Habitats and Environments

Francesca Costa

Ecosystems, habitats and environments

Reading

1 Read this text about ecosystems. All the words in bold are in the glossary at the end of the text.

The living part of our planet is called the **biosphere**. It is the sum of all **ecosystems**. All organisms in the biosphere depend upon each other. In order to study it, scientists have divided the whole biosphere into smaller units called ecosystems. Examples of ecosystems are: tropical rainforests, rivers and oceans. Organisms and their environment interact with each other and change over time. They continuously have an influence on each other.

Even within an ecosystem we can find smaller groups of living things called **habitats**.

Figure 1. This photograph depicts a hill habitat.

Examples of habitats are: fields, hills, meadows, ponds, marshes, woods, forests, and so on. The habitat is therefore a place where there are living things. For example, the habitat of a grasshopper is a meadow.

Each habitat has its own **environment**. The environment is composed of food, water, shelter, light and minerals.

Each organism is in a relationship with other organisms of its own species or of different species. The science which studies relationships between different organisms and their environment is called **ecology**. In the last thirty years ecology has become more and more important because human beings have realized that their behaviour has a strong impact on the environment.

Let us go back to the word 'environment' and what it signifies. Each environment is characterized by **abiotic factors** (non-living factors) such as water, air, soil, temperature and light, and by biotic factors (non-living factors), which are all the living organisms inside it.

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Biotic factors

The growth of a population depends on different factors such as food, climate, human intervention, predators etc. All the factors which limit or hinder growth are called limiting factors. Density (number of individuals per unit) depends upon factors which can be within (size of each individual) or outside the population (climate, food).

Abiotic factors

Light is one of the most important abiotic factors. It allows photosynthesis and influences the behaviour of animals. The type of soil is also very important for plants and animals.

Water is another important factor for an ecosystem. It is the basic component of living beings. Moreover, water influences climate and eliminates temperature differences because it becomes cooler and warmer over a longer period than the Earth.

Climate in the form of temperature is also a crucial factor. Each organism can survive only at certain temperatures.

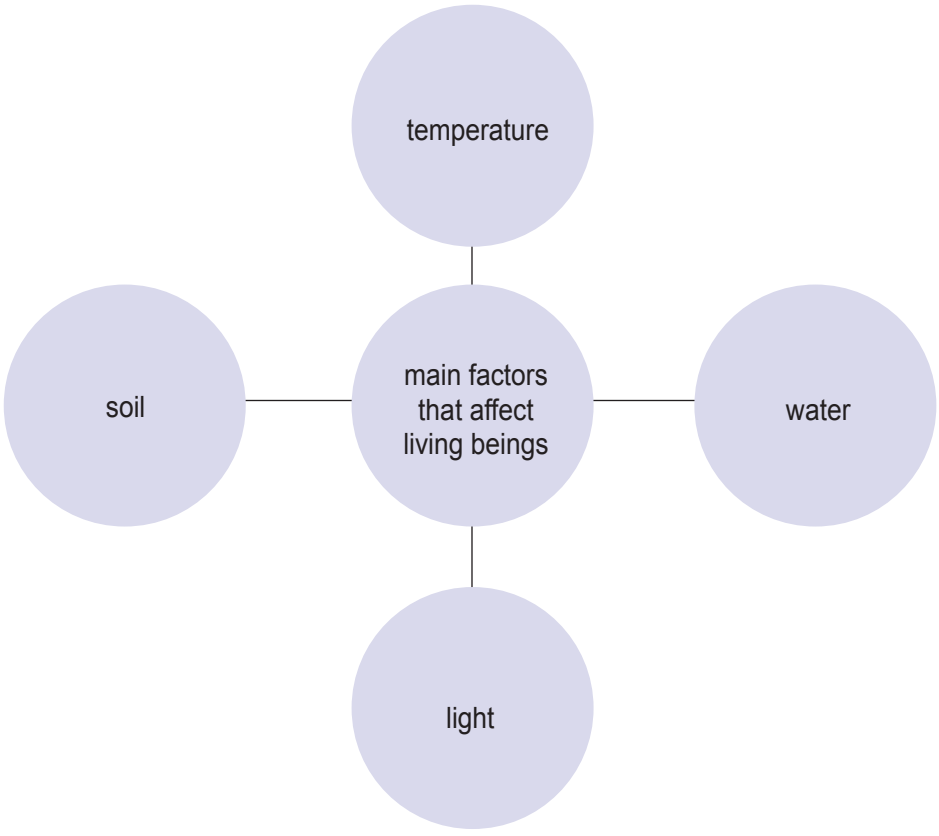

Figure 2. Concept map of main factors affecting living beings.

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Populations and communities

Within the same territory we can find different populations of animals. Populations are organisms of the same species living in the same environment – for example, the squirrels that live in a wood. Populations coexisting in the same habitat are called **communities**.

In order to analyse habitats scientists use a method called **sampling**. This is the examination of small examples of the habitats they want to study. Samples are not only used in science but also in cosmetics. What are they used for? Usually when you need to analyze a habitat you draw a quadrat around one sample area and you calculate the percentage cover of each plant that can be found within the quadrat. The quadrat is a sample of the plant cover in the habitat which is being analyzed. To achieve a reliable sample of a habitat scientists collect data from at least 100 quadrats!

Do you think the method will be the same with animals? No, because they move! Scientists use a method called 'mark and recapture'. This means that you have to trap the animal, mark it, and then set it free. Once it is marked you can easily recognise it and follow its movements. Sometimes it is very difficult to count all the animals in one specific habitat. Scientists, therefore, estimate the size of the animal population.

