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GREEN ADVENTURES: GUIDE TO ENVIRONMENTAL EDUCATION AND NATURE ACTIVITIES

**"Resources and Strategies for Primary and Secondary
Teachers to Promote Inclusive and Sustainable Learning"**



AIPD
PISA



A SUPERPOWER TO DEFEND NATURE



This manual was created thanks to the collaboration between Idryma Prostatias Aprosarmoston Paidon I Theotokos (Fundació Theotokos de Grècia), BirdLife Malta, the Commission for the Rights of Persons with Disabilities (CRPD), the Spanish Society of Ornithology (SEO/ BirdLife Spain), the Italian League Protezione Uccelli (LIPU/BirdLife Italy), the Hellenic Ornithological Society (BirdLife Greece) and the Italian Association Persone Down Onlus of Pisa (Italy).

We would like to express our special thanks to Vaia Arsenopoulou, Sofia Kritikou, Irene Alexandropoulou, Elli Xanthopoulou, Júlia Moya Garcia, Jordi Prieto Mollar and Alan Tejedor Garcia for their valuable contribution.

For more information, you can contact us by sending an email to **education@birdlifemalta.org**

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As you do these activities, remember that each student brings their own perspective, strengths, and knowledge to the table. By encouraging outdoor exploration, you are opening the door to a world where every child can thrive, grow and shine as an advocate for the environment. Together, we'll create a greener, more sustainable future, and we'll do it one outdoor adventure at a time.

With sincere thanks,

The team of "A.S.D.N."

Prologue

BirdLife partners involved in this project working in different countries across Europe have noticed a common pattern: a growing disconnection from natural environments, especially among children and young people. In our activities, we encounter an antagonistic narrative about nature. Children are aware of the importance of nature: they know they need trees to breathe, to provide shade, and they associate nature with feelings of well-being and happiness, especially during holiday periods. However, when these children express themselves from a more experiential perspective, they show disaffection towards nature and the natural environments around them. Many say that bugs disgust them, that they don't like getting dirty, that sand bothers them and that they don't want to sit on the floor. Most do not recognize the most common species of fauna and flora in their environment, do not understand that they are part of nature, nor do they identify the meaning of their connection with all living beings.

We tend to need nature from a utilitarian perspective (air, shade, food, water, fun, etc.), but we ignore the roles provided by species that we do not consider "beautiful" or that we do not directly associate with the satisfaction of a specific need. An illustrative example comes from a school playground re-naturalisation project led by BirdLife Malta. When a group of teenagers were asked how they could improve nature in the school yard, they replied: "We want more benches so we can take our phones in the yard and take out the trees because the leaves in the fall bother us and they're dirty." This response shows that their needs are clearly separated from nature.

This disconnection has significant effects on people's well-being. Many studies suggest that lack of contact with nature is a risk factor for numerous physical and mental illnesses, including attention disorders, vitamin D deficiency, obesity, and lack of creativity.



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Introduction

THIS TEACHING GUIDE is a proof to the belief that every child, regardless of their abilities, has something invaluable to contribute to the global movement for environmental conservation. Within these pages, we invite you to embark on an exciting educational adventure that explores and clarifies key concepts such as climate change, biodiversity loss and habitat destruction.

But why focus on these complex challenges with children and adolescents with neurodivergence? The answer is simple but profound: Because every child deserves the opportunity to connect with nature and become a change-maker for their own environment and the planet.

By introducing our children and adolescents to all these topics through discovery and exploration of their immediate surroundings, we not only provide them with a deeper understanding of the world around them, but also instill in them a sense of purpose, responsibility and agency.

This guide is structured with environmental content for teachers, but also offers a rich collection of outdoor activities specifically designed to engage children and adolescents with neurodivergence. These activities are carefully designed to be inclusive, adaptable and above all, fun! Through hands-on activities students will not only connect with nature, but also discover their own unique abilities as environmental advocates.



Discovering Nature

EXPLORING THE NATURAL WORLD is an enriching experience that offers countless benefits for people of all ages. It involves immersing yourself in diverse environments, from lush forests and vast deserts to vibrant coral reefs and tranquil meadows. Each environment offers unique opportunities to observe and learn about the countless life forms that inhabit our planet.

Connecting with nature can start with something as simple as a walk in a local park or a field trip. These activities encourage physical exercise and provide a break from the hustle and bustle of urban life, promoting mental well-being. Observing the intricate details of plants, animal behaviour, and the patterns of weather and seasons fosters a deeper appreciation of the complexity and interconnectedness of the natural world.

For children, these explorations are especially valuable. Direct experiences with nature stimulate curiosity and creativity, providing hands-on learning opportunities that go beyond traditional classroom education. By observing how different species interact within ecosystems, children can understand fundamental biological concepts and develop a sense of environmental responsibility.



Things to consider before you start

When realising our outdoor activities (either in an urban park, in the countryside, in a nature reserve, in a forest, etc.), there are some measures that we suggest you follow to respect other people, the environment and its inhabitants:

1. Don't put yourself in danger, plan ahead and follow the signs you come across.
 2. Always carry out a site inspection for risk assessment before carrying out an activity.
 3. Always carry a first aid kit with you.
 4. Make sure you have enough educators and helpers to supervise the group.
 5. Make sure that students are dressed appropriately for outdoor activities:
 - Wet/cold weather: raincoat, boots, warm clothes.
 - Sunny/hot weather: sun hats, sunscreen, plenty of fluids to drink.
 6. Make sure everyone knows what the options are for using the bathroom.
 7. Leave fences and property as you find them and consider other people.
 8. Protect plants and animals and don't leave trash behind:
 - Do not take stones, or pull plants or leaves from trees.
 - Do not remove an organism from its environment to move it to another or, worse, bring it inside or into your home.
 9. Keep dogs on a leash.
 10. Don't get discouraged! Going outdoors doesn't always go according to plan. Write down what might have gone wrong and how you could improve it next time!
- 



Program 1: Nature through the senses

Amidst the chaos and noise of our modern lives, nature offers us a place to find peace and tranquility. Its sights, sounds and smells have the ability to soothe the senses and promote general well-being. Students will connect and experience nature through their five senses.

ACT 1.1 Nature through the senses

Group size: 1-15 people

Duration: 2 hours

Difficulty: 1

Background and objectives

Encourage observation and direct experience with natural elements to develop a deeper and more conscious understanding of their senses.

Resources

- none



Instructions:

1) Go outside and have the students observe different natural elements and feel the different textures, whether soft, smooth or hard, warm or cold (*touch*). Make them notice colours, shapes, patterns and movements (*sight*). Have them listen to the sounds they can hear. Ask them how many sounds they can hear and whether they come from nature or human activities. Can they hear birds? rain? Traffic? (*hearing*). Have them breathe in deeply and smell plants and flowers (*smell*). And finally, if possible, give them some fruit and ask them to taste it (*taste*).

2) Have a final discussion about the importance of using all five senses, both for safety and pleasure, to fully enjoy nature.

A modification of this activity could be to make the students walk from an urban area to a natural area and notice the differences.

For a simplified version of this activity, you could have students sit in one place and use all their senses while sitting.

ACT 1.2 Musical Activity

Group size: 1-15 people

Duration: 1 hour

Difficulty: 1

Background and objectives

- Identify various natural resources and develop students' creative expression.

Resources

- none

Students will learn to identify various natural resources and unleash their creative expression.



Instructions:

- 1) Each participant has 15-20 minutes to find objects in nature that make noise when hit, blown or rubbed. These can be sticks, grass, pine cones, etc. Please ask participants not to choose any living organisms.
- 2) The participants return with their "instruments" and a conductor is chosen, who organizes the group into a semi circular orchestra.
- 3) Each musician can 'tune' his instrument, so that the rest of the group can hear the different sounds. If a performer can play more than one instrument at the same time, they can do so.
- 4) The conducting person can choose a familiar tune with an easy beat and lead their orchestra in the song. Let participating people request songs they'd like to play; give musicians the opportunity to work on a 'solo' that they can perform for everyone.

ACT 1.3 Colour Bingo

Group size: 1-15 people

Duration: 2 hours

Difficulty: 1

Background and objectives

- Educating on the concept of biodiversity and its importance

Resources

- Worksheet 1.3 Colour bingo cards (create or print cards with pictures of various plants and animals).

The aim of this activity is to introduce the concept of biodiversity and its importance through a fun and interactive bingo game. This activity must be carried out in the spring, during the flowering season.



Instructions:

- 1) Go to a green area and tell the participants that they will have to find objects, plants and flowers with the same colours shown on the colour bingo sheet. Although plants look green, they can be different shades of green. In addition, flowers have different colours to be more attractive to insects that feed on their pollen and carry their pollen to other places with their bodies. The pollen will be used to produce more plants. Therefore, the diversity of flower colour is important.
- 2) Help the participants to carry out the activity.
- 3) Finally, discuss with the participants about their results and experiences and praise them for their efforts.

Key concepts for teachers

Ecosystems and habitats

The interconnectedness of nature refers to the intricate and interdependent relationships that exist between all living and non-living components of the natural world. It is the recognition that every organism, ecosystem and element of the environment is connected in a complex web of relationships. These dynamic relationships between living organisms (biotic factors) and their physical environment (abiotic factors) involve the exchange of energy, matter and information, which ultimately sustain life on Earth. These interactions are fundamental to the functioning and stability of ecosystems and their preservation is crucial to maintaining the health of the planet.

Ecosystems are made up of diverse habitats, each housing unique communities of plants, animals and microorganisms. For example, a forest ecosystem includes habitats such as the forest floor, understory, and canopy, each with different species and interactions. Similarly, a coral reef ecosystem consists of several zones, from shallow water to deep reef slopes, each teeming with life. Understanding these ecosystems and their habitats helps us appreciate the diversity of life and the complex interactions that sustain it.



Key concepts for teachers

The interdependence of species is a key aspect of nature's interconnectedness. In a terrestrial ecosystem such as a forest, there are several interactions at play:



Predator-prey relationships

Predators, such as wolves, regulate populations of herbivores such as deer. Without this interaction, herbivore populations could increase excessively, leading to overgrazing and habitat destruction.



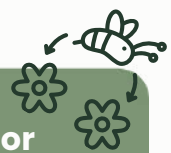
Mutualistic relations

Fungi and mycorrhizal plants maintain a mutualistic relationship. Fungi help plants absorb essential nutrients from the soil, while plants provide sugars to the fungi. This mutualism improves the overall health and resilience of the forest.



Decomposition

Decomposers such as earthworms, bacteria and fungi break down dead organic matter, returning essential nutrients to the soil. Without decomposition, the forest would be filled with dead plant material, making it difficult for new growth to occur.



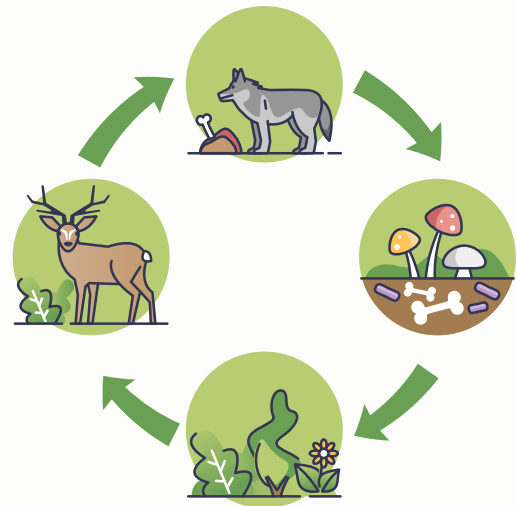
Plant-pollinator interactions:

Insects, birds and other animals pollinate flowers. This interaction is crucial for the reproduction of many plant species. If these interactions were disrupted, it would affect plant populations and the animals that depend on them for food.

Key concepts for teachers

Food chains and networks

Food chains and food webs illustrate the flow of energy and nutrients through an ecosystem. A food chain is a linear sequence of organisms where each is eaten by the next in the chain. For example, in a grassland ecosystem, grass (producer) is eaten by a grasshopper (primary consumer), which is eaten by a frog (secondary consumer), which is then eaten by a snake (tertiary consumer).



However, ecosystems are more accurately represented by food webs, which are webs of interconnected food chains. This complexity reflects the reality that most organisms have varied diets and multiple predators. For example, in a forest ecosystem, a single plant species might be eaten by several herbivores, which in turn are preyed upon by a variety of predators.

These food webs highlight the interdependence of species. Each species plays a role in maintaining the balance of the ecosystem. When a species is removed or its population changes significantly, it can have cascading effects throughout the food web. For example, the removal of a top predator can lead to an overpopulation of herbivores, leading to overgrazing and habitat degradation.

The interconnectedness of nature and life chains emphasize the complex and vital relationships that sustain life on Earth. Understanding ecosystems and habitats, recognizing the interdependence of species, and studying food chains and food webs is crucial to appreciating the balance of nature. By preserving these interactions through biodiversity conservation, habitat preservation, sustainable resource management, climate change mitigation and invasive species control, we can ensure the health and resilience of our planet for future generations.

ACT 1.4 Nature Scavenger Hunt

Group size: 1-15 people

Duration: 2 hours

Difficulty: 1

Background and objectives

- Introduce the concept of the interconnectedness of nature by exploring the different natural elements through a gymnasium.

Resources

- Worksheet 1.4 Nature Scavenger Hunt

This activity helps participants improve their observation and problem-solving skills, follow instructions, complete tasks, and work as a team to achieve a common goal.



Instructions:

1. Start by explaining the idea of the interconnectedness of nature in simple terms, highlighting how all elements of nature are connected and depend on each other.
2. Show the participants a list of natural objects they need to find during the scavenger hunt. Distribute the sheets.
3. Take the participants outside and help them search for the objects on the list. They can work individually or in small groups. Encourage them to use their senses to explore the environment.
4. Discuss each object as it is found, highlighting its role in the natural world and how it connects with other elements of nature.

After the scavenger hunt, gather the participants. Talk about the interconnectedness of these natural elements, such as: how leaves provide food for insects, which in turn are food for birds. Reinforce the idea that we are part of nature and depend on it for our well-being.

ACT 1.5 Me and what I need

Group size: Class group
Duration: 2 hours
Difficulty: 1

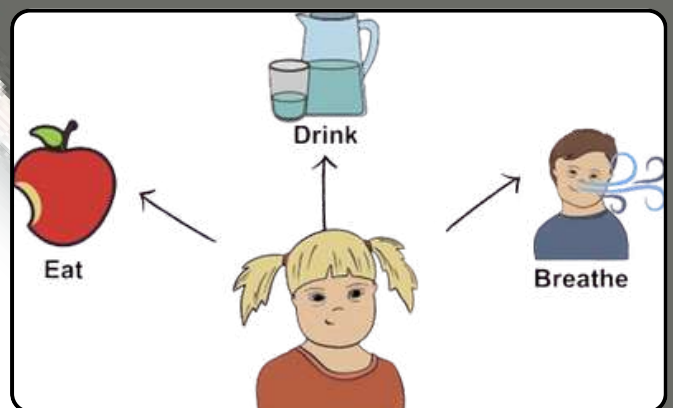
Objectives

- Make our connection with nature visible
- Reflecting on this connection from our own experience

Resources

- Printed cones (sheet 1.5)
- Glue
- Colours
- Scissors
- An example of a life chain (sheet 1.5.1)

The main objective of this activity is to highlight our connections and interdependencies with nature.



Instructions:

The aim of this activity is to help students understand our connection and interdependence with nature. We will use four chains that can be built up or down, using questions that help us understand the origin of each element.

- 1) Cut Out the Circles: First, cut out the circles to create the cones.
- 2) Build the Chain: Once the cones are created, we will build the chain through questions as we stack the cones. You can ask ascending (seed-to-apple) or descending (apple-to-seed) questions.

Explanation by the students: "We all need things to live. We need food to feed us, water to drink, air to breathe or clothes to warm us. But where do all these things come from? Do you know?"



ACT 1.6 My chain of life

Group size: Class group
Duration: 2 hours
Difficulty: 1

Objectives

- Make our connection with nature visible
- Reflecting on this connection from our own experience

Resources

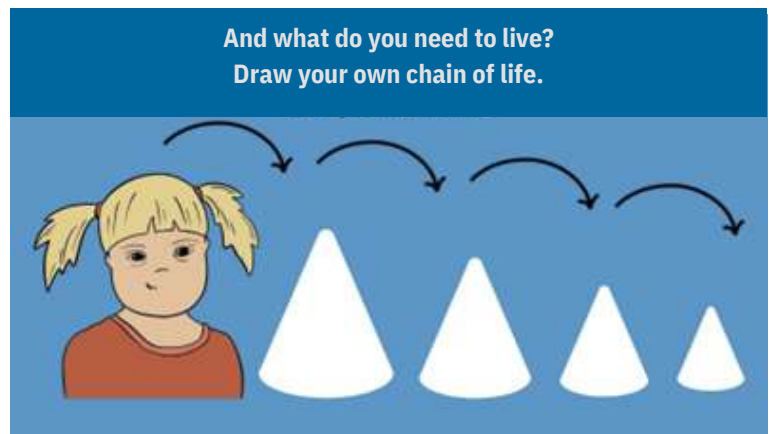
- printed cones (sheet 1.6)
- Glue
- Colours
- Scissors
- An example of a life chain

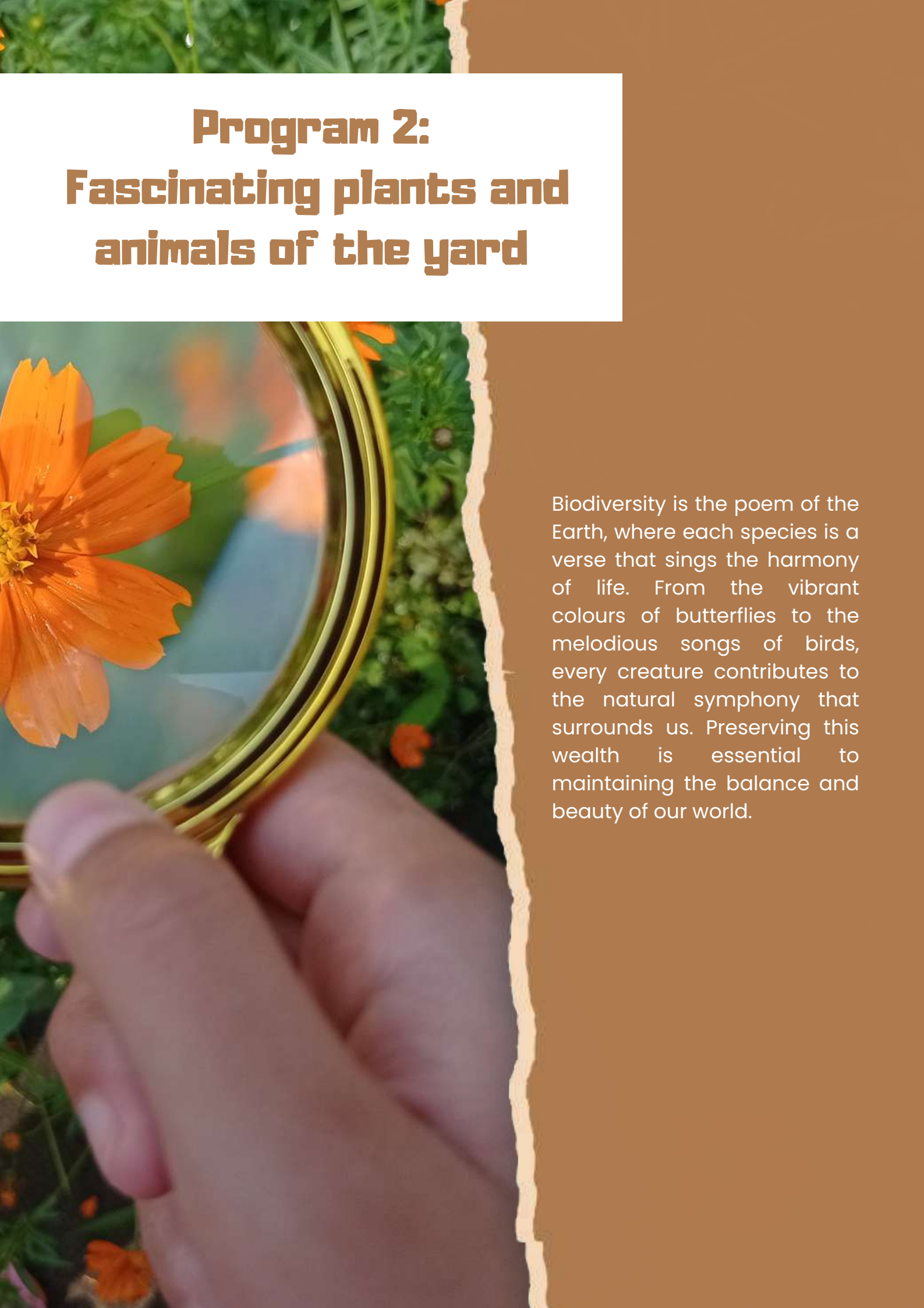
The aim of this activity is for each student to draw up their own chain of life from a personal perspective. Through the question "What do you need to live, besides drinking, breathing and eating?", students will identify their vital needs. At the end we will reflect on how many of these needs are linked to nature.



Instructions:

1) It helps students to reflect on their needs for well-being. Once each need has been identified, establish the different stages as in the previous exercise and draw them on the cones to be able to establish the relationships.



The background of the page is a collage of nature-themed images. At the top left, there's a close-up of green foliage. Below it, a hand holds a magnifying glass over a garden. The magnifying glass focuses on a single orange flower, while the background shows other similar flowers and green plants. The right side of the page has a solid brown background where the text is located.

Program 2:

Fascinating plants and animals of the yard

Biodiversity is the poem of the Earth, where each species is a verse that sings the harmony of life. From the vibrant colours of butterflies to the melodious songs of birds, every creature contributes to the natural symphony that surrounds us. Preserving this wealth is essential to maintaining the balance and beauty of our world.

Key concepts for teachers

Biodiversity

Biodiversity refers to the variety of life on Earth, which includes different species of plants, animals, fungi and microorganisms as well as the ecosystems they form. This diversity is not only beautiful but also essential to the health and stability of the planet.

The beauty of biodiversity is evident in the amazing range of colours, shapes and behaviours found in nature. From the vibrant colours of birds and tropical flowers to the complex social structures of ant colonies and wolf packs, biodiversity enriches our world and offers endless sources of inspiration and wonder.

Beyond its aesthetic value, biodiversity plays a crucial role in the ecosystem services that support human life. These services include the pollination of crops by insects, the purification of water by wetlands, the decomposition of waste by microorganisms and the regulation of climate by forests and oceans. Each species, however small or seemingly insignificant, contributes to the functioning of these systems.



Key concepts for teachers

Monitoring nature

Nature monitoring involves the systematic observation and recording of information about the natural environment. This process helps us understand the health of ecosystems, track changes over time, and identify potential problems. Participating in nature monitoring can be as simple as regularly observing and evaluating features of nature in your garden, participating in citizen science projects or using apps to record local wildlife sightings.



Wildlife observation techniques

Wildlife observation and environmental health monitoring are essential practices for educators to deepen students' understanding of the natural world and foster environmental responsibility. Below is a detailed explanation of the techniques and tools educators can use for effective wildlife observation and environmental monitoring.

Field Trips: Field trips to natural spaces provide invaluable opportunities for students to engage with biodiversity first-hand.

Encourage students to actively observe and document the flora and fauna they encounter. Consider incorporating structured observation exercises and guided nature walks to improve their observation skills.



Key concepts for teachers

Nature Journals: Nature journals serve as dynamic tools for recording observations and reflections on wildlife encounters. Encourage students to draw, describe and record their observations of plants, insects and birds. This practice not only improves your observational acuity, but also cultivates a deeper appreciation of the complexities of the natural world.



Citizen Science Projects: Engage students in citizen science initiatives focused on wildlife monitoring. Platforms such as *eBird*, *iNaturalist* and *Butterfly Conservation's - Big Butterfly Count* allow students to contribute valuable data to ongoing research projects while improving their observation and data collection skills.



Censuses: Conduct censuses within school grounds or local green spaces to assess biodiversity and habitat quality. Students can identify and record the presence of indicator species, assess plant cover, and document habitat characteristics. This hands-on approach fosters a sense of ownership and responsibility for local ecosystems.



Key concepts for teachers

Techniques and technologies for environmental monitoring

Binoculars and magnifying glasses: Provide students with binoculars and magnifying glasses to improve their ability to observe wildlife in detail. These tools make it easy to closely examine birds, insects and plant features, allowing students to appreciate the complexities of biodiversity.

Camera trapping: Deploy camera trapping cameras in outdoor environments to capture images and video of hard-to-see wildlife. The data collected can be used to identify species, monitor activity patterns, and contribute to wildlife monitoring efforts. Trap cameras offer an exciting insight into the hidden world of nocturnal and elusive wildlife.



Weather Stations: Install weather stations on school grounds to monitor environmental conditions such as temperature, humidity, and precipitation. Students can collect meteorological data over time and gain valuable insights into the dynamic interplay between environmental factors and biodiversity.

Digital applications and online resources: Use digital applications and online resources to facilitate wildlife identification and data collection. Mobile apps like *Merlin Bird ID*, *Seek by iNaturalist*, and *PlantSnap* allow students to identify and document species they encounter during outdoor hikes. Online databases and educational resources provide additional information on species identification and their natural history and conservation status.

Recommendations to Increase Learning



Before introducing a new concept, try to find out what they know about it through questions. In this way, you can pull the thread from their own knowledge and complete everything they don't know yet. For example, does anyone know what a herb is? What is the difference between grass and a shrub?



In order to better understand the concepts, do the explanations outside whenever possible. Thus, students can directly observe what they are learning.



If it is not possible to leave the classroom at that moment, always try to use natural and real elements that the students can interact with, see and touch. This will always be more effective than any image.



