam-Webster dictionary// <https://www.merriam-webster.com/dictionary/pure%20forest>
21. Parfit, Michael. National Geographic. – September, 1990. – P. 116-138.
22. Planet Earth Forest. – Jake Page and the editors of Time – Life Books. – 1990. – 176 p.
23. Platt R.H. Discover American Trees, 1968. – Dodd.
24. Richard Easton
25. Collection of case studies on examples of good practice in Teacher Education with a focus on organisational aspects and integrated concepts of language education // <file:///C:/Users/user/Desktop/collection-of-case-studies.pdf>
26. Rainforest Action Network  
[http://www.ran.org/info\\_center/about\\_rainforests.html](http://www.ran.org/info_center/about_rainforests.html)
27. Russian forestry /Review/ №2, 2007  
<https://lesprominform.ru/uploads/rfr/RFRReview2.pdf>
28. Russian forestry /Review/ №7, 2017  
[https://lesprominform.ru/uploads/rfr/RFR\\_7.pdf](https://lesprominform.ru/uploads/rfr/RFR_7.pdf)
29. Temperate Deciduous Forest, <http://www.coff.edu/ete/modules/mseese/earthsysflr/clymo5.html> (June 4, 2000).
30. Temperate Deciduous Forest Biome, <http://mbgnet.mobot.org/pfg/diverse/temp/index.htm>.

31. WorldBiomes, <http://www.bluplanetbiomes.org/worldbiomes.htm> (Jan, 2001).
32. Wierthner, George. Fire Power // National parks. – May-June. – 1995. – P. 32-36.
33. Wallwork A. English for Presentations at International Conferences [Text] /A. Wallwork // DOI 10.1007/978-1-4419-6591-2\_1, C Springer Science+Business Media, LL 2010 – 196p. //– URL: [http://hcot.ir/wpntent/uploads/2014/08/9781441965905\\_English\\_for\\_Presentations\\_at\\_International\\_Conferences.pdf](http://hcot.ir/wpntent/uploads/2014/08/9781441965905_English_for_Presentations_at_International_Conferences.pdf)
34. <http://english.forestindustries.fi>.
35. <http://www.wf.com>.
36. <http://tl.ru/razn/proverbs.htm>.
37. [http://www.blueplanetbiomes.org/deciduous\\_forest.htm](http://www.blueplanetbiomes.org/deciduous_forest.htm).
38. <http://www.fix.net/-ggoven/trees.html>
39. <http://www.connexions-direct.com/jobs4u/index.cfm?pid=49>.
40. <http://www.arizonatrees.com/AZTimes%20Horticultural/Sap%20Excretion.htm>.
41. <http://www.ucmp.berkeley.edu/exhibits/biomes/forests.php>
42. <http://www.englishclub.com/business-english/presentations-pres.htm>
43. [https://www.youtube.com/watch?time\\_continue=373&v=Vr6\\_8sYN\\_yo](https://www.youtube.com/watch?time_continue=373&v=Vr6_8sYN_yo)
44. <https://www.youtube.com/watch?v=jbRgJGqI98I>
45. <https://www.youtube.com/watch?v=kiust33r858>
46. [https://www.youtube.com/watch?v=Hj\\_S1A6rqXU](https://www.youtube.com/watch?v=Hj_S1A6rqXU)

*Учебное издание*

Зульфья Наилевна Изимариева

# FORESTRY

Учебное пособие  
по английскому языку

Технический редактор

Отпечатано с готовых диапозитивов

---

Подписано в печать . Формат бумаги **60×84<sup>1</sup>/16**  
Усл. печ. л. . Уч.-изд. л. . Бумага офсетная  
Печать трафаретная. Гарнитура «Таймс». Заказ . Тираж экз.

---

Издательство ФГОУ ВПО «Башкирский государственный аграрный университет»  
Типография ФГОУ ВПО «Башкирский государственный аграрный университет»  
Адрес издательства и типографии: 450001, г. Уфа, ул. 50 лет Октября, 34