Glossary

abiotic factor = a non-living element of the environment

biotic factor = all living organisms within an environment

biosphere = the part of the Earth where living things can exist

community = a group of organisms from different species that live together in one habitat

ecology = the study of relationships and interactions of living things within the environment

ecosystem = all the living and non-living things in a given area that interact with one another

environment = the surroundings and conditions in which plants and animals live

habitat = the natural home of a plant or an animal

population = group of individuals of one species in an area

quadrat = area which is drawn to study plants in a particular habitat

sampling = the study of a small area of a habitat in order to make a hypothesis about the whole habitat

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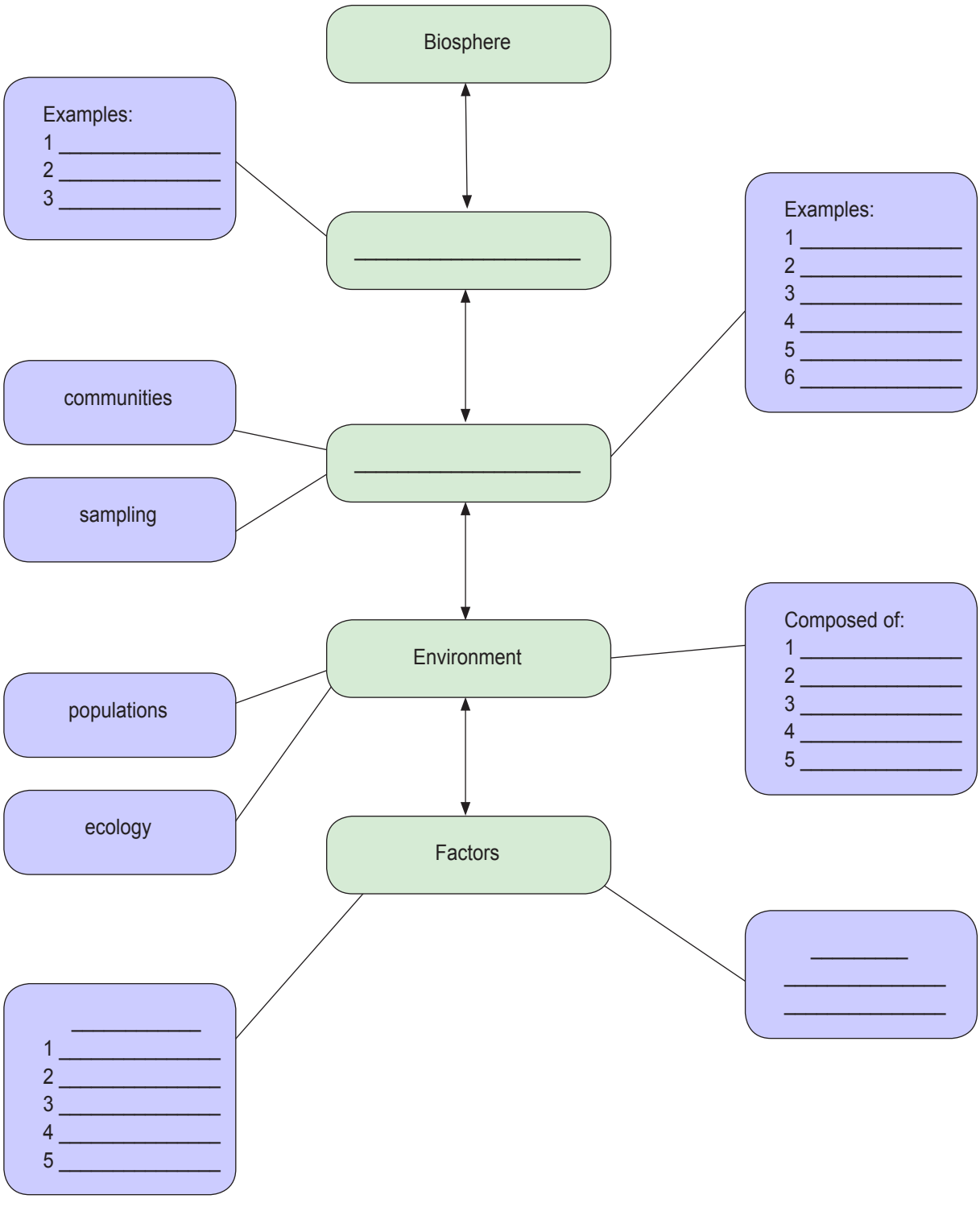
Ecosystems, habitats and environments — Reading, Vocabulary

1 Complete the diagram with information from the text.



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Speaking

2 Work in pairs. Describe the relationship between biospheres, ecosystems, habitats and environments. Use the Useful Language in the box to help you.

Useful language

How to describe ecosystems

Sentence starters

The biosphere is the sum of…
Examples of ecosystems include…
Within an ecosystem we can find ….
Characteristics of… include…

Useful phrases

is the place where…
is characterised by…
is composed of…
depends on factors such as…
is one of the most important/crucial factors
…. is also an important factor
contains… / includes… / is made up of …

Vocabulary

3 Check that you know these terms. Write a short definition in your own words.

habitat population environment community

4 Give examples of three different habitats that you know:

……

……

……

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Reading

5 Work in pairs. Are these sentences true or false?

a The living part of our world is the biosphere. T / F

b The environment has biotic and abiotic factors. T / F

c The biosphere is a part of the ecosystem. T / F

Vocabulary

6 Unscramble these words.

a Ttaihba .....

b Nirnmtenveo .....

c Hrpeebsoi .....

d Ycesomste .....

e Deilf .....

f Wemdoa .....

g Nopd .....

h Olis .....