To reinforce learning, use physicality.

Example

After the students have done the first three activities of the program (the count of herb plants, shrubs and trees) a good idea to reinforce these concepts is for the students to represent these three layers through their bodies. Working from the body can help further integrate these concepts.



ACT 2.0 Not all plants are equal – Introduction–

Group size: 1-15 people

Duration: 2 hours

Difficulty: 1

Background and objectives

- Understand the differences between the three plant layers: herbaceous, shrubby and arboreal.

Resources

- Explanatory sheets of the different plant layers (2.0.1 and 2.0.2)
- Plant Layers Worksheet (2.0.3)

The aim of this activity is to explain the different plant layers in order to create the basis for starting the flora count of the school yard.



Instructions:

1) First of all, we will invite the participants to make a census of the flora of their yard, identifying the presence or not of the different plant layers: herbaceous, shrubby and arboreal.

2) Once you have explained the different layers with the help of images (you can use the explanatory sheets of the different plant layers 2.0.1 and 2.0.2 that you will find in the appendix), go out into the yard and look for the elements (grasses, bushes and trees) for them to see, touch and feel, thus understanding the concept through touch and direct experience. The idea is for them to write down if they find grasses, shrubs and trees in their yard (use activity sheet 2.0.3).

ACT 2.1.1 Which herbs are in the yard?

Difficulty 1

Group size: 1-15 people

Duration: 2 hours

Difficulty: 1

Background and objectives

- Understand what a herbaceous plant is
- Identify the grassy areas of our yard
- Mark the grassy areas of our yard
- Create a digital herbarium with the herbs found

Resources

- Explanatory sheet herbaceous plants (2.1.1)
- Plant identification guide (see the herbaceous plants section) 2.1.2)
- Digital herbarium template (2.1.3)
- Mobile/Tablet to take photos and recognize plants (*Pl@ntNet*)
- Activity sheet (2.1.6)

This activity is proposed in three different levels of difficulty to meet the various levels of understanding and abilities. This strategy allows each student to work according to their abilities, promoting inclusive and personalized learning (see act. 2.1.1, 2.1.2, 2.1.3).



Instructions:

- 1) With the help of the explanatory sheet 2.1.1, explain what herbaceous plants are.
- 2) Once you understand the concept, look for all the areas of the yard where you find herbaceous plants.
- 3) Post a sign where you find herbs so your friends know too.
- 4) Take pictures of the grasses in your yard and identify them with the help of books or an app like *Pl@ntNet* (plantnet.org). You can use the plant identification guide we provide as support (see the herbaceous plants section) (2.1.2).
- 6) Create your digital herbarium with these photos.
- 7) Close the activity by evaluating the presence of herbs in the yard. (Activity 2.1.6)

ACT 2.1.2 Which herbs are in the yard?

Difficulty 2

Group size: 1-15 people

Duration: 2 hours

Difficulty: 2

Background and objectives

- Understand what a herbaceous plant is
- Identify the grassy areas of our yard
- Mark the grassy areas of our yard
- Create a digital herbarium with the herbs found

Resources

- Explanatory sheet herbaceous plants (2.1.1)
- Biodiversity map (2.1.4)
- Plant identification guide (see the herbaceous plants section) (2.1.2)
- Herbarium template (2.1.3)
- Mobile/Tablet to take photos and recognize plants (*Pl@ntNet*)
- Activity sheet (2.1.6)

To facilitate the location on the map, it is recommended to incorporate photographs of the places. These visual images help the students to better identify and place themselves in the geographical space, thus improving their understanding and orientation.



Instructions:

- 1) Have a map of the playground ready (providing pictures of the areas can help children identify the areas).
- 2) Go out into the yard and look for herbs.
- 3) Show on a poster where you find herbs so that all participants know it too.
- 4) Draw on the map the places where the herbs grow. (If it is difficult, help the students to find and join the places on the map)
- 5) Take pictures of the herbs in your yard.
Look up herb names using books or an app like *Pl@ntNet* (plantnet.org). Make a digital herbarium with these photos.
- 6) Close the activity by evaluating the presence of herbs in the yard. (Activity sheet 2.1.6)

ACT 2.1.3 Which herbs are in the yard?

Difficulty 3

Group size: 1-15 people

Duration: 2 hours

Difficulty: 3

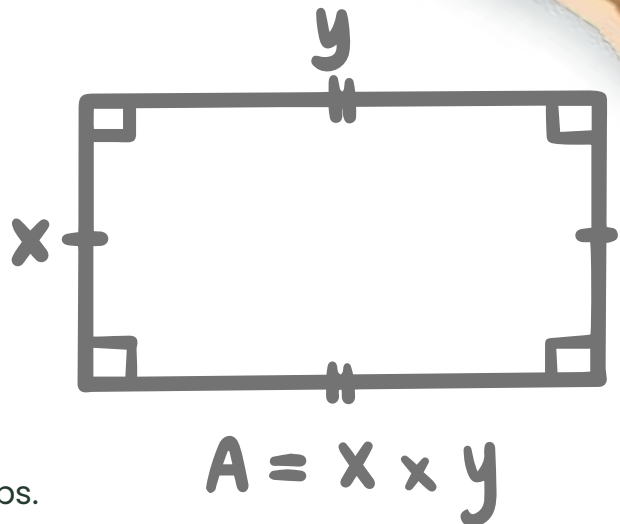
Background and objectives

- Understand what a herbaceous plant is
- Identify the grassy areas of our yard
- Mark the grassy areas of our yard
- Create a digital herbarium with the herbs found

Resources

- Explanatory sheet herbaceous plants (2.1.1)
- Biodiversity map (2.1.4)
- Surface calculation sheet (2.1.5)
- Mobile/Tablet to take photos and recognize plants (*Pl@ntNet*)
- Plant identification guide (2.1.2)
- Herbarium template (2.1.3)
- Activity sheet (2.1.6)

The concept of surface calculation is introduced through a hands-on activity to make it easier to understand. This method allows students to physically interact with the materials, helping them better visualize and understand mathematical concepts.



Instructions:

- 1) Have a map of the yard.
- 2) Go out into the yard and look for herbs.
- 3) Prepare a sign where you find herbs so your friends know too.
- 4) Draw on the map the places where the herbs grow.
- 5) Calculate the surface content of the areas with grass/herbs. (Surface calculation (2.1.5))
- 6) Take pictures of the herbs in your yard.
- 7) Look up herb names using books or an app like *Pl@ntNet* (plantnet.org). Make a herbarium with these photos. (Plant identification guide (2.1.2))
- 8) Close the activity by evaluating the presence of herbs in the yard. (Activity sheet 2.1.6)

ACT 2.2.1 We look for the shrubs in our yard

Difficulty 1

Group size: 1-15 people
Duration: 1 hour
Difficulty: 1

Objectives

- Understand what a bush is
- Identify the areas with bushes in our yard
- Mark the areas with bushes in our yard
- Create a digital herbarium with the shrubs found

Resources

- Explanatory sheet shrub plants (2.2.1)
- Biodiversity map (2.1.4)
- Plant identification guide (2.1.2) (see shrub section)
- Herbarium template (2.1.3)
- Mobile/Tablet to take photos and recognize plants (Pl@ntNet)
- Activity sheet (2.2.2)

This activity is proposed in two different levels of difficulty to meet the various levels of understanding and abilities. This strategy allows each student to work according to their abilities, promoting inclusive and personalized learning (see act. 2.2.1, 2.2.2).



Instructions:

- 1) Go out into your yard and identify where there are shrubs, identify these areas in some way, with a sign or poster for example, so that your classmates also know where the shrubs are.
- 2) Try to find the names of the shrubs in your yard, with the help of field guides or an application like *Pl@ntNet*. You also have at your disposal a mini plant identification guide 2.1.2 (see the shrub section) which you will find in the annex.
- 3) Create a digital herbarium with the located shrubs (remember to take a general photo and more specific photos of the leaves and fruits).
- 4) Close the activity by evaluating the presence of bushes in the yard (Activity sheet 2.2.2).

ACT 2.2.2 We look for the shrubs in our yard

Difficulty 2

Group size: 1-15 people

Duration: 2 hours

Difficulty: 2

Objectives

- Understand what a bush is
- Identify the areas with bushes in our yard
- Mark the areas with bushes in our yard
- Create a digital herbarium with the shrubs found

Resources

- Explanatory sheet shrub plants (2.2.1)
- Biodiversity map (2.1.4)
- Plant identification guide (2.1.2) (see shrub section)
- Herbarium template (2.1.3)
- Mobile/Tablet to take photos and recognize plants (*Pl@ntNet*)
- Activity sheet (2.2.2)

Before starting the activity, you can work with the map in an experiential way to ensure that the students know where they are. Point to a place on the map and ask the students to take you there to confirm that they can correctly identify and place the different places. This practice helps to strengthen localization and spatial orientation skills.



Instructions:

- 1) Go out into your yard and identify where there are shrubs, identify these areas in some way, with a sign or poster for example, so that your classmates also know where the bushes are.
- 2) Try to find out the names of the shrubs in your garden, with the help of field guides or an app like *Pl@ntNet*. You also have at your disposal a mini plant identification guide 2.1.2 (see shrub section) which you will find in the annex.
- 3) Create a digital herbarium with the located shrubs (remember to take a general photo and more specific photos of the leaves and fruits).
- 4) Close the activity by evaluating the presence of shrubs in the yard (Activity sheet 2.2.2).

ACT 2.3.1 Let's look for the trees in our yard

Difficulty 1

Group size: Class group
Duration: 1 hour
Difficulty: 1 identification

Objectives

- Understand what a tree is
- Identify the areas with trees in our yard
- Mark the areas with trees in our yard
- Create a digital herbarium with the trees found

Resources

- Sheet explains tree plants (2.3.1)
- Plant identification guide (2.1.2) see the trees section
- Mobile/Tablet to take photos and recognize plants (*Pl@ntNet*)
- Herbarium template (2.1.3)
- Activity sheet (2.3.2)

This activity is proposed in two different levels of difficulty to meet the various levels of understanding and abilities. This strategy allows each student to work according to their abilities, promoting inclusive and personalized learning (see act. 2.3.1, 2.3.2).



Instructions:

- 1) Go out into your yard and identify where the trees are.
- 2) Try to find out the names of the trees in your yard with the help of field guides or an application like *Pl@ntNet* (plantnet.org). You also have at your disposal a mini plant identification guide 2.1.2 (see the trees section) which you will find in the annex.
- 3) Then identify them with a poster so that your classmates also know where the trees are and what they are called.
- 4) Create a digital herbarium with the located trees (remember to take a general photo and more specific photos of the leaves and fruits).
- 5) Close the activity by evaluating the presence of trees in the yard. (Activity sheet 2.3.2)

ACT 2.3.2 Let's look for the trees in our yard

Difficulty 2

Group size: Class group

Duration: 1 hour

Difficulty: 2

Objectives

- Understand what a tree is
- Identify the areas with trees in our yard
- Mark the areas with trees in our yard
- Create a digital herbarium with the trees found

Resources

- Sheet explains tree plants (2.3.1)
- Plant identification guide (2.1.2) see the trees section
- Mobile/Tablet to take photos and recognize plants (*Pl@ntNet*)
- Herbarium template (2.1.3)
- Activity sheet (2.3.2)

You can complement this activity with the proposals of Program 4 of the trees. These additional activities will enrich the learning experience and help students deepen the concepts worked on.



Instructions:

- 1) Go out into your yard and identify where the trees are.
- 2) Try to find out the names of the trees in your yard with the help of field guides or an app like *Pl@ntNet* (plantnet.org). You also have at your disposal a mini plant identification guide 2.1.2 (see the trees section) which you will find in the annex.
- 3) Then identify them with a poster so that your classmates also know where the trees are and what they are called.
- 4) When you find the places where the trees grow, draw them on your map.
- 5) Close the activity by evaluating the presence of trees in the yard. (Activity sheet 2.3.2)

ACT 2.4.0 What is a bird?

- Introduction -

Group size: Class group

Duration: 1 hour

Difficulty: 1

Objectives

- Understand the main characteristics of birds

Resources

- Animal Images Sheet: Find the Birds. For the recognition of birds (File 2.4.)

Mini practice to understand what a bird is and its main characteristics.



Instructions:

- 1) Prepare your classroom with materials that refer to birds. Ideally have materials that can be approached from different senses: touch feathers or (fake) eggs, see images and videos, and listen to audios.
- 2) Once they have been able to experiment and get a more concrete idea of what a bird is, also test their different senses such as:
 - Put various objects in a bag, including (fake) eggs and feathers and ask them to remove any items that refer to a bird from the bag .
 - Print lots of pictures of birds and other animals, and ask your students to pick out only the bird pictures.

ACT 2.4.1 Are there birds in the yard?

Difficulty 1

Group size: Class group

Duration: 1 hour

Difficulty: 1

Objectives

- Explore using the senses to locate wildlife using reference images to identify birds
- Develop teamwork skills and co-operation to successfully carry out bird counts

Resources

- Level 1 Support Sheets (2.4.1 and 2.4.2)

This activity is proposed in three different levels of difficulty to meet the various levels of understanding and abilities. This strategy allows each student to work according to their abilities, promoting inclusive and personalized learning (see act. 2.4.1, 2.4.2, 2.4.3).



Instructions:

- 1) Choose a 10-minute route in the school yard through the areas of the yard where there is more vegetation.
- 2) Remember to insist that you must be quiet to not scare the birds.
- 3) Try to stop and listen, looking intently for a few seconds at each tree or bush. You may spot birds on the move or hear them sing.
- 4) In this first level of complexity, our objective will be to train our gaze and simply try to see if there is a presence of birds or not.
- 6) Questions for students:
 - Did you see any birds during the tour?
 - Were they all the same?

ACT 2.4.2 Are there birds in the yard?

Difficulty 2

Group size: Class group

Duration: 1 hour

Difficulty: 2

Objectives

- Explore using the senses to locate wildlife and use reference images to identify birds
- Develop teamwork skills and co-operation to successfully carry out bird counts

Resources

- Level 1 Support Sheets (2.4.1 and 2.4.2)
- Level 2 Support Sheets (2.4.3 and 2.4.4)

You can approach this activity in reverse. Begin by introducing a bird through photographs, songs, and other audio-visual resources. Then spend the tour observing whether the participants can identify the bird in its natural environment.



Instructions:

- 1) Choose a 10-minute route in the school yard through the areas of the yard where there is more vegetation. Remember to insist that you must be quiet so to not scare the birds.
- 2) Try to stop and listen, looking carefully for a few seconds at each tree or bush. You may spot birds on the move or hear them sing.
- 3) At this level of complexity, the students, in addition to perceiving whether or not there are birds on the route, will try, using photographs of 2 species, to identify if any of the birds they see match the images. The complexity can be increased by adding more and more species for identification.

Questions for students:

- Did you see any birds during the tour?
- Were they all the same?
- Do you know the name of any of the birds you saw?

ACT 2.4.3 Are there birds in the yard?

Difficulty 3

Group size: Class group

Duration: 1 hour

Difficulty: 3

Objectives

- Explore using the senses to locate wildlife and use reference images to identify birds
- Develop teamwork skills and co-operation to successfully carry out bird counts

Resources

- Level 1 Support Sheets (2.4.1 and 2.4.2)
- Level 2 Support Sheets (2.4.3 and 2.4.4)
- Biodiversity and fauna map (2.4.5)

You can approach this activity in reverse. Begin by introducing a bird through photographs, songs, and other audio-visual resources. Then spend the tour observing whether the participants can identify the bird in its natural environment.



Instructions:

- 1) Choose a 10-minute tour in the school yard through the areas of the yard where there is more vegetation.
- 2) Remember to insist that you must be quiet to not scare the birds.
- 3) Try to stop and listen, looking carefully for a few seconds at each tree or bush. You may spot birds on the move or hear them sing.
- 4) At this level of complexity the students, in addition to perceiving whether or not there are birds, will try using photographs of 2 species to identify if any of the birds they see match the images. The complexity can be increased by adding more and more species for identification.
- 5) Take a picture of the place where you saw birds during the count and mark them on the map.

ACT 2.5.1 Count of pollinators

Difficulty 1

Group size: Class group

Duration: 1 hour

Difficulty: 1

Objectives

- Detect the presence of pollinators in the school yard
- Become familiar with identifying different groups of pollinators using some key characteristics
- Training the eye for nature details

Resources

- Explanatory sheet (2.5.1)

This activity is proposed in two different levels of difficulty to meet the various levels of understanding and abilities. This strategy allows each student to work according to their abilities, promoting inclusive and personalized learning (see act. 2.5.1, 2.5.2).



Instructions:

- 1) Mark two squares: one in an area with herbaceous plants and one on the concrete.
- 2) Invite students to first look at the concrete square and look for any invertebrates/critters. Then repeat the same action, but now in the square where there is vegetation for at least 5 minutes.
- 3) Give them a paper and a pencil, and tell them to make a line every time they see an invertebrate.

Questions for students:

- Did you find any invertebrates? Compare the pieces of paper in the square with the vegetation and the concrete square.
- Are there more invertebrates in one square than the other?
- If so, which one has more invertebrates?
- Do you have any idea why there are more invertebrates in one square than the other?

ACT 2.5.2 Count of pollinators

Difficulty 2

Group size: Class group

Duration: 1 hour

Difficulty: 2

Objectives

- Detect the presence of pollinators in the school yard
- Become familiar with identifying different groups of pollinators using some key characteristics
- Training the eye for nature details

Resources

- Explanatory sheet (2.5.1)
- Insect identification guide (2.5.2)

Integrate learning about pollinators into the curriculum with gardening projects and hands-on observation activities. This will help children understand their ecological importance and connect with nature.



Instructions:

- 1) Mark a square of 5 m² in an area with herbaceous plants.
- 2) Place your group around the square and have each person look at one part for 5 minutes.
- 3) Give them a paper and a pencil, and tell them to make a mark every time they see an invertebrate.
- 4) When you see an invertebrate, try to gently pick it up and put it in a jar with a magnifying glass for the students to observe.
- 5) With the help of the guide we provide you, try to identify which family each invertebrate you capture belongs to (remember to **observe it with great respect and return it to its habitat** with delicacy). Never catch a butterfly!

ACT 2.6 Count of invertebrates

Difficulty 1

Group size: Class group

Duration: 1 hour

Difficulty: 1

Objectives

- Detect the presence of other invertebrates in the school yard
- Familiarize yourself with the identification of different groups of invertebrates using some key features
- Training the eye for nature details

Resources

- Explanatory sheet (2.6.1)

If a child is afraid to touch or observe an invertebrate allow them to do it from a distance. If they agree, gradually move closer as they feel more comfortable.



Instructions:

- 1) Mark a square of 1 m² in an area with herbaceous plants.
- 2) Place your group around the square and have each person look at one part for 5 minutes.
- 3) Give them a paper and a pencil and tell them to make a mark every time they see an invertebrate.
- 4) When you see an invertebrate, try to gently pick it up and put it in a jar with a magnifying glass for the students to observe and take a picture of.
- 5) With the help of the guide we provide you, try to identify which family each invertebrate you capture belongs to (remember to **observe it with great respect and return it to its habitat** with delicacy).
- 6) Work on the difference between insects and other invertebrates.

Program 3: The Trees



The trees of the Mediterranean region are guardians of nature, with a vital role in the ecosystem. Natives such as olive, white pine and oak support wildlife, stabilize soil and store carbon. Non-native species, such as eucalyptus, remind us of the importance of understanding their impacts. Identifying and appreciating these species inspires us to protect biodiversity for future generations.

Key concepts for teachers

The role of trees in ecosystems

Trees are fundamental to the health and functioning of ecosystems. They provide a wide range of benefits, both for the environment and for human society. From its role in maintaining biodiversity, to its contributions to climate regulation and human well-being. Trees play a vital role in shaping the world around us.



Trees are essential to the structure and function of ecosystems. They are the basis of various habitats and support a wide range of plant and animal species. They act as carbon dioxide reservoirs, absorbing carbon dioxide from the atmosphere and storing it in their biomass, thereby helping to mitigate climate change.



In addition, trees play a crucial role in the regulation of water cycles by absorbing water and releasing it through transpiration in their leaves. This process helps reduce soil erosion, mitigate flooding, and maintain stable hydrological systems. On top of that, trees provide habitats for a wide variety of species, including birds, mammals, insects and fungi, supporting biodiversity and ecosystem resilience.

Key concepts for teachers

Identifying different tree species in the Mediterranean is essential to understand their ecological roles and appreciate their diversity. The region is home to a variety of native trees, including holm oak *Quercus ilex*, cork oak *Quercus suber*, Aleppo pine *Pinus halepensis* and stone pine *Pinus pinea*. **Holm oak** is known for its resistance to drought and poor soils, providing crucial habitat and soil stabilization. **Cork oak** is an economically important species for cork production and helps prevent soil erosion. The **Aleppo pine** is a species well adapted to dry and rocky environments, being vital for reforestation and the maintenance of the soil structure. The **stone pine**, famous for its umbrella-shaped crown and edible pine nuts, provides shade and food resources.

Non-native species such as eucalyptus have also been planted for their rapid growth and wood production, although some species can become invasive.

The **banana** is appreciated for its decorative appeal and its shade, usually it is common to find in urban areas and on riverbanks. The **carob**, known for its edible pods, is drought-resistant and supports agroforestry systems by enriching the soil and provides food and fodder for livestock. These trees, both native and non-native, play a crucial role in Mediterranean ecosystems, providing habitats for wildlife, storing carbon and stabilizing soil. Understanding and appreciating the diversity of these trees is vital to conservation efforts and sustainable land management, helping to protect and restore the natural landscapes essential to the region's environmental health and human well-being.



Key concepts for teachers

The life cycle of a tree

The life cycle of a tree consists of several stages. From germination, through maturity and, finally, senescence. It begins with the germination of a seed, which requires the right environmental conditions, such as light, moisture and temperature, to sprout and establish its roots.

As the tree grows it develops the trunk, branches and foliage, expanding its canopy and competing for resources with neighbouring trees. Throughout its life a tree goes through processes such as photosynthesis, respiration and absorption of nutrients to maintain its growth and metabolism.

During maturity, a tree produces flowers and seeds, which are dispersed by wind, water or animals to spread to new areas. As a tree ages, it may experience natural senescence, decreasing its vitality and eventually succumbing to disease, damage, or other environmental effects.

However, the life cycle of a tree does not end with its death. Dead and decaying trees provide habitat and vital resources for numerous organisms such as fungi, insects, birds and mammals. They contribute to the nutrient cycle, soil formation and ecosystem dynamics, maintaining the life cycle of forests.



ACT 3.1 Why are trees important?

Group size: Class group

Duration: 1 hour

Difficulty: 1

Objectives

- Understand the importance of trees

Resources

- No specific resources are required

Mini practice to reflect
on trees.



Instructions:

Spend some time brainstorming for ideas why trees are important.

- 1) Draw a poster with all the reasons why you think trees are important.
- 2) Collect photos, show them to the students and discuss them together.
- 3) Ask questions like:
 - Why do we need trees?
 - How many things around our home/classroom are made of trees?
 - Are there other living things that need trees? Why?

An alternative is to ask the children to gather in a basket products made of wood such as blocks, paper, puzzles, etc. that they can find in the classroom.

ACT 3.2 Which tree is that?

Group size: Class group

Duration: 1 hour

Difficulty: 1

Objectives

- Identify nearby trees

Resources

- Plant identification guide (2.1.2) see the trees section
- Mobile/Tablet to take photos and recognize plants (*Pl@ntNet*)

Knowing the trees helps us protect them. When we learn about their species and their role in ecosystems we feel more committed to preserving these natural treasures.



Instructions:

- 1) Organize an outing with the children to observe the trees in the neighbourhood or school grounds. Which species of trees are there?
- 2) Use web guides or a book guide to identify the different tree species. If the leaves have not yet sprouted, be sure to observe the branches and bark. If you have enough time, count how many species of trees you find and determine which is the most abundant.

Key concepts for teachers

The parts of a tree: the trunk

A tree's trunk transports nutrients and water from its roots to its branches and leaves. It also supports the tree! Some trees have smooth bark and others have rough, thick pieces of bark. The bark protects the tree from extreme temperatures, insect pests and diseases that could damage or kill the tree. So bark is like a knight's armor.

Have you ever seen a tree stump or looked at the end of a log? If so, you may remember seeing many rings or layers within the trunk. These layers are created by the "cambium" (a thin layer between the wood and the bark of each tree), where new cells are made. Tree trunks develop a new layer every year.

