Title: Grassland – World Biodiversity Record

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Level: Secondary school

Material: Exercises

Goal: To sensitize students to the need for the preservation of grassland habitats

Procedure:

1. Begin with worksheet "Worldwide biodiversity of plants"
2. Worksheet "World biodiversity record"
3. Worksheet "World biodiversity record – arid grassland"
4. Worksheet "Plant species on arid grassland"
5. Discuss the outcome
6. Text "Succession – what's that?", worksheet "Succession"
7. Discuss results, talk about how succession, human influence, and biodiversity are related

World Biodiversity Record

Task: In which of these biotopes can you find the highest biodiversity of plants (up to 90 species) in one square meter?

Forest

Dune

Grassland

Rainforest

Semidesert/Desert

Swamp

World Biodiversity Record – Arid grasslands

In the central European climate zone, grasslands show the world's highest biodiversity of plants within one square meter. From the point of view of species survival, grasslands are a very interesting habitat. Most of these species-rich grasslands are semi-natural, which means that they are mowed, grazed, or burned regularly. These grasslands also include arid grasslands.

Complete the following tasks to learn more about them. Use the internet for help.

1. Give a short definition of the word 'arid grasslands'.

_____

_____

_____

_____

2. Name 5 endangered species, which can be found on arid grasslands.

   1) _____
   2) _____
   3) _____
   4) _____
   5) _____

3. How can we protect these species?

_____

_____

_____

_____

Plant species on arid grassland

Assign the following plant names to the pictures below. Use the internet for help!
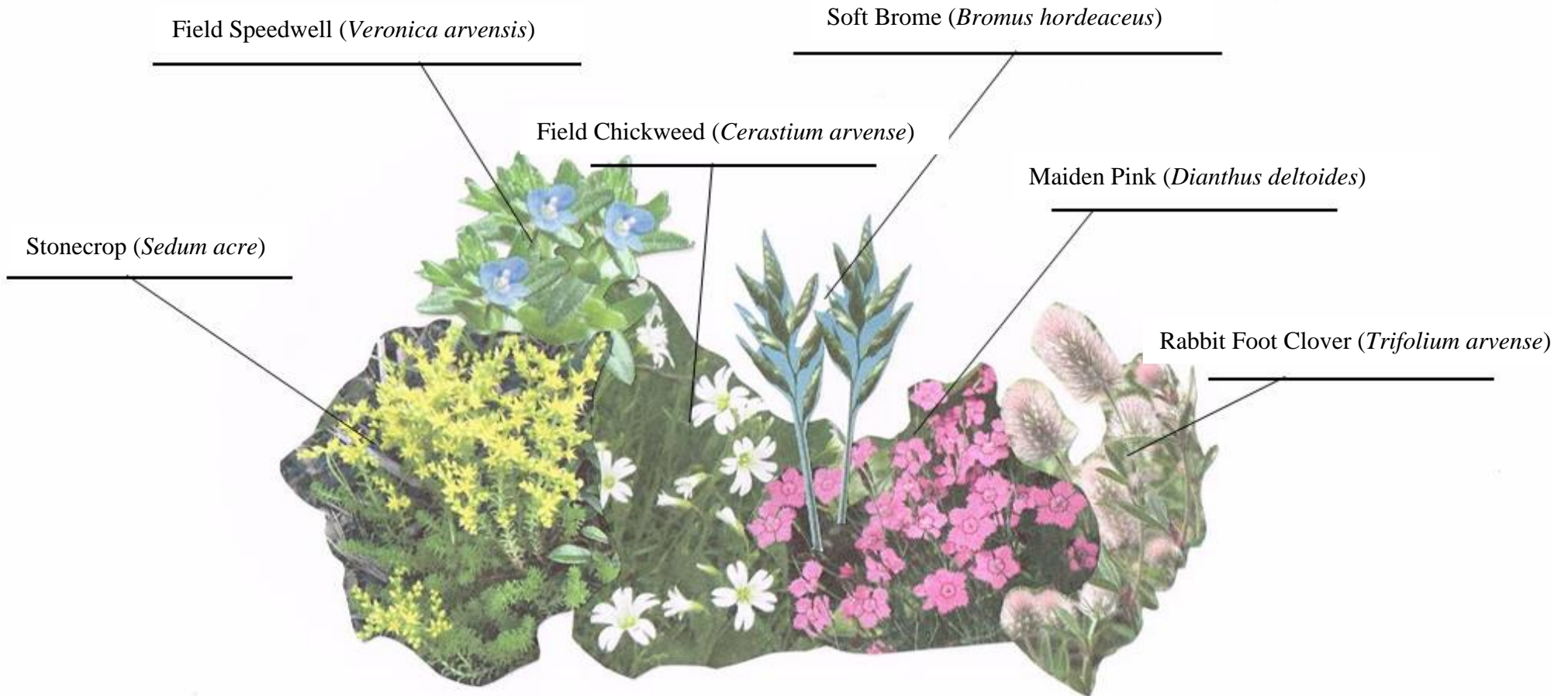
Stonecrop (*Sedum acre*), Soft Brome (*Bromus hordeaceus*), Rabbit Foot Clover (*Trifolium arvense*), Maiden Pink (*Dianthus deltoides*), Field Chickweed (*Cerastium arvense*), Field Speedwell (*Veronica arvensis*)

Plant species on arid grassland

Assign the following plant names to the pictures below. Use the internet for help!

Stonecrop (*Sedum acre*), Soft Brome (*Bromus hordeaceus*), Rabbit Foot Clover (*Trifolium arvense*), Maiden Pink (*Dianthus deltoides*), Field Chickweed (*Cerastium arvense*), Field Speedwell (*Veronica arvensis*)

Field Speedwell (*Veronica arvensis*)

Soft Brome (*Bromus hordeaceus*)

Field Chickweed (*Cerastium arvense*)

Maiden Pink (*Dianthus deltoides*)

Stonecrop (*Sedum acre*)

Rabbit Foot Clover (*Trifolium arvense*)

Succession – What's that?

The word 'succession' describes a temporal sequence in symbioses within a biotope. A succession takes place in every ecosystem. The starting point is either new biotopes, or disturbed or used biotopes. A distinction is made between primary and secondary succession. Primary succession means a completely new settlement in a new habitat (for example, one which has come into being through volcanic eruption). Secondary succession is a process of reconstitution. It occurs after the original symbioses have been destroyed by natural fire or flood, human clear-cutting or slash and burn methods. In both cases, the pioneer species appear first. Pioneer species are an association of plants which are the first to grow on an unvegetated area, and which thus prepare it for other plant communities. Next in line are the follow-up communities, and finally the so-called climax association. These represent the final stage of succession.

Usually, succession begins with a layer of grass-plants and herbs until the area is once again a fully covered by vegetation. Biodiversity continues to increase until this phase makes way, after about a decade, for a phase of growth. Low woodland with a diversity of shrubs begins to appear. After another decade, the first tree species appear. In the course of a few centuries, different tree species dominate until the forest reaches its final stage.

World Biodiversity Record – Succession

1. The natural succession cycle varies as a result of human interference. For example, grazing forestalls the development of arid grasslands. What do you think about this? Is human interference in natural succession a bad thing?

_____

_____

_____

_____

_____

_____

2. What would happen if we neglected the grasslands?

_____

_____

_____

3. Label the succession stages in the picture below.

| years | 0 - 10 | 10 - 20 | 30 - 40 | 40 + |