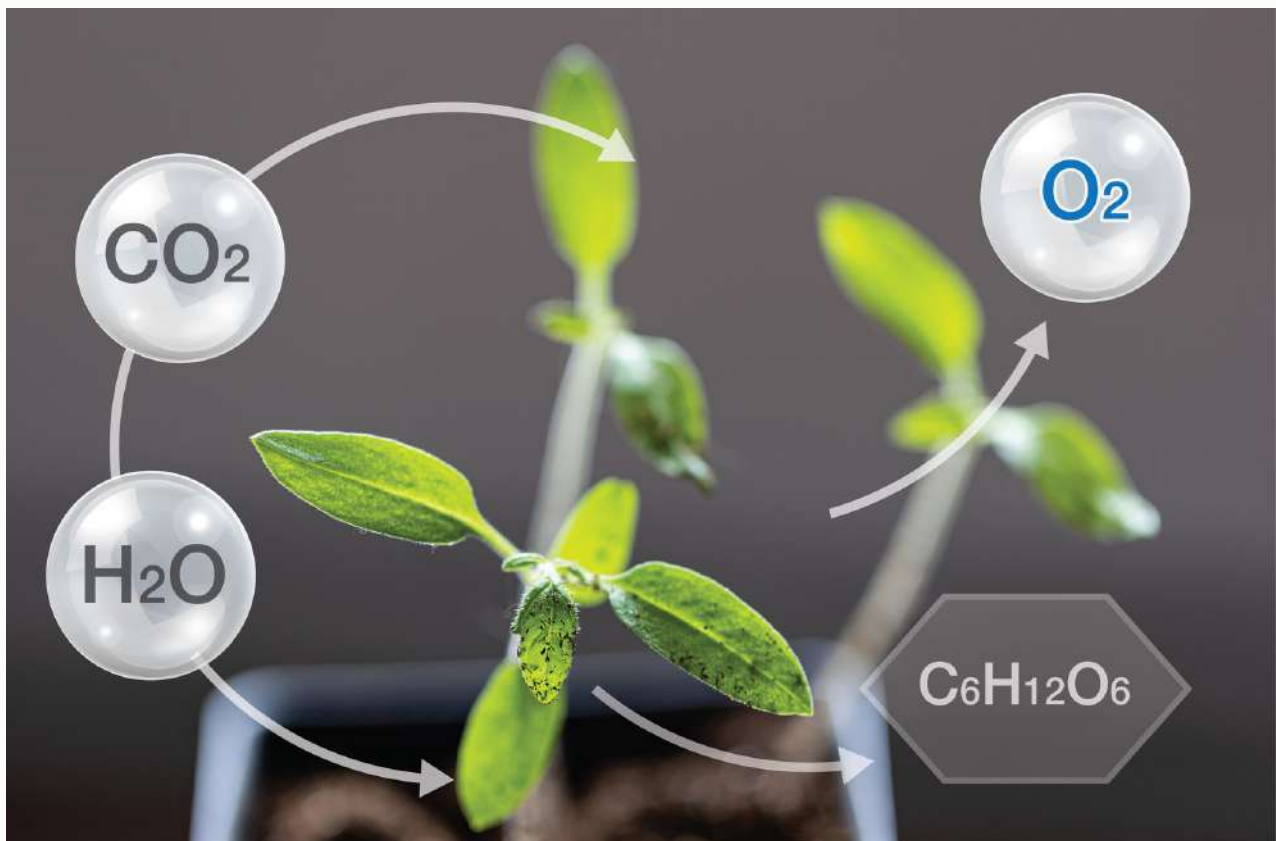
The reason you can see the layers inside a tree trunk is because when they grow in the spring, they do so with a light colour. But in the summer the outside of the new layer becomes darker. Then, in the following spring a new layer will begin to grow which will be light in colour again. The wider a ring, the more the tree will grow that year. This usually means that the tree has received a lot of rain. Narrow rings usually mean that the tree has had trouble growing or that it didn't get as much water or sunlight as it needed.



Key concepts for teachers

The parts of a tree: the leaves

A leaf is a plant organ in contact with the outside of the tree. Their main functions are photosynthesis and gas exchange. A leaf is often flat, so it absorbs light better, and thin so sunlight can reach the chloroplasts of the cells. Most leaves have stomata, which open and close. They regulate the exchange of carbon dioxide, oxygen and water vapour with the atmosphere.



Key concepts for teachers

The parts of a tree: the roots

The roots usually grow underground. They anchor the plant to the ground, absorb water and dissolved minerals, which are transported to the stem and store reserve nutrients. There are two main types: taproots and fibrous roots. A **taproot** is long, thick and grows downward. Secondary branches/roots grow laterally from its sides. In some plants, such as carrots and turnips, the main root serves as a storage organ and swells with nutrients. **Fibrous roots** are made of a mass of roots that have approximately the same diameter. The fibrous root system does not arise as branches from the primary root but consists of many branched roots emerging from the base of the stem. Plants have a fibrous root system, trees have taproots.

Roots grow from their ends. The tip of the root is covered by a thimble-shaped protective root layer. Above the tip, on the outside the root hairs take in water and nutrients. These move through a layer called the cortex on their way to the centre. The bark also stores the plant's extra food. In the centre of the root there are

tissues that transport water and food between the roots and the rest of the plant. The roots are not always underground. When they arise from the stem, and pass a certain distance from the air before reaching the ground or remain suspended in the air, they are called aerial. Cobs (maize) are a clear example. This type of root helps support the plant.

Roots are an integral part of the plant and damage to them will harm or kill the plant. If the roots or their branches are cut, the plant may not be able to get enough nutrients. Roots that dry out will probably never be able to absorb water again. If the soil is too compact, the roots will not be able to grow.



ACT 3.3 *The rings of a tree*

Group size: Class group

Duration: 1 hour

Difficulty: 1

Objectives

- Knowing how to read the information that a log gives us

Resources

- Paper and pencil for students

Knowing the trees helps us protect them. When we learn about their species and their role in the ecosystem, we feel more committed to preserving these natural treasures.



Instructions:

1) Bark Rubs

Place a piece of paper against the trunk of a tree and use a coloured pencil to colour gently on the paper. If you have the possibility, have the students do this activity on different types of bark and ask them to compare the drawings.

2) Counting or drawing tree rings

Go outside, find a tree stump and look carefully at its rings. Together with the students try counting the circles or ask them to draw what they see.

ACT 3.4 Colours and shapes of leaves

Group size: Class group

Duration: 1 hour

Difficulty: 1

Objectives

- Identify and classify leaves
- Develop sensory perception

Resources

- Leaf identification guides: They can be web guides or library books
- Colour packs: So that children can compare the colours of the leaves
- Geometric shapes: Made of cardboard or other materials, to compare with leaf shapes

Carrying out this activity can be very beneficial, as exploring nature can improve sensory perception. In addition, identifying and classifying leaves encourages cognitive and observational skills.



Instructions:

- 1) If you have trees in the yard, collect some leaves with the children and bring them to class. Try to collect different types of leaves (shapes, colours, etc.). You can also hide leaves in the playground or in the school classroom and have students find them.
- 2) Give the children leaves and a pack of colours. Ask them to find the colour in the pack that matches each leaf the most. Also bring geometric shapes (e.g. out of cardboard) and ask them to choose the shape that resembles each leaf the most.
- 3) Now let's focus on texture, have the children touch the leaves (only if they are comfortable with it). How does the leaf feel? Is it soft and flexible, or dry and crumbly? How does it sound when played? If you still have time, children can examine their leaf to determine whether it is simple (a single leaf) or compound (made up of multiple smaller leaves).

ACT 3.5 Leaf rubbing

Group size: Class group

Duration: 1 hour

Difficulty: 1

Objectives

- Recognize and identify different types of leaves
- Allow participants to explore leaf textures and shapes
- Improve fine motor skills

Resources

- Fresh leaves (with veins well marked)
- Drawing paper or regular paper (avoid thick cardboard)
- Painter's tape to fix the paper
- Colored pencils, colored waxes or charcoal (without wrapping so you can rub sideways)

Carrying out this activity can be very beneficial, as exploring nature can improve sensory perception. In addition, identifying and classifying leaves encourages cognitive and observational skills.



Instructions:

- 1) Place the fresh leaves with the veins facing up under the drawing paper.
- 2) Tape the corners of the paper with painter's tape to prevent the leaves from sliding.
- 3) Unwrap a crayon and rub it sideways on the paper to reveal the leaf shapes underneath.

ACT 3.6 Sticky Leaf Tree

Group size: Class group

Duration: 1 hour

Difficulty: 1

Objectives

- Allow participants to create a unique tree using the collected leaves
- Promote collaboration between participants as they create the tree together
- Improve fine motor skills by handling leaves and sticky paper

Resources

- Different types of leaves collected outside
- Contact paper (with sticky side)
- Adhesive tape to hold the paper on the wall and to stick the leaves
- Markers or pencils to draw the outline of the tree

This activity encourages creativity and connection with nature while promoting teamwork and developing fine motor skills.



Instructions:

- 1) Collect different types of leaves with the participants.
- 2) Draw the outline of a tree on a long piece of contact paper, making sure the sticky side is facing up, or use normal paper.
- 3) Use masking tape to attach the paper to the wall.
- 4) Invite the participants to place the collected leaves on the sticky paper to create their tree or to stick the leaves on a normal paper by using tape.

ACT 3.7 Crown of leaves

Group size: Class group

Duration: 1 hour

Difficulty: 1

Objectives

- Improve fine motor skills through handling of leaves and cardboard
- Encourage self-expression and confidence in wearing your own creation

Resources

- Leaves of different shapes and colours collected outside
- Piece of cardboard that fits around the head of the kid
- Adhesive tape or staples to connect the cardboard
- Glue or adhesive tape to attach the leaves to the cardboard

This activity encourages creativity and connection with nature while promoting teamwork and developing fine motor skills.



Instructions:

- 1) Collect leaves of different shapes and colours with the participants.
- 2) Take a piece of cardboard and fit it around the kids head, connecting it with adhesive tape or staples to make a crown.
- 3) Glue the collected leaves around the cardboard to create the leaf crown.

ACT 3.8 Bubble leaves!

Group size: Class group

Duration: 1 hour

Difficulty: 1

Objectives

- Help participants understand the process of photosynthesis and how plants produce oxygen
- Encourage the observation and analysis of natural phenomena
- Connect participants with nature and biological processes.
- Stimulate curiosity and interest in science through experimentation

Resources

- Fresh leaf just extracted from a plant
- bowl with water
- Small stone to dip the blade
- Place with direct sunlight (preferably outside)
- Magnifying glass (optional, to see the bubbles more clearly)

This activity allows participants to observe first-hand the fascinating process of photosynthesis, encouraging their scientific curiosity.



Instructions:

- 1) Make sure you have a fresh leaf freshly pulled from a plant.
- 2) Place the leaf in a bowl of water and place a small stone on top so that it is completely submerged.
- 3) Place the bowl in a place with direct sunlight.
- 4) After a few hours, inspect the leaf and note the small bubbles that form around it and on the edges of the bowl. Use a magnifying glass to see the bubbles more clearly, if necessary.

ACT 3.9 Irrigation experiment

Group size: Class group

Duration: 1 hour

Difficulty: 1

Objectives

- Help participants understand how roots absorb water for the plant
- Encourage the observation and analysis of different irrigation techniques
- Connect participants with the biological processes of plants
- Stimulate curiosity and interest in science through experimentation

Resources

- At least two plants in containers (of the same type and size)
- Optional: Bean seeds in small pots of soil or in a glass with wet paper towels
- Plastic film to cover one of the pots
- Watering can or water bottle
- Spray bottle to spray the leaves
- Place with direct sunlight

This activity allows participants to observe first-hand the fascinating process of photosynthesis, encouraging their scientific curiosity.



Instructions:

- 1) Bring at least two plants for the class in containers of the same type and size.
- 2) Make sure that the soil in the containers is equally moist.
- 3) Cover the top of one of the pots around the stem with a secure layer of plastic wrap so the soil doesn't get wet.
- 4) During the following weeks, water the soil of the plant without plastic with a watering can or a water bottle.
- 5) Water the plant with the plastic that covers the ground by spraying the leaves directly with a spray bottle.
- 6) After a couple of weeks, compare the two plants with the children and ask them if the experiment has shown that plants absorb water through their roots.

ACT 3.10 How hot!

Group size: Class group

Duration: 1 hour

Difficulty: 1

Objectives

- Help participants understand how urban trees can cool the environment
- Encourage the observation and analysis of temperatures in different environments
- Promote awareness of the importance of trees and urban vegetation
- Stimulate reflection on how the presence of urban greenery can improve the quality of life in cities

Resources

- Thermometers to measure soil temperature
- Areas with a lot of concrete surface and little vegetation
- Areas with vegetation, preferably with trees
- Optional: stopwatch to measure the time the participants stay in each place

Mini practice to reflect on trees.



Instructions:

- 1) Choose areas with a lot of concrete surface and little vegetation, as well as areas with vegetation (even a single tree is enough).
- 2) Ask the participants to place a thermometer on the ground in the chosen areas and record the temperature detected.
- 3) Compare the temperatures together with the participants and reflect on the difference.
- 4) Optional: If you want to avoid using the thermometer, ask the participants to stand for 30 seconds in a place without vegetation and then for 30 seconds under a tree, and notice the difference in temperature.

Program 4: Birds



Birds are essential to our environment not only for their beauty, but also for the vital services they provide to ecosystems. Birdwatching is a rewarding hobby that connects people with nature, promoting well-being and environmental awareness. By observing the most common bird species and their habitats, people can learn about the various roles these animals play in ecosystems.

Key concepts for teachers

Introduction to bird watching

Birds are fascinating creatures found all over the world, from frozen tundras to tropical rainforests and play a crucial role in ecosystems. Birds are not only a joy to observe; they are essential to the health of our environment, acting as pollinators, seed distributors and insect predators. Their behaviours and patterns provide valuable information about the state of the nature surrounding us.

Birdwatching is a popular and rewarding hobby that allows people to observe and study birds in their natural habitats. It can be enjoyed by people of all ages, requiring little more than good eyesight and binoculars. Bird watching can take place anywhere from your own garden to a local park or more remote nature reserves. This activity not only encourages a deeper connection with nature, but also promotes physical and mental well-being.

Birdwatching helps people develop patience and observation skills and encourages spending time outdoors. By participating in birdwatching, individuals can also contribute to citizen science projects helping researchers collect valuable data about bird populations and their behaviours. This collective effort helps to conserve and protect bird species and their habitats.



Key concepts for teachers

Common species and their habitats

A wide variety of bird species can be found in the Mediterranean region, each adapted to specific habitats.

Shorebirds: The Mediterranean coast is home to several seabirds such as gulls, herons and cormorants. These birds are often seen foraging along shorelines, fishing in shallow water and nesting on coastal cliffs or beaches. The **yellow-legged gull** and the **cattle egret** are two examples of birds that are commonly found in these areas.



Forest birds: Mediterranean forests are rich in bird species. The **common hoopoe**, known for its striking crest and distinctive song, is a common sight. Other forest birds include various types of warblers and the **European turtle-dove**. These birds thrive in the dense foliage of trees and shrubs, where they find food and shelter.



Urban birds: Cities and towns in the Mediterranean region are also home to bird populations. Doves, sparrows and swifts are well adapted to urban environments. The common swift, for example, is often seen flying fast in search of insects. These birds make their nests in buildings and other structures, demonstrating a remarkable adaptability to urbanised landscapes.

Key concepts for teachers

Wetland birds: Wetlands, such as marshes and lagoons, are vital habitats for many species of birds. The **greater flamingo** and the **grey heron** are notable examples. These areas provide rich feeding grounds and are essential for the reproduction and migration of numerous bird species.

Understanding the habitats and behaviours of these birds enhances the birdwatching experience by providing insight into the ecological roles they play and the challenges they face.



The importance of birds in nature

The term "canary in the coal mine" is often used to describe the role of birds as indicators. In the past, miners brought canaries into coal mines because these birds were more sensitive to dangerous gases like carbon monoxide. If the canary showed signs of distress or died, this indicated a threat to the miners, allowing them to take preventive measures. Similarly, today birds serve as early warning signals of environmental threats.

Birds play a crucial role in maintaining the health and balance of ecosystems. Here are some key reasons why birds are crucial for nature:

Key concepts for teachers



Environmental Indicators: Birds are excellent indicators of environmental health. Their presence or absence can signal changes in the environment such as variations in climate, pollution levels and habitat quality. For example, a decline in certain bird species may indicate problems such as habitat destruction or environmental pollution.



Bioaccumulation of pollutants: Birds can be particularly sensitive to environmental pollutants. Their behaviour, reproductive success and population trends can indicate the presence and effects of pollutants in the environment. Birds can accumulate pollutants from their environment in their tissues. The presence of contaminants in birds may indicate environmental pollution.



Ecosystem services: Birds contribute to essential ecosystem services. They pollinate plants, distribute seeds, control insect populations and help break down organic matter. For example, birds such as the **common chiffchaff** can play a role in pollination, while birds of prey such as owls and falcons help manage rodent populations.



Reflectors of biodiversity: The diversity of bird species within an ecosystem reflects the general biodiversity of that environment. A healthy and diverse bird population often indicates a rich and balanced ecosystem supporting a wide range of plant and animal life.



Habitat specialists: Some bird species are highly specialized and depend on specific habitats or food sources. Their presence can highlight the health of these particular ecosystems. For example, the presence of the **Iberian magpie** in Mediterranean oak forests indicates the health of these unique habitats.



Migratory patterns: Many species of birds migrate long distances between breeding and wintering areas, influenced by temperature and food availability. Changes in these patterns may indicate variations in climate and habitat. Monitoring them helps to understand and address the impacts of climate change and habitat loss.



Public engagement and conservation: Birds are charismatic and capture the public's imagination which makes them effective ambassadors for conservation. Birdwatching is a popular activity that can engage the public in environmental issues.

ACT 4.1 Life cycle of birds

Group size: 12 people

Duration: 1 hour

Difficulty: 1

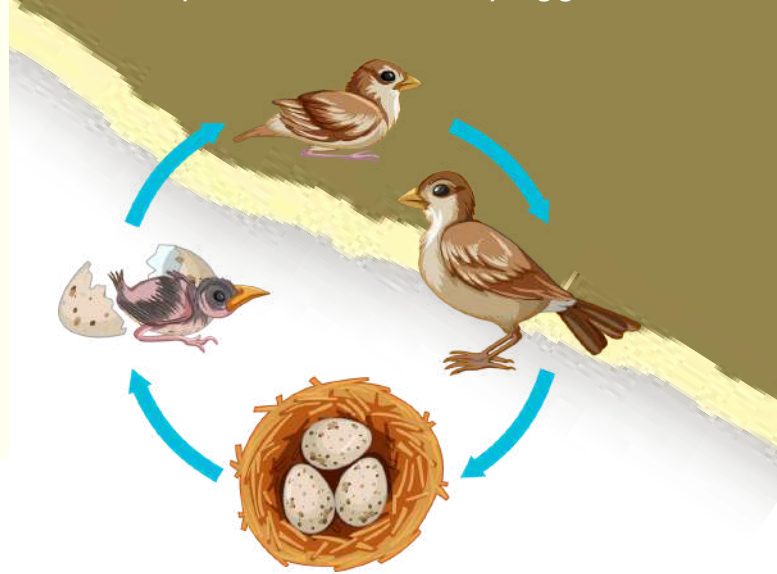
Objectives

- Know the life cycle of birds
- Learn to differentiate birds from other animals

Resources

- Life cycle puzzle (Worksheet 4.1.1)
- Pencil, scissors
- A4 cardboard (optional), paints (optional)
- Images of birds in different stages of life
- Video "The miracle of hatching"

Around 10,000 species of birds live around the world. They are distinguished from other animals by the presence of feathers. Some can fly and all of them lay eggs.



Instructions:

- Form 4 groups of 3-4 children each.
- Print the bird puzzle, making as many copies as there are groups and glue the sheets to an A4 cardboard for greater durability, then cut them out.
- Distribute the individual parts of the puzzle to each group.
- Invite the teams to place the 5 parts of the puzzle in the correct order and check that they have completed it correctly.
- Ask about their favourite part of the bird's life cycle and have them explain their answer.
- Emphasise the basic needs of a bird at each stage of its life cycle.
- Talk about birds and how they come to life. Ask if they know what they look like, how their life begins, what they need while still inside the egg, and how they change as they grow. Show examples of illustrations on the board.
- Explain that birds lay eggs, that chicks are born without feathers, and that they get them as they grow.
- Show the video "The Miracle of Hatching | Attenborough's Wonder of Eggs" from BBC Earth on YouTube.

ACT 4.2 Memory of birds

Group size: 12 people

Duration: 1 hour

Difficulty: 1

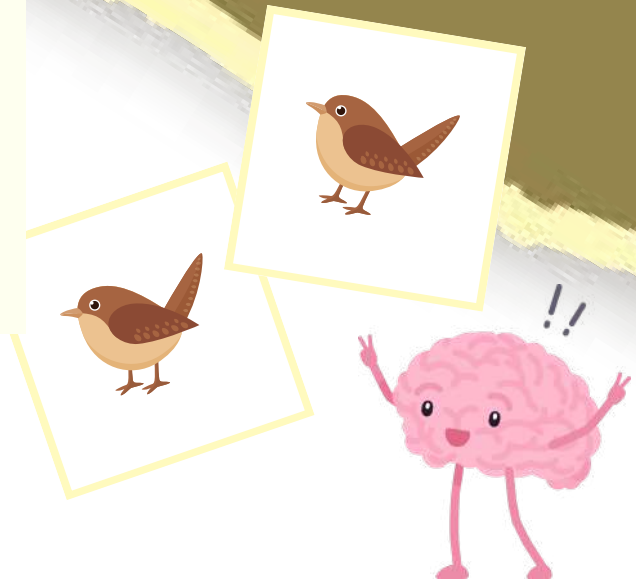
Objectives

- Learn to identify the most common bird species in the area.
- Sharpen memory and concentration.

Resources

- Cardboard
- Images of birds (sheet 2.4.3)
- scissors
- glue

It is an interactive game that consists of finding pairs of cards, in this case, of the most representative birds in the environment.



Instructions:

- Print two copies of images of the birds closest to the school at the same size (you can use the support sheets from activities 2.4.3 and 2.4.4). Use the frames to size the images equally.
- Cut out the images and glue them onto the cardboard. Then, cut along the edges of the bird images.
- All the cards (duplicates) should be placed face down.
- Two cards will be turned over in succession per turn, memorizing their locations.
- When two identical cards that form a pair are found, the participant takes them. The game will end when all pairs have been found.
- Ask the participants if they know the bird species that appear on the cards.

ACT 4.3 *What should we do when we find a chick?*

Group size: Class group

Duration: 1 hour

Difficulty: 1

Objectives

- Reflect on the impact our actions have on nature

Resources

- Computer with projector or electronic tablet to watch the video
- Wrapping paper to draw the infographic
- Markers to draw all the stages with the children

This activity teaches children the importance of not interfering with nature when they find an orphan chick. They learn to respect wildlife and value conservation by letting the young birds learn to fly on their own.



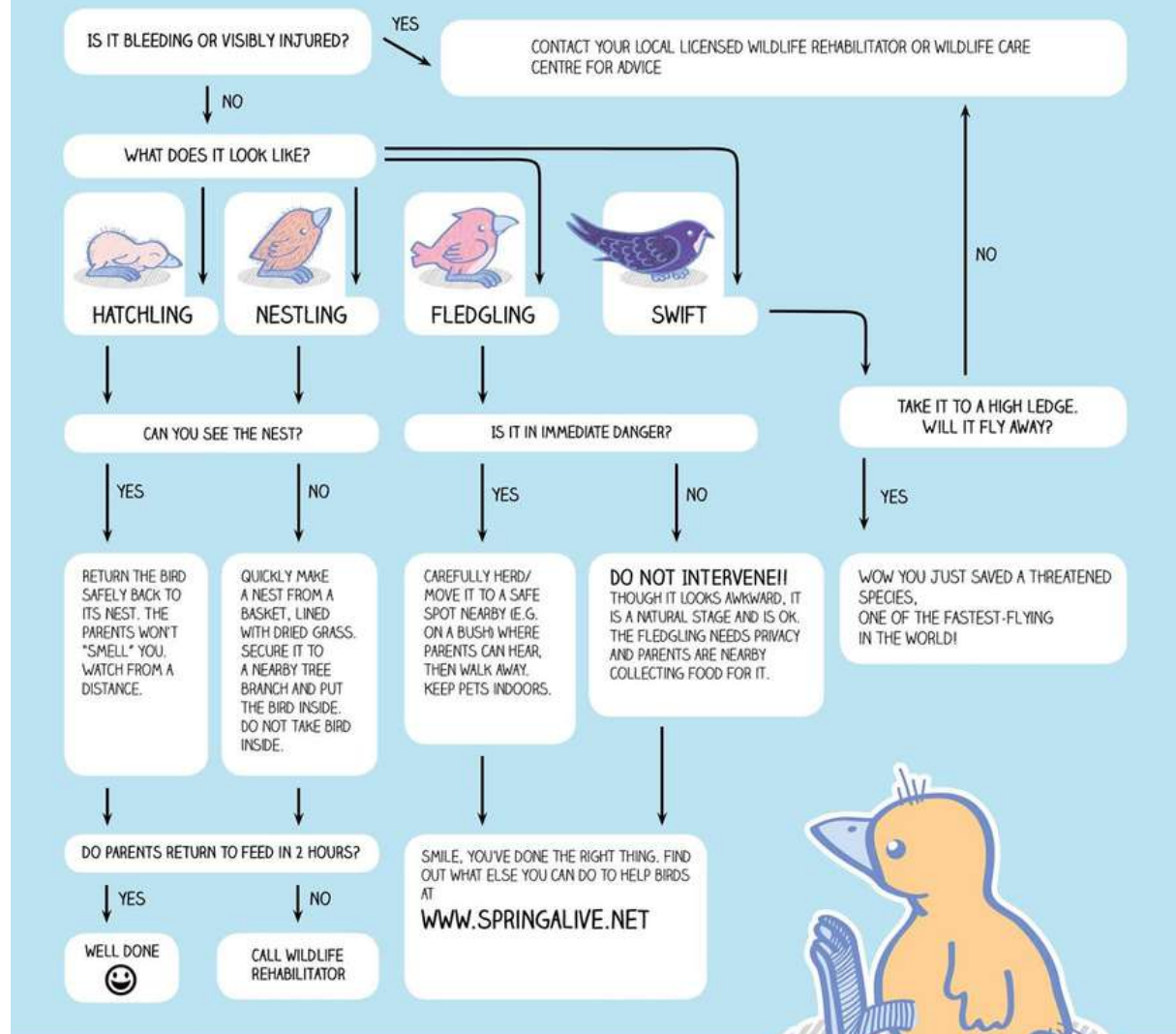
Surely at some point we have found a chick on the street, in the garden, on the balcony etc., but what should we do then? Often the best help is to do nothing! We are sending you a video for you to watch with the students and an infographic to explain to the children how we should proceed when this happens to us.

Instructions:

1. Watch the video and explain to the children what to do when you meet a chick in the street.
2. Build an infographic with the children to make sure they have understood it well and share it with the educational community.

I FOUND A BABY BIRD! WHAT SHOULD I DO?

IT IS ALONE, HELPLESS, SMALL, COLD, CLUMSY AND FLUFFY...
IT IS HARD TO RESIST THE URGE TO RESCUE.
BUT WHAT WE REALLY SHOULD DO IN SUCH SITUATION?



The Mitsubishi Corporation Fund for Europe and Africa

www.springalive.net

Hatchling: The chick comes out of the egg and has no feathers and is totally dependent on its parents.

Nestling: Chicks already have small feathers, they are still totally dependent on their parents. They can't fly.

Fledgling: The birds already have adult-like feathers, but they don't fly well, they take very short flights and bounce around on the ground. The parents are still feeding them. It would be the equivalent of a "teenager" in bird.

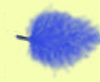
Key concepts for teachers

The different feathers of birds

Feathers are a complex body coverage unique to birds and can be very different depending on their function.



- Down feathers have no central shaft and are soft and fluffy. They are small and have the function of insulating the skin. They are the first layer of feathers on a bird's entire body, laying under the cover feathers. It is the first plumage that hatchlings have.
- Contour feathers cover the body of the bird and the upper part of the wings. They have a central axis, are small, rounded, quite soft and can adapt to the curves of the body or wing.
- Flight feathers have a strong central axis and are very firm. They are stiff and asymmetrical enough to hold their shape as the bird moves through the air.
- Rectrices are the tail feathers used to direct the flight. They are big and stiff.



Most birds moult and generate a new set of feathers each year. Feathers moult symmetrically so you may notice a flying bird with a feather missing from both wings.

Feather patterns and colours create camouflage or a special colouring. Some birds generate a new set of feathers each spring for breeding plumage that attracts mates.

Key concepts for teachers

Some types of beaks

The beak of tits is short with a blunt tip, like the **blue tit**. It is good for small seeds, berries and insects.



Raptors have strong hooked beaks for tearing flesh, like the **common buzzard**.



Seed-eating birds have a short, thick, cone-shaped bill to crack nuts and seeds, like the **European goldfinch**.



Birds that chase and hunt their prey in water have long, straight, broad beaks for stabbing or catching, like the **grey heron**.



Insect-eating birds have slender pincer-like beaks that allow them to grab small insects from leaves or flowers, like the **common chiffchaff**.



ACT 4.4 The feathers of the birds

Group size: Class group

Duration: 1 hour

Difficulty: 1

Objectives

- Learn the function of feathers for birds
- Enhance knowledge of the different bird species
- Sharpen the sense of touch

Resources

- Feathers
- Magnifying glasses
- Cardboard, paper
- Pencils
- Water
- Watercolours or other painting colour

Be on the lookout for feathers during your outings, whether during outings, in the school ground or the children individually with their families. If you find any, collect them.



Instructions:

Collect different feathers before the activity. Divide the students into small groups and distribute the material to do the activity.

1. Notice the colours, patterns and designs of the feathers. Use multiple feathers.
2. Examine bird feathers with a magnifying glass.
3. Try to separate them and comb them with a pencil as if it were the beak.
4. Children can blow the feathers to try to keep them in the air. Discuss the results and the children's observations (keep a journal of your observations or create a notebook).
5. Let the children sprinkle some water on the feathers. What is happening? (feathers repel water)
6. Talk about wingspans, from hummingbirds to the largest birds.

ACT 4.5 The beaks of birds

Group size: 12 people

Duration: 1 hour

Difficulty: 1

Objectives

- Relate the type of food to the shape of the beaks
- Learn about the different beaks of birds

Resources

- Tweezers
- Toothpicks
- Wooden spoons
- Beans, seeds, rice, nuts, water, peanuts, etc.

All birds have a keratin beak instead of teeth.

It's light and strong and they use it to eat, clean their wings, defend themselves, build their nest and attract mates. The shape of a bird's beak adapts to the type of food it eats.



Instructions:

1. Do research on the different beaks of birds

- Provide tweezers, toothpicks, etc. to use them as beaks.
- Provide various types of "food" such as beans, seeds, rice, raisins, etc. to simulate food types for different bird species.
- Children try to collect what a bird would eat using one of these instruments as a beak.

2. Children sort and classify different types of seeds and bird food by size. They then discuss which utensils are needed for each type of food.

3. Eat like the birds: fruit and seed buffet. With this activity, this day snack time could include pumpkin seeds, fruit, berries, etc.

4. Reflection:

- Where can each of the species find their food?
- What will happen if the availability of food for a species is reduced?

Key concepts for teachers

The song of the birds

Birds communicate by making a variety of sounds and songs. They warn each other, defend their territories, give information about food and attract a mate with their songs.

There are two basic categories of sounds. The longer, more elaborate songs are used to attract potential mates or defend territory, while the shorter calls are used for identification and to share information about food or predators.



Alan Weaver



Alan Weaver

Some birds imitate the songs of other birds or human sounds like alarms or whistles, such as the **common starling**.

Woodpeckers too can sing or call, but they also communicate by tapping or piercing trees or other surfaces. An example is the **great spotted woodpecker**.

Birds are most active in the early morning hours and in spring and autumn.

ACT 4.6 The songs of the birds

Group size: 12 people

Duration: 1 hour

Difficulty: 1

Objectives

- Learn to identify different species of birds by their song using the SEO/BirdLife and Birdnet applications.

Resources

- Mobile devices (phones or tablets) with the SEO/BirdLife and Birdnet apps installed
- Headphones (optional, to better hear the songs)
- Notebooks and pencils to take notes

This activity teaches children the importance of not interfering with nature when they find an orphan chick. They learn to respect wildlife and value conservation by letting the young birds learn to fly on their own.



Instructions:

- 1) Explain to the participants how the SEO/BirdLife and Birdnet applications work. Show them how to record a bird's song and how to use apps to identify it.
- 2) Go outside with your students to an area with vegetation (e.g. a park, forest or garden) and where there is a good presence of birds.
- 3) Divide the participants into small groups and assign each group a mobile device with the applications installed. Each group must listen carefully to the songs of the birds and record them using the applications.
- 4) Once the song is recorded, use the applications to identify the species of the bird. Encourage the participants to take notes on the identified species and the characteristics of their songs.
- 5) Gather all the groups and share the identifications made. Discuss the different species found and their characteristics. Reflect on the importance of biodiversity and the conservation of natural habitats.

Key concepts for teachers

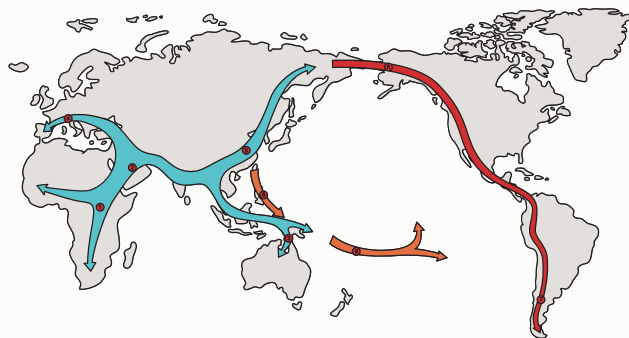
The migration of birds

Migration is the mass movement of birds from their breeding grounds to their wintering grounds (autumn migration) and vice versa, from wintering grounds to breeding grounds (spring migration). The driving force behind migration is the need to ensure favourable climatic and ecological conditions for feeding and reproduction.



Many bird species that nest in northern regions near the Arctic Circle move south during autumn to avoid low temperatures and have more food available. Other tropical birds migrate to temperate climate zones in the spring where they have reduced competition for food and nesting sites.

Different species of birds follow different strategies during their migratory journey. Wild geese form groups and fly in a "V" shape. This formation helps make the journey less exhausting. The first goose in the formation creates a favourable buoyancy condition for the others that follow it. In this way they save up to 15% of the energy they would spend if they made the trip alone or scattered randomly and eventually they will be able to travel for longer. Of course, the goose at the front of the formation gets tired more quickly and for this reason, from time to time, another goose its place. Flying in formation still allows the birds to maintain eye contact, communicate, maintain coordination, avoid conflict, and teach younger individuals the migration route.



Key concepts for teachers

Encourage the children to recall their existing knowledge about bird migration. Use this information to describe concepts such as "What is migration" and/or "Why do birds migrate?".

Use questions like:

Can you name some species of migratory birds? When do they migrate? Where do they come from?

Give examples such as: **Barn swallows** are migratory birds. Have you seen them fly? What time of year did you see them? During winter or early spring?



Barn swallows are not present in Europe in late autumn and early winter. On which continent can they be found during this time of the year? You can use a globe to facilitate the discussion.



Do all birds migrate at the same time and to the same countries?

Give clear examples using different cases such as: Can you see both **barn swallows** and **common cranes** at the same time of year? **Barn swallows** migrate from South Africa to Europe in early spring to build their nests and **common cranes** migrate from northern Europe to southern Europe in late autumn. Birds use flight strategies to conserve energy like the "V" shape while flying to save 70% of energy.

Do you think all birds follow the same migration route? Why?

Simplify the discussion by using a balloon or a map. Focus on areas of water (e.g. the Mediterranean Sea) and ask questions such as: Can a bird like an eagle travel over the sea? What does an eagle need to speed up its journey? Eagles and storks tend to take advantage of thermal updrafts that form over the continent.

Birds consume larger amounts of food than usual before their migratory journey. They can store fat in certain parts of their body that will keep them strong until the first possible resting stop on their journey. During the stand, they stay together to protect themselves from predators.

Do only birds migrate? Do you know if other animals that do the same?

ACT 4.7 The Great Journey of the Geese

Group size: 12 people

Duration: 1 hour

Difficulty: 1

Objectives

- Understand the concept of migration
- Learn the reasons why birds migrate
- Know the different migratory flight strategies
- Encourage cooperation and teamwork

Resources

- Globe or world map
- Explanatory video on the "V" formation of geese (for example, "The Wisdom of Geese" from the University of Bristol)
- Paper and pencil to write down migration stories
- Enough space to simulate the formation flight

Juveniles will simulate the journey of a flock (group) of wild geese on their fascinating migratory journey!



Instructions:

1) Explain what migration is and why birds migrate. Ask questions about migration routes, flight strategies, and other animals that migrate.

2) Build two groups of 5-6, then explain the 'V' formation and the benefits of this strategy and ask them to think of the best way to travel as a group to reach their destination safely.

3) Ask the teams to answer the following helpful questions:

- What should we do before starting our long and tiring journey?
- How can birds increase their fat?
- In what form will we fly so that we don't touch each other but have an aerodynamic shape to fly faster?

Offer the children different shapes: In a line or in the shape of a "V"? Mention that the birds use the air flow created by the birds in front when flying in 'V' formation.

ACT 4.7 The Great Journey of Geese

4) Encourage the groups to prepare a short migration story based on the following steps:

- The position of the "guide" of the group alternates cyclically among the children. Point out that there is no leader, but depending on which goose is the strongest and least tired, each time they commit to "leading" the group. Facilitate the presentation of the story by reminding them to change the group leader (guide) by calling each one by their name (for example, the goose Anna changes places with the goose Paul, and now she becomes the leader of the flock)

The groups decide the scenarios for their story:

1. The beginning of the trip (What are they doing before they leave?)
2. At least one resting position (What are they doing during their rest?)
3. An injury or fatigue to a goose in the group (Which goose will get injured?) and what the rest of the group can do to help (How do they continue their journey?)
4. A change (or more) of the group leader
5. The end of the journey (Where do they land, what will they find there? How do they feel?)

Consider writing the above steps on a piece of paper to remind the children of parts of their story in case they forget.

- We remind the teams that:
 1. Our goal is for everyone to reach their destination.
 2. Cooperation between the group members is required.
 3. We pay attention to the coordination of movements within the group.

5) Now ask them to present their short act. Have the group perform first and when the first presentation is complete, the second group can begin. Each group forms a "V": one in front, two behind the first, two behind the other but further apart, and so on, leaving enough space to create a "V" shape.

6) Reflect and evaluate

What can hinder a bird's migratory journey?

What fascinates you about the migratory journey of birds?

Let the journey begin!



Key concepts for teachers

The different habitats of birds

Anyone who walks through nature and observes birds will realize that forest birds do not live on beaches and that seabirds do not live in steppes. Each bird is adapted to a certain life (climate, habitat, food, predators). This means that in the habitat where it lives it is more adapted than any other that has a similar lifestyle. A bird that tries to "move" to a habitat that doesn't suit it would not be able to compete effectively with those native to that habitat for food, avoiding predators, or using nesting sites. Some species can only live in one habitat while there are species that can be found in more than one.



Reed beds and open water. Dense reeds are a great refuge for many birds. Some can nest among the reeds, such as **mallard**, **common coot** and **little grebe**. Some hide among the reeds and wait statically to catch fish such as **grey heron**, **great white egret** and **common kingfisher**, or fly and look about, like **Western marsh-harrier** and **yellow-legged gull**.

Shallow and brackish waters. The shallowness of the saltmarshes and the lack of tall vegetation are a perfect place where **greater flamingo**, **Eurasian spoonbill**, **glossy ibis** and **Kentish plover** can filter the water or stir the mud to find their food. The **osprey** flies over these places to find the fish it feeds on. On the rocks the **great cormorant** spreads its wings to dry and **mallard** basks in the sun.

Steppes and grasslands. The birds of the steppes are adapted to life and breeding on land and therefore equipped for running or for camouflage. These include **common quail** and **Eurasian thick-knee** and **black-bellied sandgrouse**. Smaller birds sing to attract the attention of the partner, such as **greater short-toed lark** and **corn bunting**. Others fly over this habitat looking for food like **short-eared owl** and **Montagu's harrier**.

Woods. Among these plant masses, small birds such as **subalpine warbler**, **duncock** and **European robin** fly up and down between the branches of the trees. Looking for worms in the leaf litter we find **blackbird** and **Eurasian woodcock** and between the trees, the **Eurasian sparrowhawk** flies at full speed in search of its prey.

ACT 4.8 Each bird in its nest

Group size: 12 people

Duration: 1 hour

Difficulty: 1

Objectives

- Learn to identify the different habitats where birds can live
- Match each bird with its habitat
- Improve motor and artistic skills

Resources

- Colouring pages 4.7.1 habitats
- 4.7.2 Bird cards to cut out
- Coloured pencils
- Scissors
- Adhesive tape

The children will match each bird to its habitat according to its characteristics.



Instructions:

Introduce the activity using the information from the key concepts.

- Make teams of 4 participants.
- Distribute a copy of each habitat and a copy of the birds per team.
- Ask them to colour the habitats to better distinguish the physical parts of the landscapes. Use the right colours for each part of the habitat.
- The children have to cut out the birds and stick them in place. Dictate the names of each species so that they write them behind each cut-out and thus remember their name.
- Encourage the students to make assumptions about the habitat of each species based on their anatomical and morphological characteristics. Facilitate discussion by asking questions such as: What is the name of the animal? Does it have a beak or not? What's his beak like? What type of food will it select? Where could it find this kind of food? Reflect on why the flamingo cannot live in the forest, or why the **Sardinian warbler** cannot nest in brackish waters.
- Simplify the procedure by giving examples in each of the previous questions.
- Each group presents its results.
- The other groups comment based on their own results.
- Find out the correct answers and correct them where necessary.

Key concepts for teachers

Illegal hunting

Illegal hunting is a serious threat to wild birds. All over the world, millions of birds are exterminated from their natural habitats every year with a serious impact on their populations. Annually, BirdLife estimates that a terrifying figure of 25 million of birds are killed illegally in the countries bordering the Mediterranean Sea. They are shot by hunters, intentionally poisoned or caught in Japanese mist nets.



On the other hand, every year, 150,000 to 250,000 water birds are killed during the hunting season in the winter months. Many of these birds, the majority of migratory species that come to Spain for the winter, are classified as hunting species, and hunting them is currently permitted. However, these hunting species share their habitat with other species that are in a poor conservation status, some of which are endangered.

From SEO/BirdLife we have recently had to act in wetlands in Castile-La Mancha, Valencia and Doñana to avoid the risks associated with hunters shooting in wetlands.



Other species such as the Eurasian turtle dove have declined between 30% and 49% in 15 years and are now listed as a vulnerable species.

Key concepts for teachers

Some types of illegal hunting

Lime-stick trapping

The trapper smears a piece of wood with birdlime (sticky material taken from plants) which the birds mistake for a branch, so when they land they stick to it. When they try to fly their wings get stuck on the wood and they cannot fly.



Birds caught on limesticks often die of fatigue, hunger or thirst in their efforts to escape, as days can pass before someone picks them up. They usually end being sold in shops to "decorate" people's houses. This type of trapping is illegal in all EU countries but is still practised illegally in some countries.



Threatened species: Chaffinches, tits, Goldfinches, Blackbirds and all the common bird species that we see daily on our balconies and parks. In addition to passerines, there are usually collateral losses, as larger birds, such as the Eurasian Sparrowhawk, Common Buzzards and falcons try to prey on the smaller birds and are also trapped. They often manage to escape but with injuries to their wings (or with pieces of wood stuck to their wings).



Key concepts for teachers

Traps with lure

Birds are caged to attract other birds. The approaching bird is then also trapped in the cage to end up, illegally, on the black market. These individuals are the singing males. Many times, birds are placed for days on logs and out of sight, as this increases the intensity of their singing, making them even more marketable to those who want to sell them to end up in a cage.



Target species: common chaffinch, European goldfinch and common linnet, among others. But also species of thrushes, larks, buntings, etc.



Song Thrush



Serin

Key concepts for teachers

Hunting in the closed season

Hunting outside the established season for this practice is prohibited. In Greece, hunting during spring migration was banned in 1985 with the incorporation of the Birds Directive (article 7) in Greek law. Why is this period important? Birds stop when they have exhausted their reserves of fat and muscle mass and are therefore very vulnerable to danger during this time. They cannot avoid danger as they have very few energy reserves. In addition, birds at that time travel to their breeding grounds and as a result, hunting reduces the reproductive success of bird populations (fewer chicks are born).

Target species: Birds that come from Africa to breed in northern Europe, such as the **European turtle-dove, hen harrier, short-toed eagle, great white egret, red-footed falcon, black-crowned night heron, little egret**, etc.



Black-crowned
Night Heron



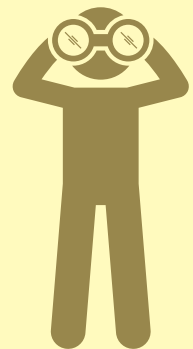
Great
White Egret

Key concepts for teachers

Support for reflections on the activity

Reflection of an observer

They try to imagine the whole process from the beginning. The group with e.g. the "hunting with mistletoe" card can think about how this practice is done, how these traps are placed, how long it can take from the bird being trapped until the hunter catches it, how the birds are collected when they are captured, what they do with the captured birds, etc.



Reflection of a hunter

They try to imagine the whole process from the beginning. The group that has e.g. the "hunting in closed time" card can think: What motivates them to do this practice? What do they think when shooting? What do they do with the birds they hunt? Are they aware that this is illegal?

Reflection of a trapped bird

They try to imagine the whole process from the beginning. The group that has e.g. the "trap with claim" card can think: What can the bird do to avoid being caught? Why does it enter the cage? How can it escape? How does its body react? How does the bird feel?



Key concepts for teachers

Scientific capture techniques

Scientific ringing

Discuss with the students that scientists use various methods to collect data about birds. The best known is the ringing where birds are caught with nets and experienced people ring them, to be able to identify the individuals and study their populations. They measure them (beak, wings, etc.), weigh them, check their physical condition, and finally release them back into nature.



Demonstrate to participants the practice of scientific bird ringing using the video on YouTube:

"The BirdLife Malta Ringing Scheme".

(<https://www.youtube.com/watch?v=M-IA5NOXV6E>)

ACT 4.9 What is illegal hunting?

Group size: 12 people

Duration: 3 hours

Difficulty: 3

Objectives

- Learning different types of illegal hunting and differentiating them from scientific capture
- Reflection on the problem of illegal hunting
- Raising awareness of the impact these practices have

Resources

- 4.8.1 Types of illegal hunting
- Projector to view video

Children examine illegal hunting from three basic perspectives:

As observers, as hunters and as birds.



Instructions:

- Enter the activity using the information of the key concepts.
- Make teams of 4 participants.
- Focus on different perceptions of illegal hunting practices. From the point of view of hunters, observers (scientists or researchers who study birds) and wild birds.
- Randomly distribute a card (4.8.1) to each team.
- Ask them to look at the picture, colour it while describing what the picture represents.
- Ask them to close their eyes for a few seconds to imagine how they would react if they were an observer, a hunter or a trapped bird.
- Each group comments on how they perceive the previous point and with the information they have read and heard, prepare a small act that represents their card.
- Each group presents their act, while the others try to figure out what illegal activity is being acted out.
- Discuss how birds react to each of the practices, but also the impact these activities have on biodiversity.
- Introduce the concept of scientific ringing with the help of the video on YouTube: "[The BirdLife Malta Ringing Scheme](#)" from BirdLife Malta.
- Discuss the differences they find between the scientific ringing techniques and the illegal hunting techniques mentioned above. What are the incentives in each case? What effects does each action have on the population of a particular species?

Program 5: Global environmental challenges



Helping nature and the planet means taking action to protect and restore natural environments while adopting sustainable practices to minimize our environmental impact

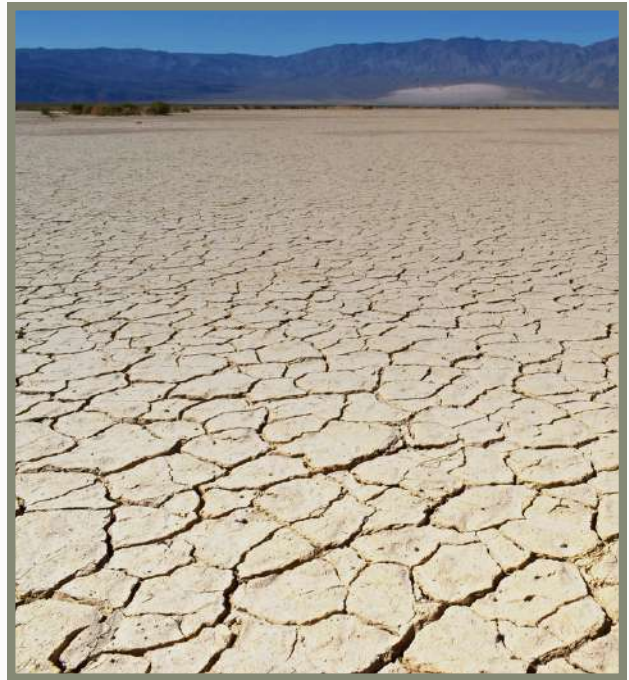
Key concepts for teachers

What are they?

Global environmental challenges are interconnected problems that threaten the health of our planet. Climate change causes increased temperatures and extreme weather events. Pollution from industries and urban areas pollutes air, water and soil. Habitat loss destroys ecosystems and biodiversity, while deforestation accelerates these problems. Each of these challenges contributes to the loss of biodiversity, affecting the delicate balance of life on Earth. Understanding and addressing these issues is crucial to preserving our environment and ensuring a sustainable future.

Climate Change

Climate change refers to significant and persistent changes in weather patterns around the world, largely due to human activities such as the burning of fossil fuels. This fact causes the release of greenhouse gases, such as carbon dioxide and methane. Which act as a shield that does not let the heat leave the atmosphere and, therefore, causes the global temperature to rise. The impacts are significant: melting of glacier ice, rising sea levels, increased flooding, weather events



- more extreme weather conditions and alteration of ecosystems. For example, Earth's average temperature has risen by about 1.2°C over the past century, causing intense storms, prolonged heat waves and differences in bird migration patterns. Addressing climate change requires a shift towards renewable energy, improving energy efficiency, preserving forests and reducing waste. Educators play a critical role in educating young people about the importance of taking action. By working together and adopting sustainable practices, we can mitigate its effects and protect our planet for future generations.

Key concepts for teachers

Habitat loss

Habitat loss occurs when natural spaces are converted for human use, causing the destruction and fragmentation of ecosystems. Urbanization and pollution are the main drivers. Urban expansion replaces natural habitats with buildings and roads while pollution degrades ecosystems, making them uninhabitable for many species. Habitat loss leads to a reduction in biodiversity, the extinction of species and the loss of ecosystem services such as water purification and pollination. Conservation laws, protected areas, habitat restoration and sustainable land use practices are crucial to mitigating habitat loss.



Pollution is a form of habitat loss through degradation and poses serious threats to the environment and human health. It comes from industrial activities, transport, agriculture and inappropriate disposal of waste. Air pollution from vehicles and factories causes respiratory diseases and contributes to climate change. Water pollution from industrial discharges and agricultural runoff contaminates water bodies, harming aquatic ecosystems and human health. Soil pollution by chemicals and heavy metals degrades soil quality and reduces agricultural productivity. Tackling pollution involves tighter regulations, technological innovation and individual efforts to adopt green practices such as reducing energy consumption and recycling. Indeed, addressing habitat loss and pollution requires collective action at local, national and global scales.

Key concepts for teachers

Loss of biodiversity

Biodiversity is all living things on Earth. It provides essential services such as pollination, nutrient cycling and water purification that are fundamental to human well-being and the health of the planet. However, it faces serious threats that are accelerating biodiversity loss at an alarming rate with species disappearing 100 to 1,000 times faster than natural rates. The decline of pollinators threatens plant production, while the degradation of coral reefs affects coastal communities. It is urgent to address the loss of biodiversity and safeguard the health and well-being of both people and the planet.

What can we do to stop biodiversity loss? Make students and citizens aware of the importance of biodiversity and the threats it faces. By fostering a deeper understanding of the interconnectedness of all life forms, we empower people to become guardians of the environment. We can take specific actions to conserve the nearest biodiversity.

This can include participating in habitat restoration projects, supporting sustainable land management practices and advocating for policies that protect biodiversity and natural habitats. Even creating a wildlife garden in our backyard can make a difference! Furthermore, incorporating biodiversity education into our curriculum by integrating concepts of conservation, ecology and sustainability across subjects, can inspire the next generation to take meaningful action to protect biodiversity and preserve the precious diversity of life on Earth .



Key concepts for teachers

Overexploitation of resources

Overexploitation occurs when we use resources such as water, land, minerals and wildlife faster than they can be naturally replenished. This leads to running out of these resources, damaging ecosystems and causing the disappearance of wildlife. Activities such as overfishing, the cutting of immature forests and the overexploitation of metals contribute to this problem, which threatens the balance of nature and the well-being of both people and animals.

For example, overfishing is driven by high demand for seafood which causes fish populations in the oceans to decline sharply. Deforestation, often for agriculture, logging or building cities, destroys habitats for countless plants and animals. This not only reduces biodiversity, but also releases stored carbon into the air, worsening climate change. Mining for metals and minerals can also damage the environment by destroying habitats, causing soil erosion and contaminating water sources with harmful chemicals.



These activities usually take place in delicate spaces such as tropical forests and wetlands, accelerating the loss of species and habitats. To solve these problems, we need to manage our resources more sustainably. People can help too by choosing products that are made sustainably, supporting companies that care about the environment, and asking governments to protect natural resources. By thinking about the long-term health of ecosystems, we can use resources wisely and ensure they are still available for future generations.

Key concepts for teachers

Invasive species

Invasive species are non-native plants, animals or microorganisms introduced into new ecosystems, often by human activities.

These species can displace native species, alter the ecological balance and damage biodiversity. For example, an alien plant could invade a forest, crowding out native plants and permanently changing the landscape.



The effects of invasive species are extensive. They compete with native species for resources such as food, water and shelter, causing a decrease in biodiversity. Invasive plants can displace native vegetation and thereby reduce habitat quality. Invasive animals can displace native birds for food and nesting sites. Addressing invasive species requires coordinated efforts. Here are steps people can take to help:

- Avoid the introduction of exotic species
- Early detection and rapid response
- Control and management
- Raising awareness and education

ACT 5.1 Climate art

Group size: Up to 12 people
Duration: 1 hours
Difficulty: 1

Objectives

- Learning the importance of recycling and encouraging its implementation
- Encouraging artistic self-expression

Resources

- Recycled materials
- Art supplies (crayons, markers, glue, scissors)
- Craft materials (stickers, coloured paper, fabric scraps)
- Scissors for children
- Non-toxic adhesives
- Cards with pictures

This activity will inspire students to take action to fight climate change through a creative art project.



Instructions:

1. Begin by discussing the importance of recycling and reducing waste with students. Use simple language and picture cards to explain how recycling can help protect the environment.
2. Show them examples of recycled art projects such as making cardboard sculptures or collages from old magazines.
3. Let each student choose recycled materials and art supplies they want to use for their project.
4. Encourage them to create their own climate artwork. They can draw or use old magazines/.... for pictures related to clean energy, trees, recycling, or any other climate-friendly topic. Help them if needed, allowing them to express themselves through art even if it is mainly through non-verbal communication.
5. After their artwork is finished hold a mini "art show" where each student can display their creation and briefly explain what it represents.
6. Discuss how their art projects can remind us to take action to protect the Earth and fight climate change.

Key concepts for teachers

Permeable soils

When it rains in the city, water falls in many places. It falls on the roofs of the houses, flows down the gutters, into the streets, courtyards and gardens. But not all these places are the same. Some, such as asphalt streets, do not allow water to pass through. They are like an umbrella. When water falls on them, it is not absorbed but slides off and goes away. Other places are like a sponge and can absorb rainwater. These places are called permeable soils. When rainwater falls on them, the water enters the ground just like when water is poured onto a sponge.

Rainwater can go to different places. It can go into the sewers, into the ground, or it can stay in one place and then disappear when it gets hot.

In the city, when water falls on the roofs of houses, there are gutters that collect this water. In the streets, the water flows into the sewers. When it rains heavily, the sewers cannot take all the water away. Then you may see a lot of water on the streets. This is because the sewers are very full and cannot take the water away as fast as it falls, creating floods.



When it rains, the water not only falls on the plants, it can also enter the ground directly. This can happen if the soil is of a type that allows water to pass through it. When water enters the ground, it can reach a very deep space, this water is called groundwater.

So, the next time it rains, think about how some of that water goes far, far down into the groundwater! It is another way in which nature uses rainwater. Plants take this water and use it to grow. When plants no longer need water, they let it out through their leaves. This is called evapotranspiration.



ACT 5.2 Permeable and impermeable

Group size: Up to 12 people
Duration: 1 hours
Difficulty: 1 – 3

Objectives

- Understand the concepts permeable and impermeable
- Valuing a resource as scarce as water

Resources

- A sponge
- An umbrella
- A watering can full of water

When it rains in the city, the water falls in many places. Some don't let water through and others absorb it like a sponge.



Instructions:

Invite your students to water the sponge first and the umbrella second. Ask the following questions: What happens to the water when we water the sponge? And what happens when we water the umbrella?

1. Now repeat this process on different types of soil/material in your school yard. Observe with the students what happens to the water. Does the water overflow onto the ground or stay on the surface?



ACT 5.3 Evapotranspiration

Group size: Up to 12 people

Duration: 1 hours

Difficulty: 1 - 3

Objectives

- Understand the concept of evapotranspiration
- Valuing a resource as scarce as water

Resources

- Transparent plastic zip bag
- Permanent pencil for drawing
- Blue food colouring/ blue paint
- Adhesive tape

Evapotranspiration is very important because it is part of the way nature works. It is like a great circle of water that goes from the sky to the plants and then back to the sky. Also, when it's very hot, this process helps to cool the air.



Instructions:

1. To be able to observe and understand this phenomenon well, all you need is a transparent plastic bag in which we will draw with a permanent marker the sea at the bottom, some ascending arrows on one side and some descending arrows on the other. At the top, on one side (next to the upward arrows) draw the sun, and on the other side (next to the downward arrows), draw clouds with rain.
2. Once we've drawn everything, we put some water into the bag and give it a touch of blue (like the sea) with food colouring or by adding a few drops of blue paint. Close the bag tightly, so the water does not escape.
3. Then place the bag (you can tape it) on a window where the sun shines for most of the day. This way, with the heat, the water cycle will be clearly visible, and the children will be able to understand the process the water follows, from evaporating from the sea and rising as vapor, to condensing into drops in the clouds, and finally falling back to the ground, refilling the "sea" and returning to the starting point of the cycle.



Practical steps for nature conservation

Teachers play a crucial role in teaching students the importance of small actions to contribute to a sustainable planet. By incorporating lessons on sustainable living practices into their curriculum, teachers can empower students to have a positive impact on the environment through daily actions. Here are some practical steps you can take to help nature and ultimately the planet.



Management of invasive species

Collaborate with local conservation organisations to address the threats of invasive species to ecosystems. Students can participate in invasive species removal programs, assist during surveys, and raise awareness about the ecological impacts of invasive species.

Zero Waste Campaigns

Organise waste reduction campaigns within the school community to minimise plastic waste, promote recycling and encourage composting.

Native planting



Establish native vegetation planting initiatives to improve biodiversity and support local ecosystems. Students can plant native species from seeds or cuttings, create native plant gardens, and participate in habitat restoration efforts. Native plants provide essential habitat and food sources for local wildlife.



Practical steps for nature conservation

Improving pollinator habitat

Create favourable habitats for pollinators within school grounds and community spaces to support the decline in their populations. Students can plant native wildflowers, install insect hotels, and create butterfly gardens, as well as implement sustainable gardening practices. Pollinator habitat improvement initiatives promote pollination services, enhance floral diversity, and contribute to food security.



Volunteer opportunities

Provide students with opportunities to volunteer for environmental initiatives in their local communities. Encourage participation in volunteer cleanup events, habitat restoration projects, and citizen science programs.



Educational outreach

Involve students in activities that help raise awareness of conservation issues.



Practical steps for nature conservation

Wildlife habitat design

Incorporate wildlife-friendly design principles into school grounds and outdoor spaces to create habitats that support local wildlife. Students can design and implement features such as native plant gardens, bird nesting boxes, bird feeders, and wildlife ponds to attract and provide habitat for various species.



Monitoring of citizen science

Engage students in citizen science monitoring programs to evaluate the effectiveness of wildlife-friendly space design interventions. Students can collect data on species diversity, abundance, and behaviour to assess the impact of habitat improvement on local wildlife populations.

Awareness activities on the reduction and recycling of waste

Involve students in interactive activities to raise awareness about the generation of waste and its environmental consequences. Through discussions, visual aids, and hands-on sorting exercises, students can gain a deeper understanding of the importance of reducing waste and recycling.

Practical recycling projects

Offer students opportunities to participate in recycling projects within the classroom. From sorting recyclables to creating recycled art projects, students can experience firsthand how small actions can have a positive impact on the environment.

Community recycling initiatives

Try to partner with local recycling centres and organize community recycling initiatives. By engaging students in clean-up events and educational workshops, educators can empower students to take action and become environmental advocates in their communities.



Practical steps for nature conservation

Lessons in water and energy conservation

Integrate lessons on water and energy conservation into the curriculum to teach students the importance of using resources wisely. Through interactive activities and real-life examples, students can learn how small behavioural changes, such as turning off lights and conserving water, can add up to significant savings.

Energy saving practices

Encourage students to adopt energy-saving practices both at school and at home. By turning off lights, unplugging electronics, and using natural lighting whenever possible, students can reduce energy consumption and minimize their carbon footprint.

Energy saving practices

Teach students simple water-saving strategies, such as shorter showers, to promote water conservation. By emphasising the importance of water management, educators can instil in students a sense of responsibility to protect this scarce resource.

By emphasising the importance of small actions, teachers can inspire students to become agents of change to build a more sustainable future.

Through hands-on activities, experiential learning opportunities, and community engagement initiatives, students learn that even the smallest actions can have a big impact on the planet. Together, we can empower the next generation to take responsibility for protecting our environment and creating a better world for everyone.



ACT 5.4 Creation of biodiversity gardens

Group size: Up to 12 people

Duration: 1 hours

Difficulty: 1 – 3

Objectives

- Understand the value of diversity in a garden
- Take action to support nature

Resources

- Visual aids
- Small pots or containers
- Test land
- Native seeds or plants
- Gardening tools
- Watering cans or spray bottles
- Garden markers (sticks or tags)
- Art supplies (markers, stickers, paint)
- Gloves

Create a new environment to encourage wildlife by planting and creating shelters, which attract birds, butterflies and other beneficial wildlife.



Instructions:

- Prepare a small gardening area with loose soil in pots or trays.
- Begin by discussing the concept of biodiversity and its importance (visual aids).
- Explain what they will do to support native plants and wildlife.
- Demonstrate how to use the tools and provide each student with a pot and/or soil.
- Help students plant native seeds or small plants in their containers. Guide them to gently compact the soil around the seeds or seedlings and water the plants with the watering can. Explain that native plants are essential for local wildlife and that they don't need as much water as tropical plants.
- Have them decorate garden markers with the names of the plants they planted.
- Place the garden markers in the containers.
- Praise and encourage students as you explain the importance of pollination.
- Encourage them to maintain and collect rainwater for irrigation.
- Discuss how these mini gardens can attract pollinators and provide shelter for insects and birds, contributing to biodiversity conservation. Show them cards with pictures of pollinators.
- Ask simple questions to encourage communication and reflection, such as: "Who likes to touch the different plants?"; "What did you like about the gardening activity today?"; "What did the flowers smell like?". Allow students to respond using gestures, vocalizations, or any method of communication they feel comfortable with.
- Encourage them to observe their gardens over time and take notes or drawings of any living-beings they see.



ACT 5.5 Home sweet home

Group size: Up to 12 people

Duration: 1 hours

Difficulty: 2

Objectives

- Help the biodiversity of the environment
- Learn the diversity of materials used to make nests

Resources

- Straw/pet hair (dog/cat)/wood shavings/dead leaves/dead grass
- Stick
- Wide net
- String / rope
- Step by step video of a nest
- Gloves

The students will make material dispensers to help the birds build their nests. This activity must be carried out at the beginning of spring.

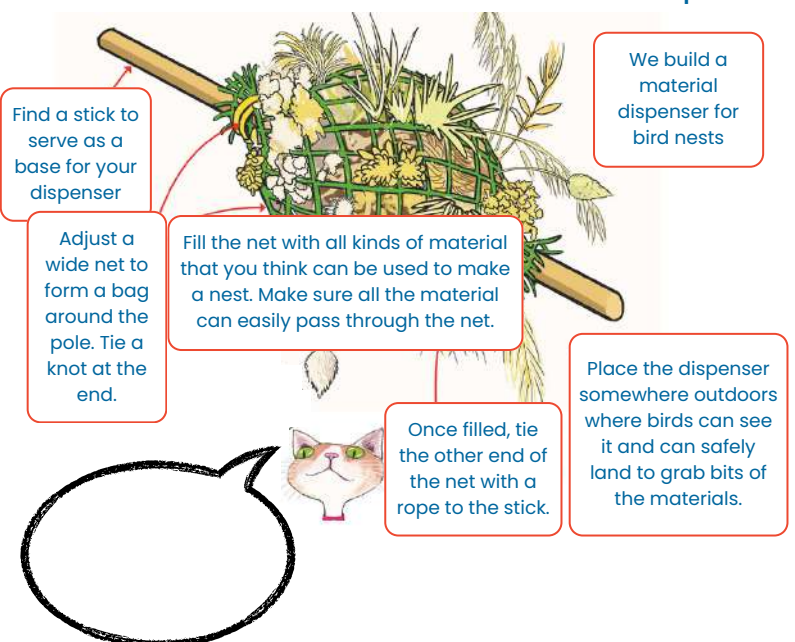


Instructions:

- **First part:** Find out what they know about bird nests, why they build them, what they use and more. Show step-by-step nest building videos.
- Provide straw, branches, wood shavings, then form groups and have them try to build a nest like the sparrow's. Place the materials on one side of the classroom and set up a "nesting spot" on the other side. Students come and go for materials, just like birds do.
- **Second part:** Make a material dispenser for the nests of the school birds. Hang them in the school yard or at home. Encourage a discussion about where to place the dispensers, where there are nests they know of, etc.
- Be sure to label them so the teachers knows they are an ongoing project. You can check from a distance to see if the birds come and go, or see if the material is disappearing. Be sure to celebrate your success in helping wildlife!

Home Sweet Home 2

Nest Dispenser



ACT 5.6 The home of insects

Group size: Up to 12 people

Duration: 2 days

Difficulty: 3

Objectives

- Learn the ecological role of insects and other invertebrates
- Carry out a practical nature service activity

Resources

- Photos of soil invertebrates
- Collage of invertebrates and their functions
- For the insect hotel choose from the following material: pieces of reeds, sticks, logs, stones, bricks, pine cones, pots, wooden pallets, rope, logs and twigs

Students will appreciate these invertebrates and the vital service they provide to the earth, plants and us, and will strengthen their knowledge and respect by creating shelters for them.



Instructions:

- Show photos of soil invertebrates. Ask what they know about them, which ones they have seen, etc. Start a discussion about them. You're likely to hear negative feedback. In this activity, change that view by making them understand the vital role these species play in the life cycle.
- Show a collage of invertebrates. Analyse the photos to discover information about each species, what they eat, whether they live in dark or light places, wet or dry, etc. They have to find something they like about each species. Give assistance using internet information.
- Take a tour of the yard and look for invertebrates. See if you can match any information to what you observe together. Look especially at the detritus/compost where you'll find woodlice, earthworms, etc. Talk about the impact these invertebrates have on the soil. Feel, smell and see its colours.
- Ask how they can attract more invertebrates to the yard. Help them realize that you can attract them by creating their habitat. If someone suggests bringing one, explain why it's not a good idea and that if they create a proper shelter, they'll come alone!
- Make a list together of the items you need for creating an insect hotel and find the right place. Link the discussion to the theme "THE HOME OF INSECTS" and connect the students' need for things they like to have around the house with similar needs of insects.
- In the classroom, consult information on how to make an insect shelter. Where will they get the materials? Have a discussion and find solutions.
- Make the shelters together and set them up in the yard, near plants and flowers, and in a place with lots of sun.

ACT 5.7 No more waste!

Group size: Up to 15 people

Duration: 3 hours

Difficulty: 1

Objectives

- Understand the impact of pollution on nature
- Carry out a practical activity of cleaning the environment

Resources

- Thick gloves (gardening)
- Garbage bags

Pollution affects natural habitats endangering wildlife and leading to habitat loss. The students will take measures to combat the loss of habitat through a small cleaning of the nearby environment.



Instructions:

- Contact the City Council and the local cleaning services before doing this activity in nature, because you need to know what to do with the waste that is collected/ if they can provide material such as bags trash/ etc.
- Visit the place you want to clean for an inspection. Make sure there are no rusty items, syringes or harmful materials. If there are, remove them first from the areas with appropriate safety equipment or select another safer area. Always provide good supervision when doing this activity as they may spot something dangerous.
- Explain the importance of keeping the environment clean. When plastics and glass are dumped on the beach or river, they can harm biodiversity, such as turtles, fish and birds. They may mistake them for food or become trapped. Ask them what actions they can take on a daily basis for this purpose.
- Explain that unfortunately, not everyone is aware of the importance of keeping the environment clean and that waste pollutes and makes places like parks, roads, beaches and fields dirty.
- Once the place to clean has been selected, go for a walk with the students and bring gloves and bags. Divide students into groups of three and hand out the gloves and bags. Let them look for rubbish: cans, plastic bottles, packaging, paper tissues, cigarette butts, etc.
- Contact your municipality's waste collection service so they can pick up all the bags collected at the end of the day.
- Hold a final discussion to highlight the positive impact this day has just had on the environment and its inhabitants.



ACT 5.8 We recycle

Group size: Up to 15 people

Duration: 3 hours

Difficulty: 1

Objectives

- Learn the importance of recycling and encourage its implementation

Resources

- Cards representing the categories of recyclable items
- 8 jars (4 labelled "Recycling bin" and 4 labelled "Waste bin")
- 4 cardboard boxes
- A mix of recyclable and non-recyclable empty items. You will need 4 examples of each element type you choose to use

Pollution affects natural habitats endangering wildlife and leading to habitat loss. The students will take measures to combat habitat loss through a small clean-up.



Instructions:

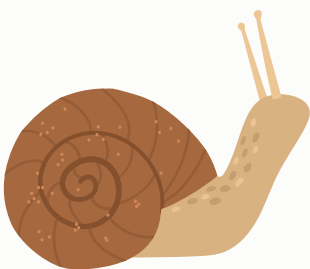
- Explain that recycling means turning trash into something new instead of throwing it away. Lack of recycling is very harmful to the environment because garbage is usually deposited on the ground (pollution) and also because this leads to excessive use of natural resources (overexploitation of resources). We can recycle most things with a little effort and without throwing them in the general waste bin.
- Show and explain the cards representing the categories of recyclable items.
- Make four groups. You will need four trash cans, four recycling cans, and four sets of materials (both recyclable and non-recyclable) mixed and placed in the four cardboard boxes.
- Align the four groups side by side with a cardboard box of recyclable and non-recyclable items next to the first person in the relay. Place a recycling bin and a waste bin in front of each group at a distance you prefer.
- When the activity starts, the first student in each group must take an item from the cardboard box, run to their set of bins, and place it in the correct one before returning and tapping the next person in the team.
- Continue until all items from a team's cardboard box have been sorted. This may mean that they go back through the group two or three times, depending on the number of students per group and the number of items to sort.
- The winning team is the first to finish placing all the items in the correct bins.



Thank you for engaging your students in the activities suggested in this handbook. We hope that they have been meaningful experiences, and that they have not only nurtured the cognitive and sensory development of your students, but also created a sense of environmental management.

Your impact as a teaching professional can be further extended through proactive outreach and awareness efforts. By sharing on social media platforms the enriching experiences and activities you will engage in with your students, you have the power to inspire others and promote the importance of inclusive environmental education.

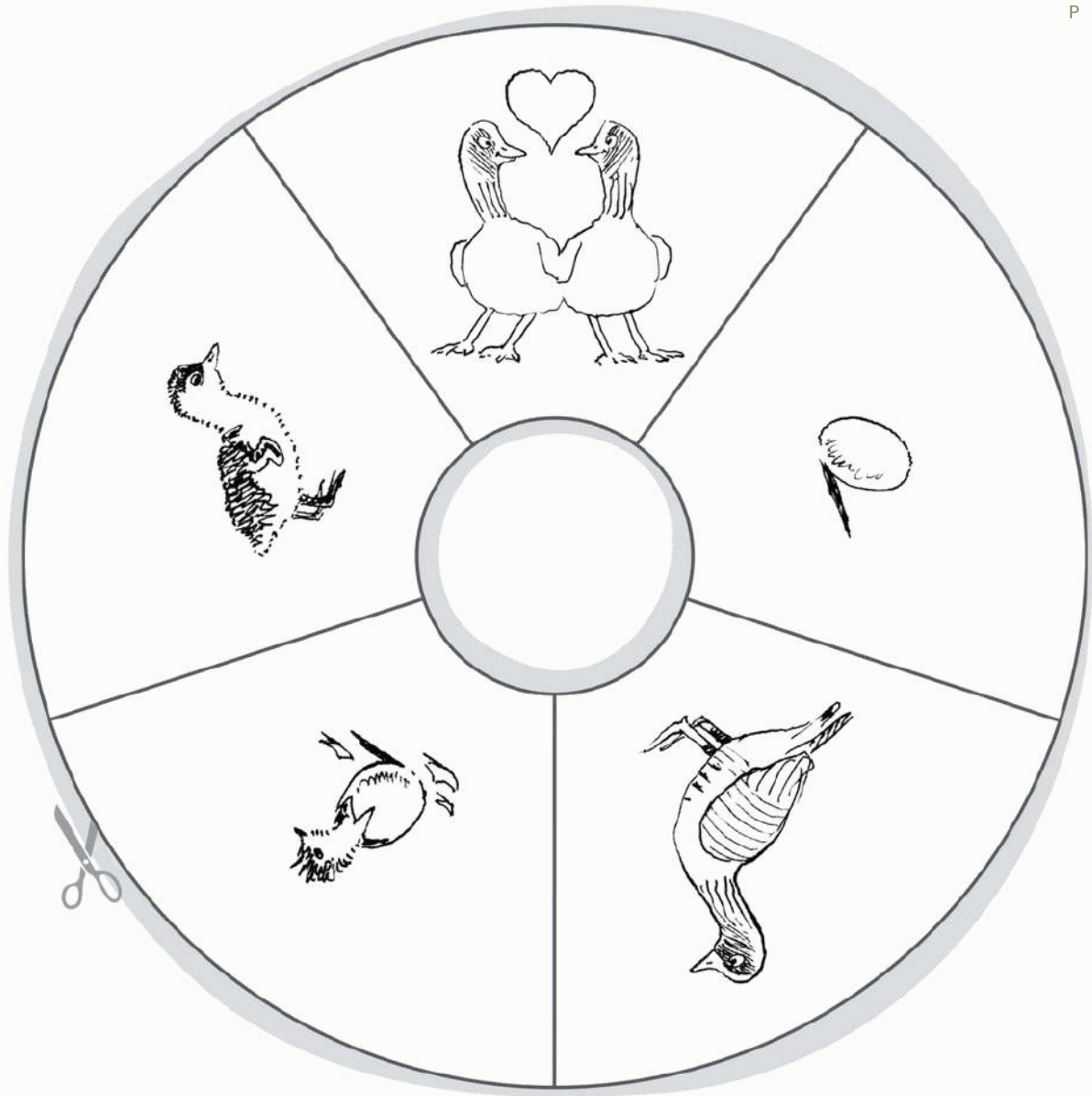
Every post you share becomes a window into the world of inclusive learning and environmental exploration, showcasing the skills and potential of developing neurodivergent children. By highlighting your efforts, you not only amplify the voices of your students, but also contribute to a more inclusive and environmentally conscious society. Finally, through a collective effort, you can make a real difference in the lives of your students and the world around us.



APPENDICES

4.1 Life Cycle

P



Scan and access all resources
to print!



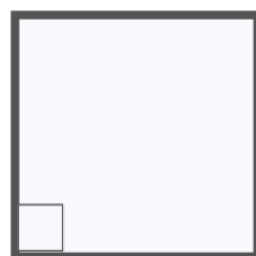
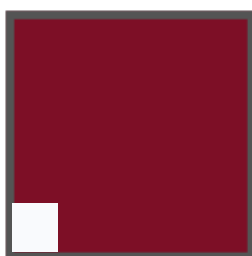
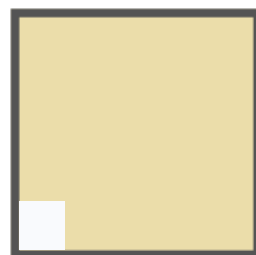
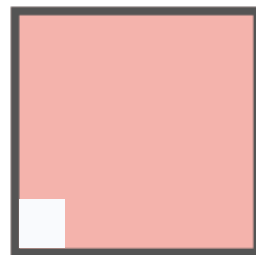
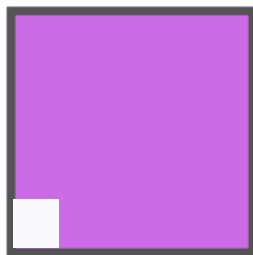
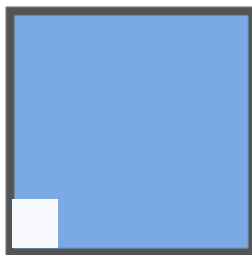
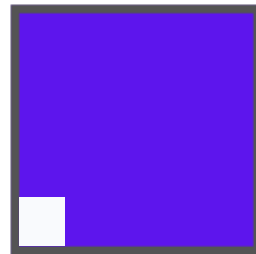
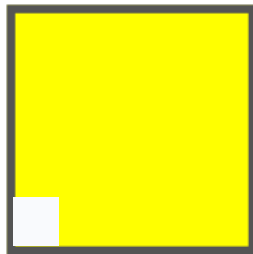
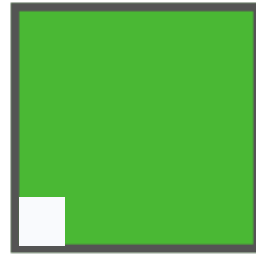
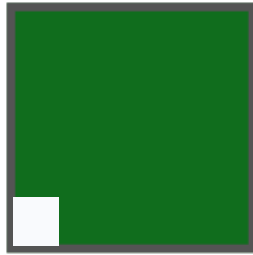
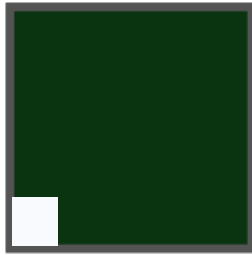
1.3 COLOUR BINGO



YOUR NAME:
LOCATION:

DATE:

AS YOU WALK, FIND FLOWERS, LEAVES AND OTHER OBJECTS THAT
MATCH THE COLOURS BELOW. SEE IF YOU CAN MATCH THEM ALL!

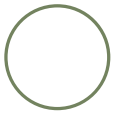


1.4 NATURE SCAVENGER HUNT

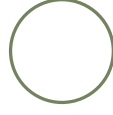
YOUR NAME:

DATE:

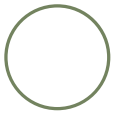
LOCATION:



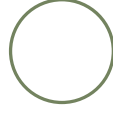
FLOWER



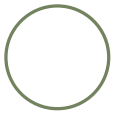
BUTTERFLY



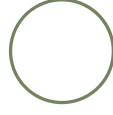
WATER



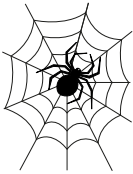
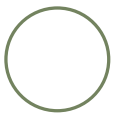
HERB



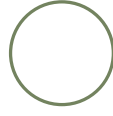
TREE



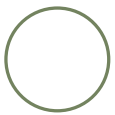
CLOVER



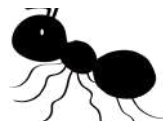
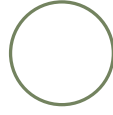
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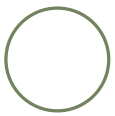
FULL



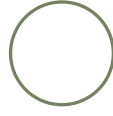
LADYBIRD



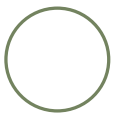
ANT



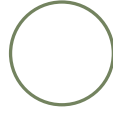
STONE



FERN

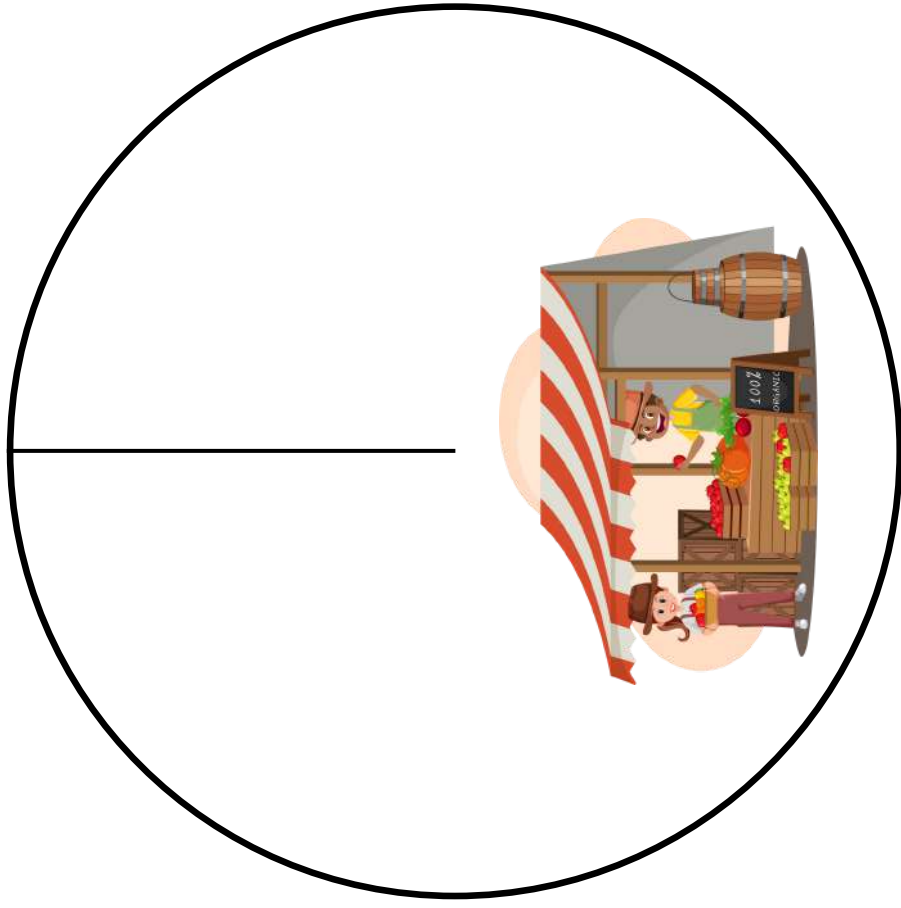
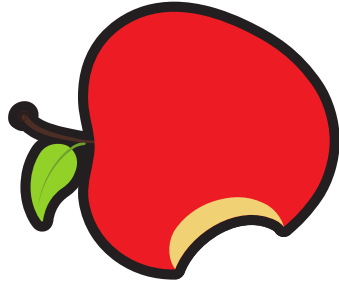


BIRD

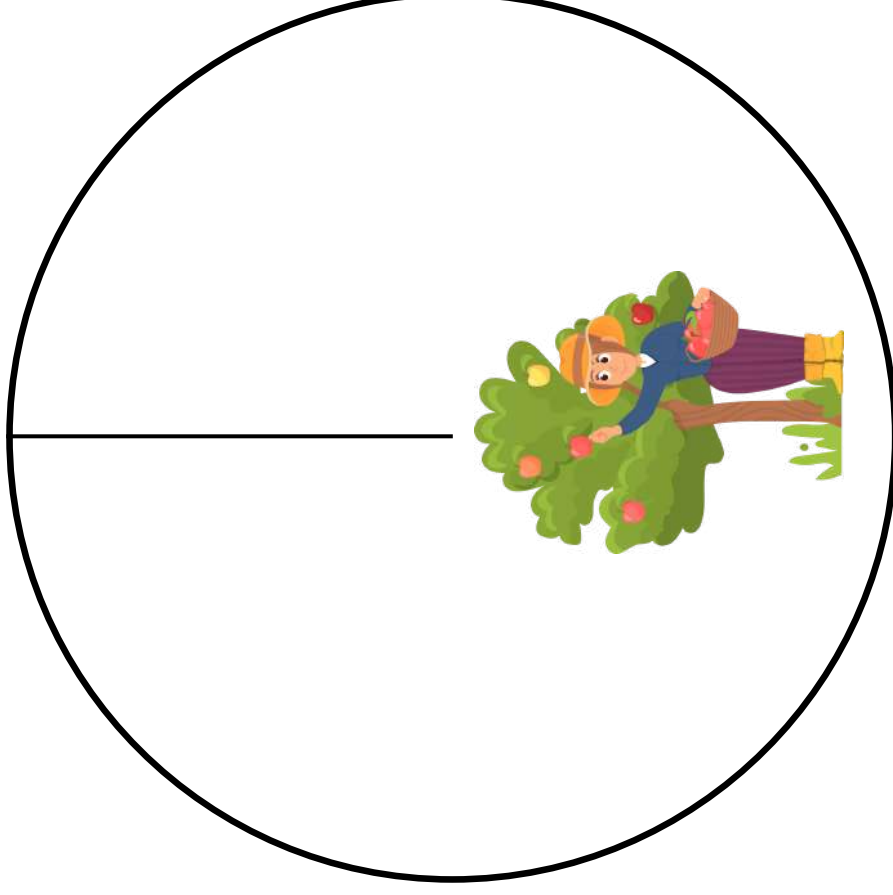
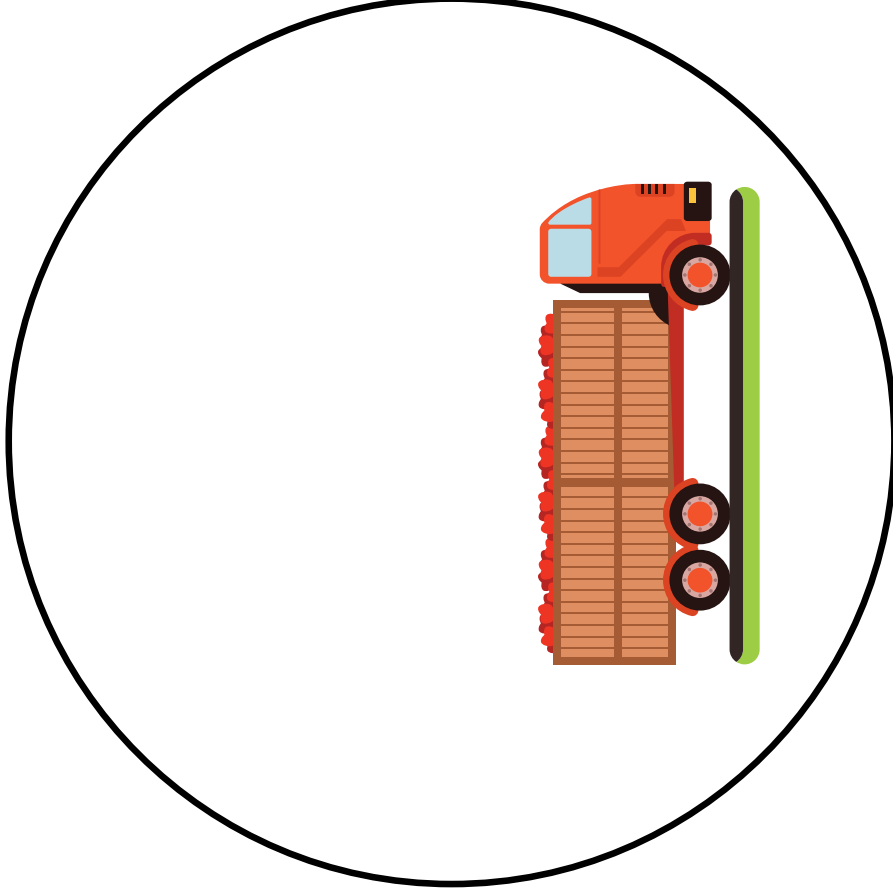


IN ROW

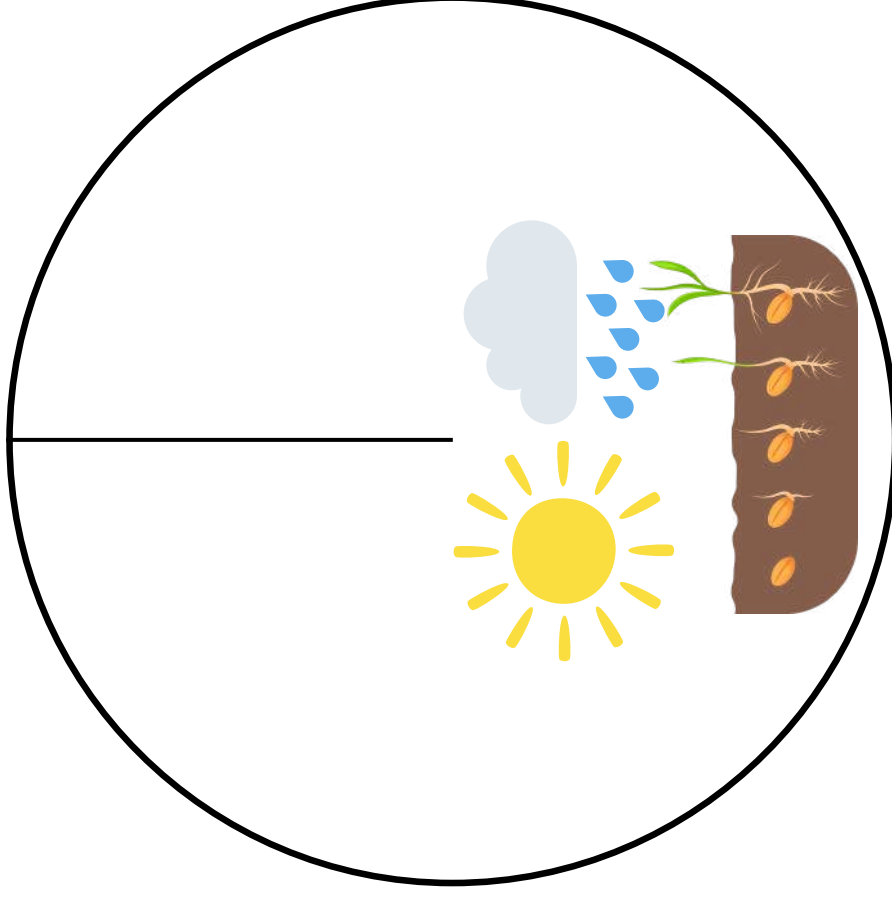
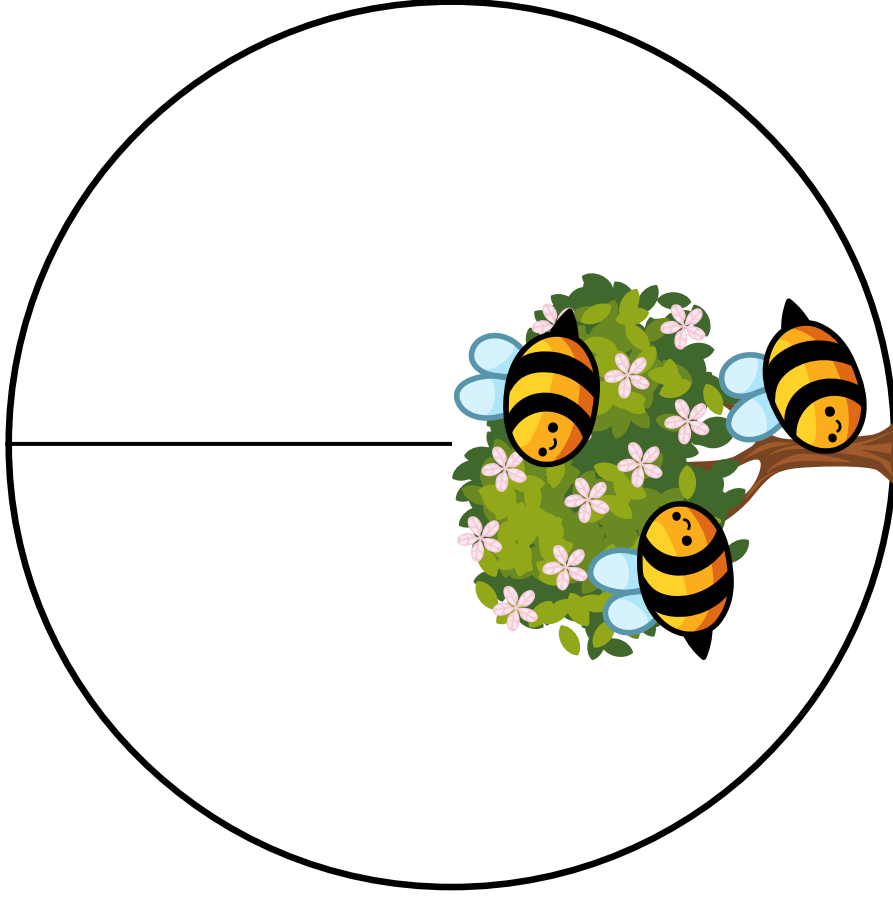
1.5 ME AND WHAT I NEED



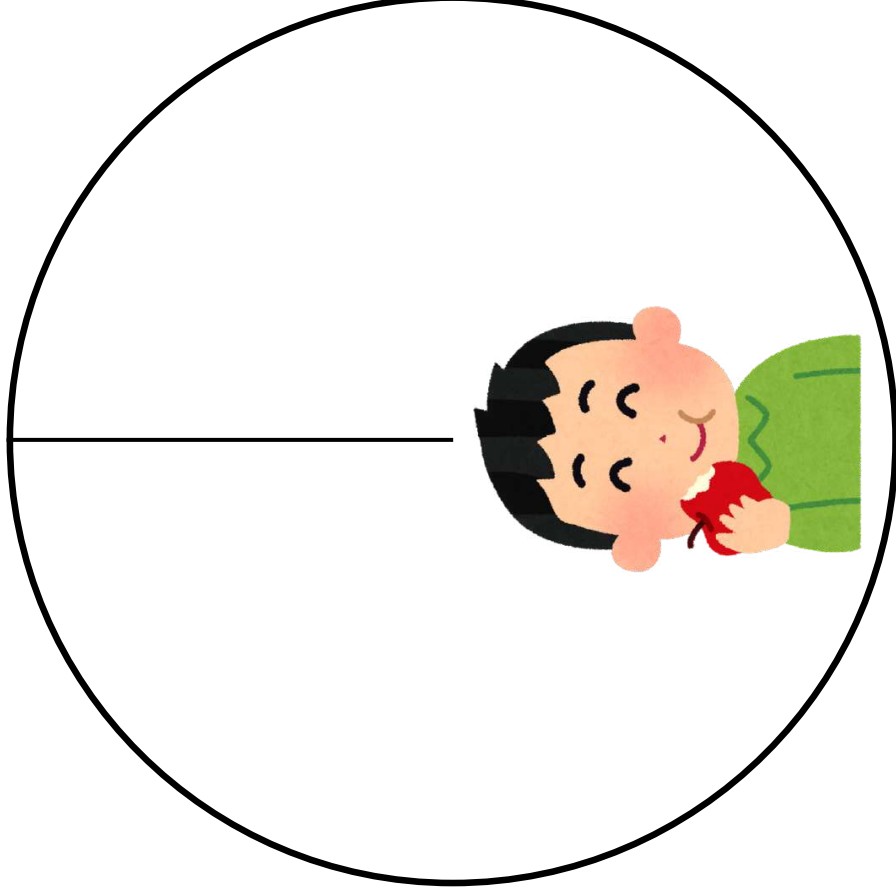
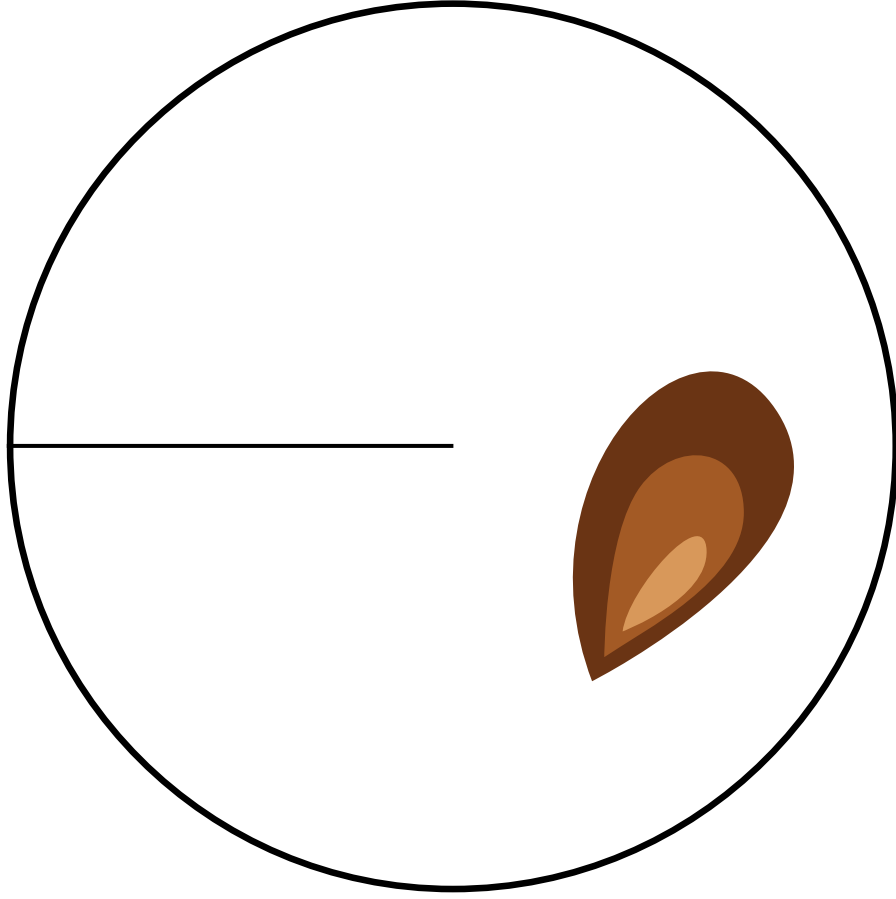
1.5 ME AND WHAT I NEED



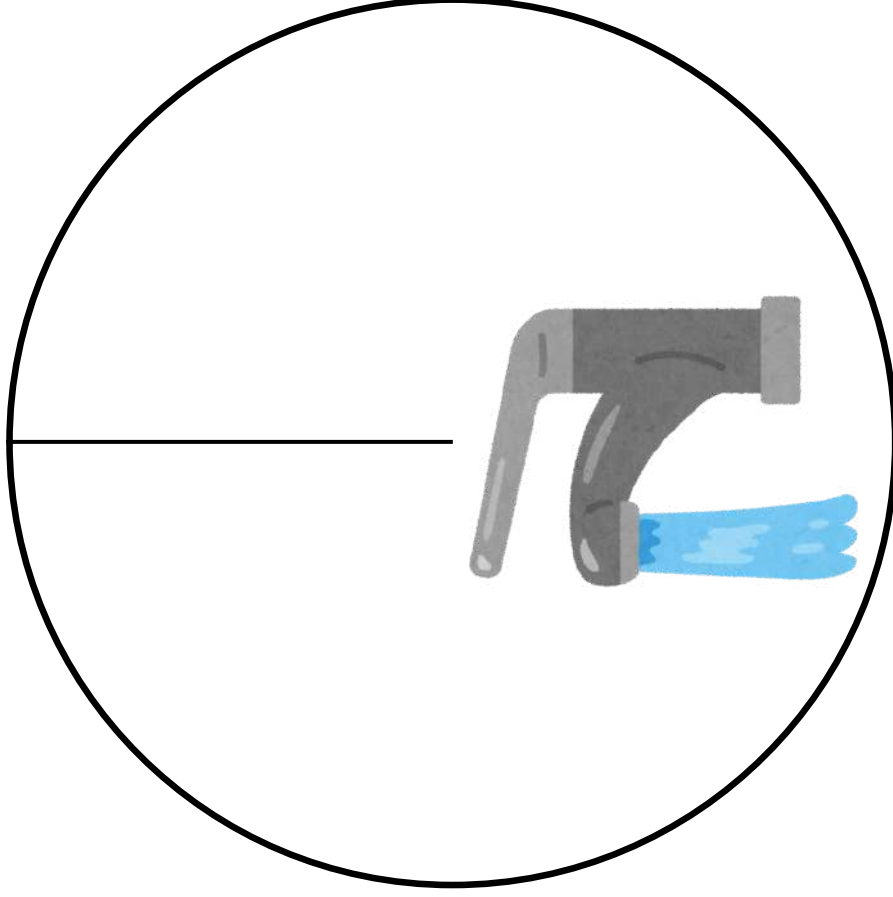
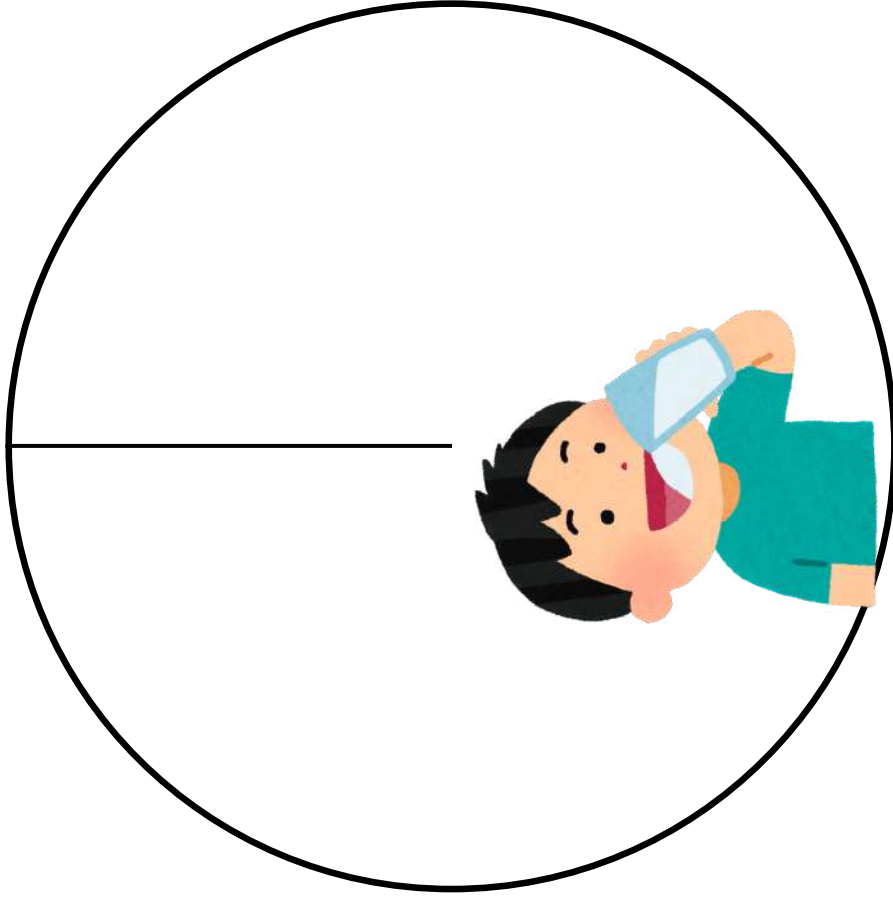
1.5 ME AND WHAT I NEED



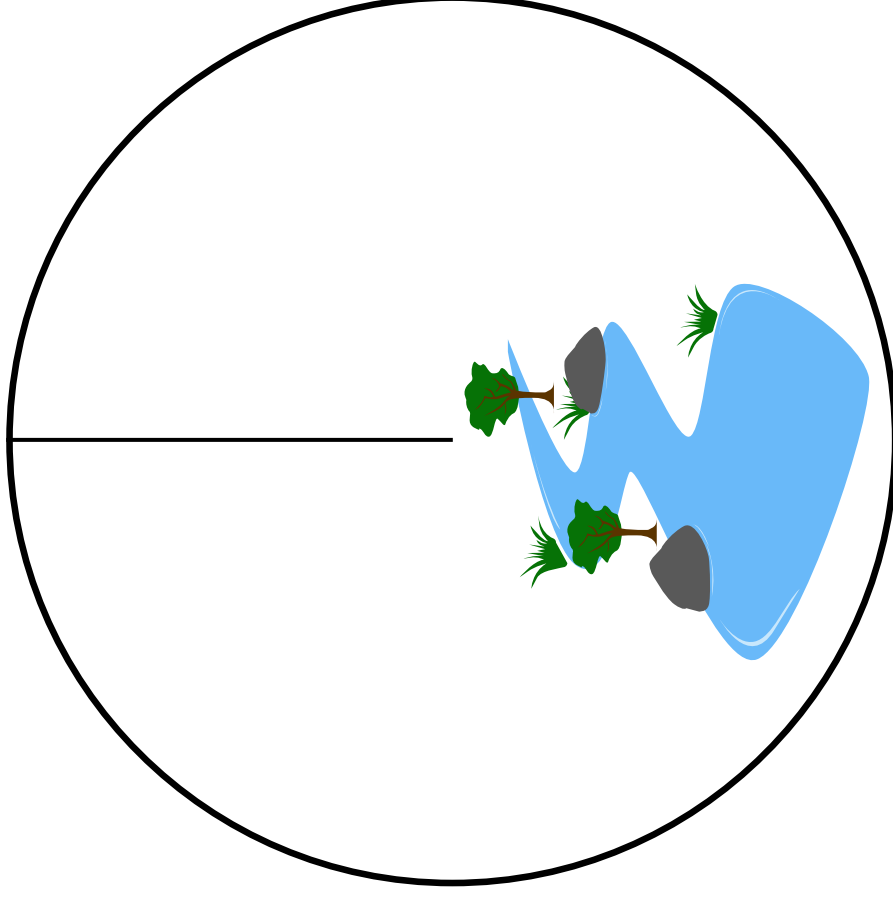
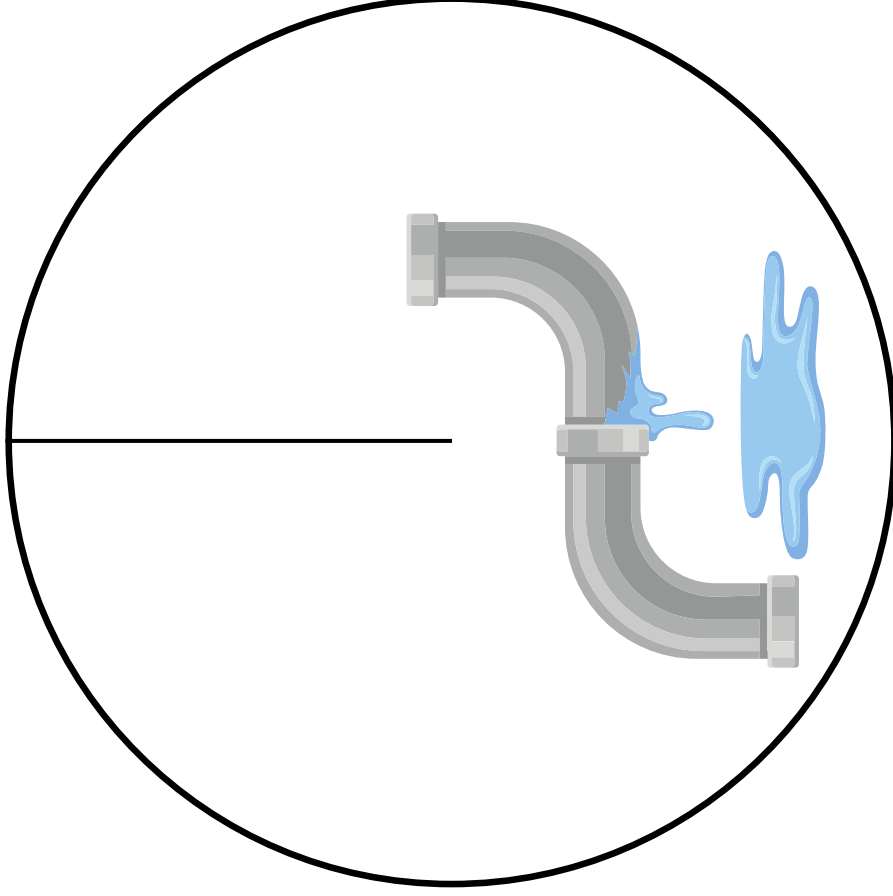
1.5 ME AND WHAT I NEED



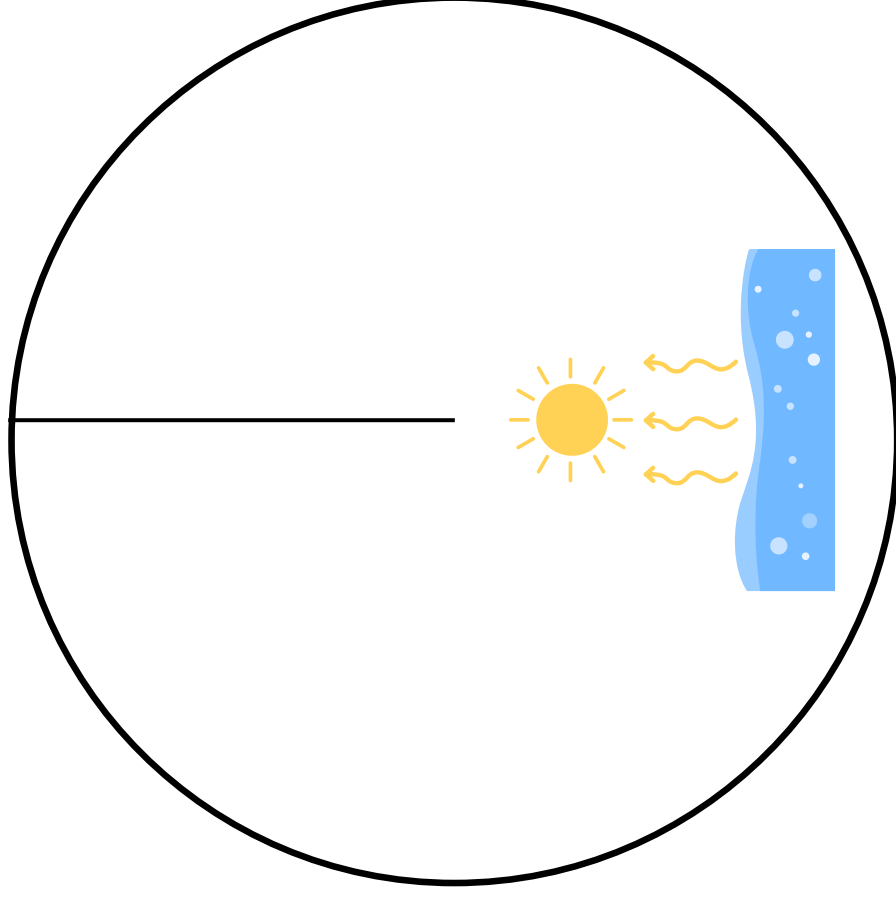
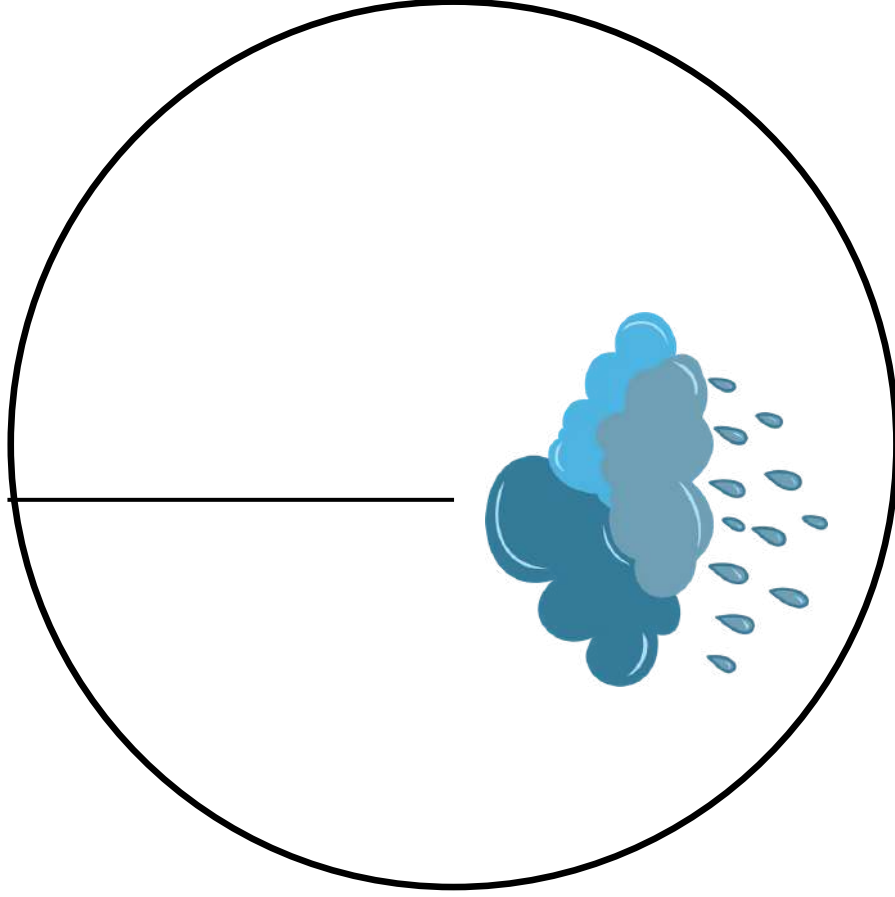
1.5 ME AND WHAT I NEED



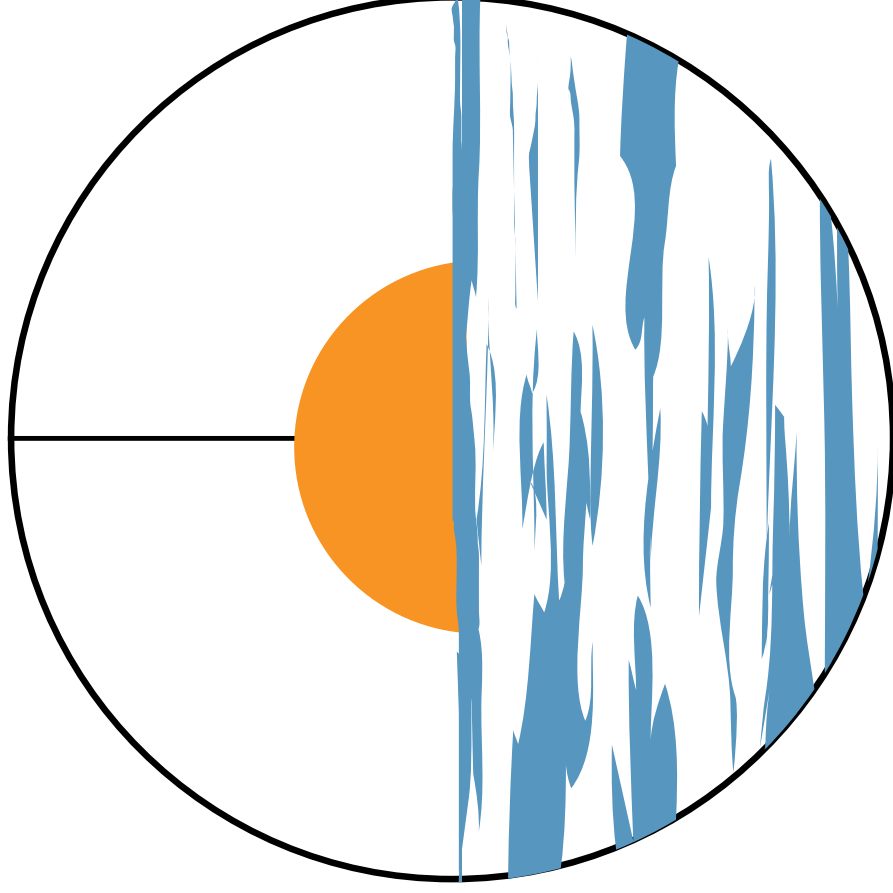
1.5 ME AND WHAT I NEED



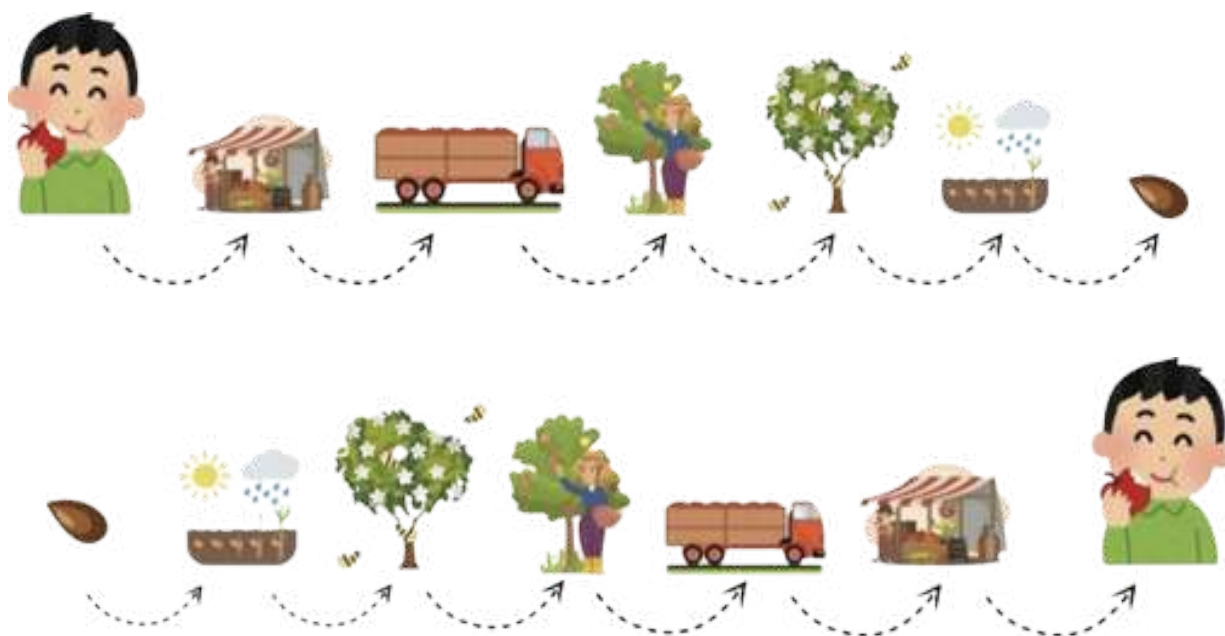
1.5 ME AND WHAT I NEED



1.5 ME AND WHAT I NEED



1.5.1 ME AND WHAT I NEED



1. Where does the apple in your hand come from? (Answer: You bought it at the store.)
2. Transport: How did the apple get to the store? (Answer: It was transported from the orchard.)
3. Harvest: How did the apple get to the truck that was transporting it? (Answer: It was picked from the tree.)
4. Apple Formation: How did the apple grow on the tree? (Answer: It grew after the pollination of apple blossoms.)
5. Pollination: How was the apple blossom pollinated? (Answer: Bees pollinated the flower in the spring.)
6. Tree Growth: How did the tree grow that produced the apple? (Answer: It grew from a seed, needing water, sunlight, and nutrients from the soil)

1.5.1 ME AND WHAT I NEED

GUIDE TO QUESTIONS

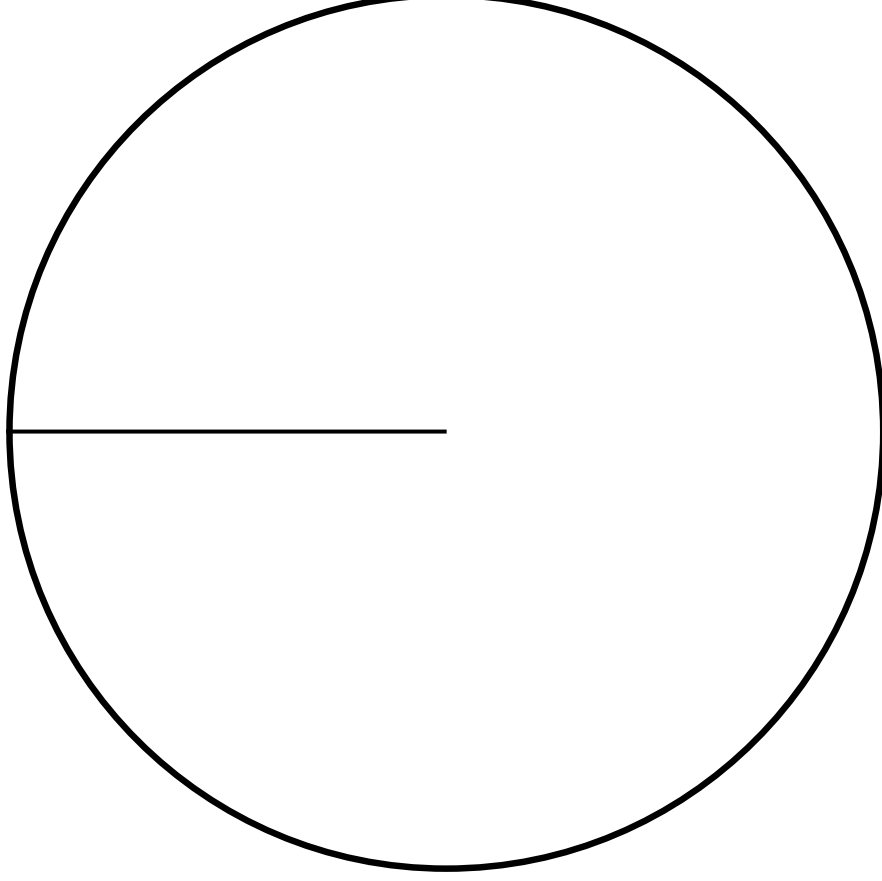
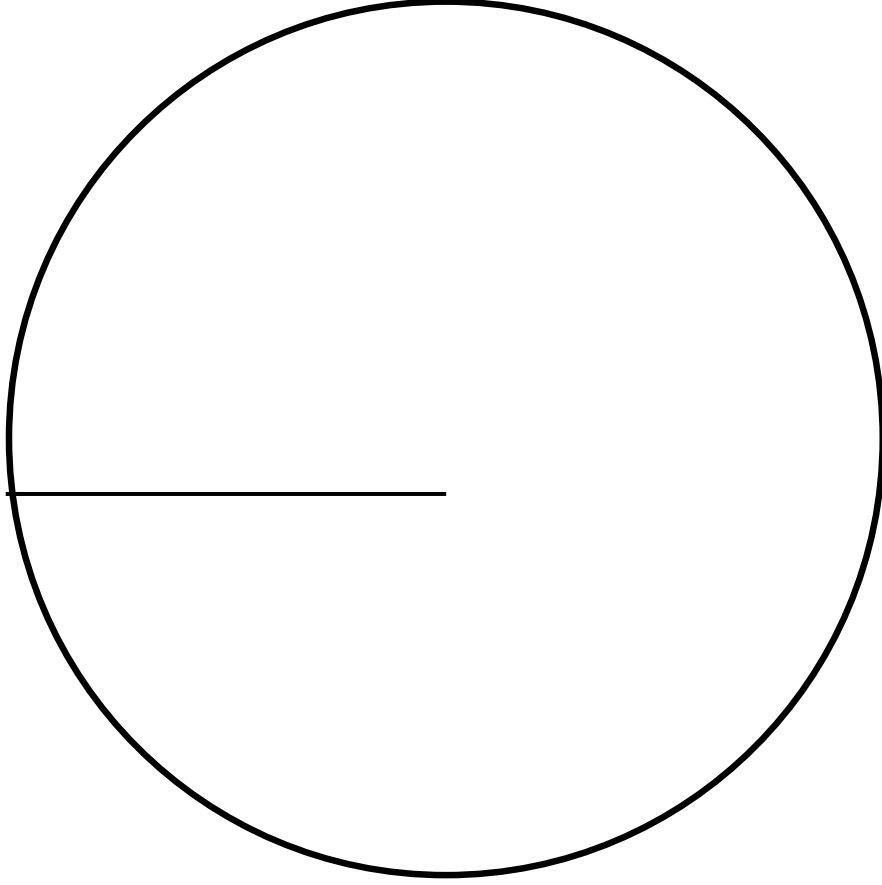


1. Where does the water you are drinking come from? (Answer: from the water tap at home.)
2. Water supply: How does water get to the tap? (Answer: It was supplied through a pipe system from a water treatment system.)
3. Water treatment: How did the water get to the treatment system? (Answer: It was transported from a water source, such as a river or lake.)
4. Water Source: How did the water get to the river or lake? (Answer: It arose because of the water cycle, which includes when water evaporates, turns into a cloud, and then falls as rain.)
5. Water Cycle: How does the water cycle occur? (Answer: The sun heats the water in seas, rivers, and lakes, and this causes the water to evaporate. The water vapor rises and becomes clouds. When the cloud fills with water, it rains and the water returns to the earth.)



1. Breathing: Where does the air you breathe come from? (Answer: You're taking it from the space around you.)
2. Air in space: Where does the air around you come from? (Answer: It is released by plants and trees.)
3. Release oxygen: How do plants and trees release oxygen? (Answer: Through a process where they use water, air, and sunlight.)
4. Plant Process: How do plants use water, air and sunlight? (Answer: Plants take water from the soil, air from the space around them and sunlight to release oxygen and make their food.)

1.6 MY CHAIN OF LIFE



2.0.1 EXPLANATORY SHEET OF THE DIFFERENT PLANT LAYERS



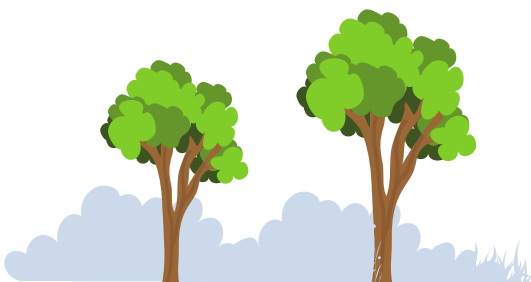
THE BOTTOM LAYER IS WHERE SMALL PLANTS AND GRASSES GROW.

IT IS CALLED THE **HERBACEOUS LAYER**.



THE MIDDLE LAYER IS WHERE THE SHRUBS GROW.

IT IS CALLED THE **SHRUB LAYER**.



THE TOP LAYER IS WHERE THE BIG TREES GROW.

IT IS CALLED THE **ARBOREAL LAYER**.

2.0.2 EXPLANATORY SHEET OF THE DIFFERENT PLANT LAYERS



HERBACEOUS PLANT



SHRUB



TREE

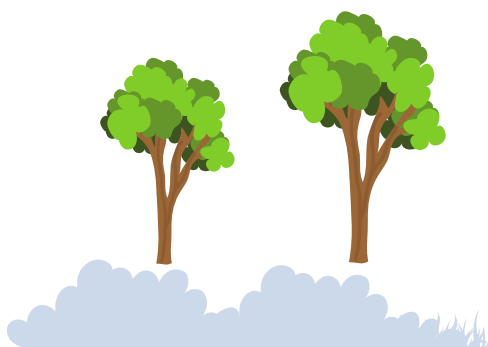
2.0.3 PLANT LAYERS WORK SHEET



Yes **No**

☐☐

Yes **No**

☐☐

Yes **No**

☐☐

2.1.1 EXPLANATORY SHEET. HERBACEOUS PLANTS

HERBACEOUS PLANTS ARE PLANTS THAT ARE SOFT AND FLEXIBLE, UNLIKE TREES.



THE TREE IS HARD AS A STONE.



HERBACEOUS PLANTS ARE SOFT
AND FLEXIBLE LIKE A FEATHER.



HERBACEOUS PLANTS ARE SOFT AND GREEN, LIKE THE GRASS WE STEP ON WHEN
WE PLAY IN THE PARK.



MANY HERBACEOUS PLANTS HAVE VERY BEAUTIFUL
FLOWERS THAT GROW AT THE TIPS OF THE STEMS.



HERBACEOUS PLANTS ARE VERY IMPORTANT TO US AND TO NATURE. THEY ARE LIKE THE SUPERHEROES OF
THE GARDEN. HERE ARE SOME EXAMPLES:

2.1.1 EXPLANATORY SHEET. HERBACEOUS PLANTS

SOME HERBACEOUS PLANTS HELP US GROW AND KEEP US HEALTHY

THAT'S BECAUSE THEY ARE VEGETABLES WE CAN EAT.



LETTUCE



TOMATOES



CARROTS



CUCUMBERS

THEY HELP US STAY
HEALTHY AND STRONG



LIKE SUPERHEROES
AND SUPERHEROINES!



2.1.1 EXPLANATORY SHEET. HERBACEOUS PLANTS

MANY HERBACEOUS PLANTS MAKE OUR GARDEN BEAUTIFUL

MANY GROW WILD IN OUR GARDEN, SUCH AS:

OTHERS WE BUY FROM GARDEN SHOPS.



RED
CAMPION



BOAR
THISTLE



CROWN
DAISY



BORAGE



THEY MAKE OUR GARDEN A HAPPY AND COLOURFUL PLACE.

2.1.1 EXPLANATORY SHEET. HERBACEOUS PLANTS

THEY HELP NATURE

HERBACEOUS PLANTS ARE VERY IMPORTANT TO NATURE.



THEY PROVIDE A HOME AND FOOD FOR MANY INSECTS AND OTHER ANIMALS.



THEY HELP CLEAN THE AIR WE BREATHE.



2.1.1 EXPLANATORY SHEET. HERBACEOUS PLANTS

THERE ARE THREE TYPES OF HERBACEOUS PLANTS:

ANNUALS

THEY LIVE ONE YEAR OR LESS



BIENNIALS

THEY LIVE TWO YEARS.



PERENNIALS

THEY LIVE MANY YEARS.



2.1.2 IDENTIFICATION GUIDE

SOME HERBS AND CLIMBERS THAT YOU MAY FIND IN PUBLIC GARDENS

ROSEMARY <i>SALVIA ROSMARINUS</i>			
THE PLANT			
THE LEAVES			
THE FLOWER			© H. Zell
THYME Replace with <i>Thymbra capitata</i>			
THE LEAVES			
THE FLOWER			© Magnus Manske
THE PLANT			© Teresa Grau Ros

2.1.2 IDENTIFICATION GUIDE

LAVENDER				
YOU CAN HAVE DIFFERENT SPECIES....LAVANDULA STOECHAS, L. DENTATA, L. LATIFOLIA, L. ANGUSTIFOLIA				
THE PLANT	 © public domain		THE LEAVES AND THE FLOWER	
		 © Hans Hillewaert	 © liesvantrompaey	 © public domain

BLACKBERRY				
RUBUS ULMIFOLIUS				
THE PLANT	 © public domain	 © David Gaya	THE FLOWER	 © Flagstafffotos
			THE FRUIT	 © public domain

2.1.2 IDENTIFICATION GUIDE

IVY HEDERA HELIX				
THE PLANT	THE LEAVES	THE FLOWER	PHOTO OF THE FRUIT	
 © Public domaine_PXhere	 © María José Fomerod	 © Rasbak	 © Bicanski	

BOUGAINVILLEA BOUGAINVILLEA SPECTABILIS Replace with Rhamnus alaternus			
THE PLANT	THE LEAVES	THE FLOWER	
			

2.1.2 IDENTIFICATION GUIDE

SOME SHRUBS YOU MAY FIND IN YOUR GARDENS

LAURUSTINUS <i>VIBURNUM TINUS</i>			
THE PLANT	THE LEAVES	PHOTO OF THE FLOWER	THE FRUIT
 © pete beard	 © Etrusko25	 © Didier Descouens	 © Daniel Villafruela

COMMON HAWTHORN <i>CRATAEGUS MONOGYNA</i>			
THE PLANT	THE LEAVES	THE FLOWER	THE FRUIT
 © Stefan Iefnaer	 © SA 3.0	 © White Hydra	 © Franz Xaver

2.1.2 IDENTIFICATION GUIDE

MASTIC TREE <i>PISTACIA LENTISCUS</i>			
THE PLANT	THE LEAVES	THE FLOWER	THE FRUIT
 © Friviere	 © Xevi V	 © Hans Hillewaert	 © Giancarlo Dessi

JAPANESE CHEESEWOOD <i>PITTOSPORUM TOBIRA</i>			
THE PLANT	THE LEAVES	THE FLOWER	THE FRUIT
 © Forest & Kim Starr	 © Forest & Kim Starr	 © Σ64	 © Luis Fernández García

2.1.2 IDENTIFICATION GUIDE

SOME TREES YOU MAY FIND IN GARDENS

OAK QUERCUS ILEX				
THE PLANT	THE LEAVES	THE FLOWER	THE FRUIT	
 © Picamaderos	 © Salomé Bielsa	 © Luis Fernández García	 © Cebes	

OAK QUERCUS ROBUR				
THE PLANT	THE LEAVES	THE FLOWER	THE FRUIT	
 © Mª África	 © hippopx	 © AnRo0002	 © MabelAmber	

2.1.2 IDENTIFICATION GUIDE

PINE Just Pinus halepensis PINUS HALEPENSIS				
THE PLANT	THE LEAVES	THE FLOWER	THE FRUIT	
 © Christian Ferrer	 © Bri Weldon	 © Daniel Capilla	 © José Maria Escolano	 © S._Rae

PALM YOU COULD HAVE DIFFERENT SPECIES: PHOENIX DACTYLIFERA, P. CANARIENSIS, WASHINGTONIA SP. ETC...	
THE PLANT, FULL AND FRUIT	
 © Kahuroa	 © B. Simpson
 © Filo gèn	 © Alejandro Bayer Tamayo

2.1.2 IDENTIFICATION GUIDE

AFRICAN TAMARISK <i>TAMARIX AFRICANA</i>			
THE PLANT	THE LEAVES		
 © public domain			
	THE FLOWERS		
			

ITALIAN CYPRESS <i>CUPRESSUS SEMPERVIRENS</i>			
THE PLANT	THE LEAVES		
 © Wojsyl	 © public domain		
	THE FRUIT		
	 © Lucarelli		

2.1.2 IDENTIFICATION GUIDE

EUCALYPTUS				
YOU COULD HAVE DIFFERENT SPECIES, THERE ARE MORE THAN 700; EUCALYPTUS GLOBULUS, E. KAMALDULENSIS, ETC...				
THE PLANT	THE LEAVES	THE FLOWER	THE FRUIT	
 © IanBrookerand David Kleinig	 © Forest & Kim Starr		 © MurrayFagg	

CAROB TREE				
CERATONIA SILIQUA				
THE PLANT	THE LEAVES	THE FLOWER	THE FRUIT	
 © public domain				

2.1.2 IDENTIFICATION GUIDE

OTHER TREES YOU MIGHT ALSO FIND...

EUROPEAN NETTLE TREE

(*CELTIS AUSTRALIS*)



JUDAS TREE

(*CERCIS SILIQUASTRUM*)



2.1.2 IDENTIFICATION GUIDE

OTHER TREES YOU MIGHT ALSO FIND...

WHITE POPLARS

(*POPULUS ALBA*)



PHOENICIAN JUNIPER

JUNIPERUS PHOENICEA



2.1.3 VEGETATION TEMPLATE

PLANT PHOTOGRAPHY

TAKE A PHOTO OF EACH DIFFERENT TYPE OF PLANT YOU FIND AND
STICK IT ON THIS FILE.

PLANT no.: **(IF YOU KNOW ITS NAME, WRITE IT HERE):**

TREE – SHRUB – HERBACEOUS PLANT (circle the one that applies)	
THE PLANT	THE LEAVES
THE FLOWER	THE FRUIT

PLANT no.: **(IF YOU KNOW ITS NAME, WRITE IT HERE):**

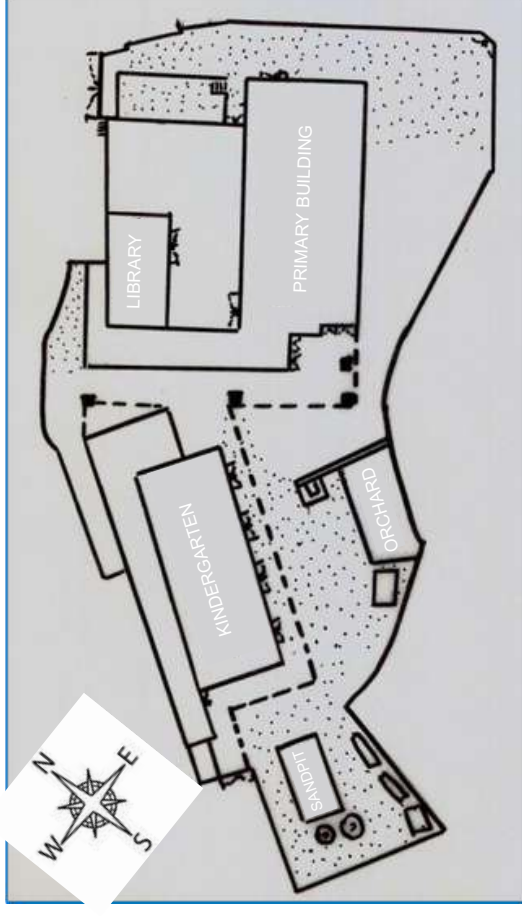
TREE – SHRUB – HERBACEOUS PLANT (circle the one that applies)	
THE PLANT	THE LEAVES
THE FLOWER	THE FRUIT

2.1.4 EXPLANATORY FILE BIODIVERSITY MAP OF FLORA

P 1: ANALYSIS. BIODIVERSITY MAP

Once we have the map done we will start placing the information on it.

Remember to orient it according to the cardinal points.



For the analysis of biodiversity, we will make 4 different types/layers of information

We will start with:

4 empty maps

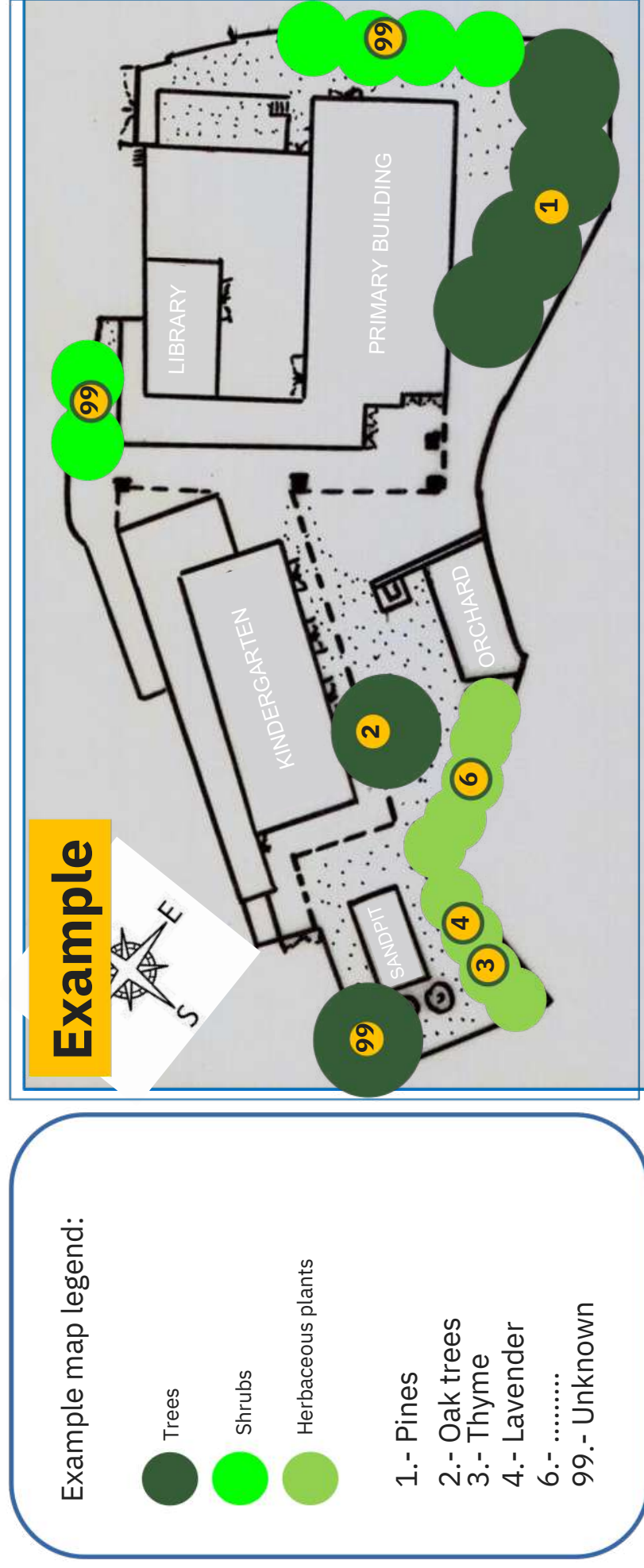
and each one will have information
about different topics:

- **Plants**
- **Animals**
- **Type of soil + water + infrastructures**
- **Sun/ Shade**

2.1.4 EXPLANATORY FILE BIODIVERSITY MAP OF FLORA

PHASE 1: ANALYSIS. BIODIVERSITY MAP: PLANTS

On the map you must locate: the area occupied by each type of plant (trees, shrubs and herbaceous plants). If you know them, put the name of the plants, if not, put unknown.



2.1.5 SURFACE CALCULATION

HOW TO CALCULATE THE SURFACE:

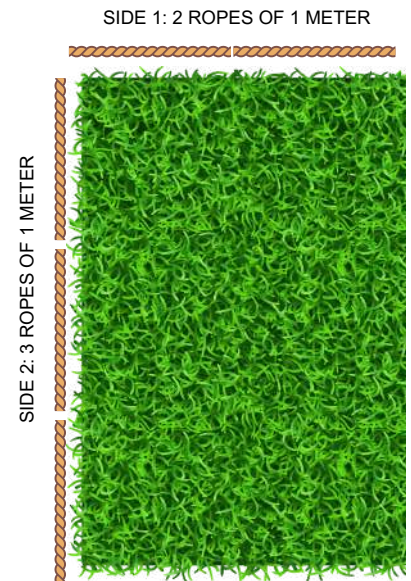
1) USE ONE-METER ROPES OR TAPES TO MARK THE EDGES OF THE GRASSY AREA.

HOW MANY ROPES DO YOU NEED TO MAKE A SIDE (WIDTH)?
NOTE THE NUMBER OF ROPES HERE:

SIDE 1

HOW MANY ROPES DO YOU NEED TO MAKE A SIDE (LENGTH)?
NOTE THE NUMBER OF ROPES YOU NEED TO MEASURE HERE:

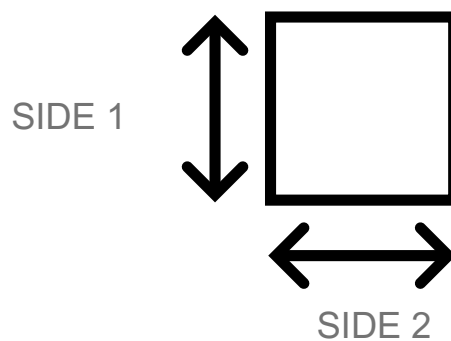
SIDE 2



MULTIPLY THE LENGTH BY THE WIDTH TO GET THE AREA CONTENT (FOR EXAMPLE, IF THE SURFACE IS 2 METERS LONG AND 3 METERS WIDE, THE AREA CONTENT IS $2\text{M} \times 3\text{M} = 6\text{M}^2$).

DRAW THE AREA ON YOUR MAP AND WRITE THE AREA CONTENT NEXT TO IT.

SIDE 1		SIDE 2		TOTAL
	X		=	



2.1.6 ACTIVITY SHEET

WE APPRECIATE THE PRESENCE OF HERBACEOUS PLANTS IN THE YARD

WHAT COLOUR WOULD YOU PUT ON THE TRAFFIC LIGHT?

MARK THE COLOUR OF THE TRAFFIC LIGHT WITH AN X

Questions:

- HOW MANY HERBACEOUS AREAS HAVE YOU MARKED ON YOUR MAP?
- ARE THESE AREAS LARGE OR SMALL?
- ARE THERE MORE HERBACEOUS AREAS OR MORE CONCRETE AREAS IN YOUR YARD?



THERE ARE NO HERBACEOUS PLANTS IN MY YARD

THERE ARE HERBACEOUS PLANTS IN MY YARD, BUT VERY FEW

THERE ARE MANY HERBACEOUS PLANTS IN MY YARD AND THERE ARE MANY DIFFERENT ONES

PROPOSALS FOR IMPROVEMENT



GET EXCITED AND DO ACTIVITY 5.4 CREATING BIODIVERSITY GARDENS

EXPAND THE AREAS WITH HERBACEOUS PLANTS IN YOUR YARD AND DO ACTIVITY 5.4 CREATING BIODIVERSITY GARDENS

VERY GOOD! EXPAND EVEN MORE THE AREAS WITH HERBACEOUS PLANTS IN YOUR YARD AND DO ACTIVITY 5.4 CREATING BIODIVERSITY GARDENS AND REINFORCE THIS ACTION WITH ACTIVITY 5.6. THE HOME OF INSECTS

DO YOU HAVE ANY MORE SUGGESTIONS?

2.2.1 EXPLANATORY SHEET SHRUB PLANTS

A SHRUB IS LIKE A LARGE PLANT, BUT NOT AS LARGE AS A TREE.

IT DOESN'T GROW AS TALL AS A TREE, BUT IT IS BIGGER THAN THE SMALL PLANTS YOU SEE ON THE GROUND.



HERBACEOUS
PLANTS



SHRUB



TREE



A SHRUB HAS MANY BRANCHES GROWING FROM NEAR THE GROUND. IT'S LIKE YOU HAVE A LOT OF ARMS STICKING OUT OF YOUR WAIST. THIS IS WHAT MAKES A SHRUB A SHRUB.

2.2.1 EXPLANATORY SHEET SHRUB PLANTS

COMPLETE THIS INFORMATION WITH LOTS OF PICTURES OF SHRUBS. AFTER THAT, GO OUT AND FIND ALL THE SHRUBS IN THE YARD.



2.2.2 ACTIVITY SHEET

- WE APPRECIATE THE PRESENCE OF SHRUBS IN THE YARD-

WHAT COLOUR WOULD YOU PUT ON THE TRAFFIC LIGHT?

MARK THE COLOUR OF THE TRAFFIC LIGHT WITH AN X

Questions:

- HOW MANY AREAS WITH SHRUBS HAVE YOU MARKED ON YOUR MAP?
- ARE THESE AREAS LARGE OR SMALL?
- ARE THERE MORE AREAS WITH SHRUBS OR MORE AREAS WITH CONCRETE IN YOUR YARD?



THERE ARE NO SHRUBS IN MY YARD

THERE ARE SHRUBS IN MY YARD, BUT VERY FEW

THERE ARE MANY SHRUBS IN MY YARD AND THERE ARE MANY DIFFERENT ONES

PROPOSALS FOR IMPROVEMENT



GET EXCITED AND PLAN NATIVE SHRUBS IN YOUR YARD OTHERWISE IF YOU HAVE SOIL, DO IT IN LARGE PLANTERS.

EXPAND THE AREAS WITH SHRUBS IN YOUR YARD, THINK ABOUT PLANTING NATIVE SPECIES AND VARIETIES THAT BEAR FRUIT IN WINTER TOO!

VERY GOOD! EXPAND EVEN MORE THE AREAS WITH SHRUBS IN YOUR YARD AND DO THE WILDLIFE OBSERVATION ACTIVITIES WE PROPOSE (FROM 2.4.1 TO 2.6)

DO YOU HAVE ANY MORE SUGGESTIONS?

2.3.1 EXPLANATORY SHEET TREE PLANTS

A tree is a large plant ... that has a strong trunk.



HERBACEOUS PLANTS

SHRUB

TREE

2.3.1 EXPLANATORY SHEET TREE PLANTS



**THE
TRUNK
GROWS
UPWARDS
...**

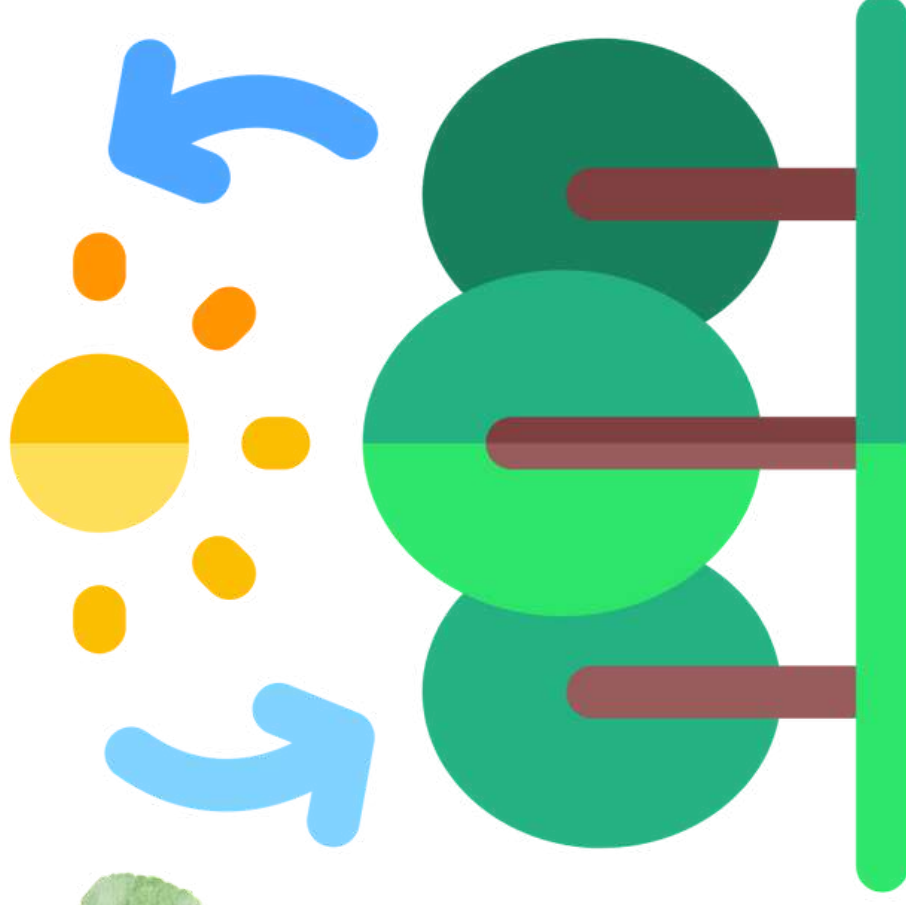
... AND IS DIVIDED INTO BRANCHES.



2.3.1 EXPLANATORY SHEET TREE PLANTS



THE
BRANCHES
HAVE
LEAVES.



LEAVES HELP THE
TREE BREATHE.

2.3.1 EXPLANATORY SHEET TREE PLANTS

TREES ARE VERY IMPORTANT BECAUSE:



THEY GIVE US SHADE...



...WOOD...



... FRUIT AND NUTS



... AND THEY CLEAN THE AIR WE BREATHE.

2.3.2 ACTIVITY SHEET

- WE VALUE THE PRESENCE OF TREES IN THE YARD-

Questions:

- HOW MANY AREAS WITH TREES HAVE YOU MARKED ON YOUR MAP?
- ARE THESE AREAS LARGE OR SMALL?
- ARE THERE MORE AREAS WITH TREES OR MORE AREAS WITH CONCRETE IN YOUR YARD?
- WHAT ARE THE PLACES WHERE YOU SPEND THE MOST TIME?
- AND WHICH PLACES HAVE THE MOST SHADE?

WHAT COLOUR WOULD YOU PUT ON THE TRAFFIC LIGHT?

MARK THE COLOUR OF THE TRAFFIC LIGHT WITH AN X



THERE ARE NO TREES IN MY YARD

THERE ARE TREES IN MY YARD, BUT VERY FEW AND ALMOST ALL ARE THE SAME

THERE ARE MANY TREES IN MY YARD AND THERE ARE MANY DIFFERENT ONES

PROPOSALS FOR IMPROVEMENT



CONSIDER PLANTING A TREE IN YOUR YARD, BUT FIRST YOU'LL NEED TO GET PERMISSION, CHOOSE THE RIGHT TREES, AND MAKE SURE THEY GET ENOUGH WATER AND CARE.

IF YOU ALREADY HAVE TREES BUT FEW AND ALL THE SAME ASK FOR PERMISSION TO PLANT SOME MORE AND TRY TO CHOOSE DIFFERENT AND NATIVE SPECIES.

CONGRATULATIONS! YOUR YARD IS A HEALTHY PLACE FOR BOTH YOU AND NATURE. NOW ENJOY THE SHADE AND SHELTER OF YOUR TREES AND OBSERVE ALL THE CREATURES THAT LIVE THERE THROUGH THE NATURE OBSERVATION ACTIVITIES WE PROPOSE (FROM 2.4.1 TO 2.6).

DO YOU HAVE ANY MORE SUGGESTIONS?

2.4. ANIMAL IMAGES: FIND THE BIRDS



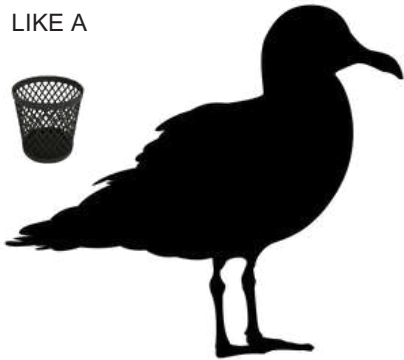
2.4.1 LEVEL 1 SUPPORT SHEET

HOW BIG WERE THE BIRDS YOU SAW? WHAT WERE THEY DOING?

MATCH WITH ARROWS WHAT THEY WERE DOING (USE AS MANY ARROWS AS NEEDED)

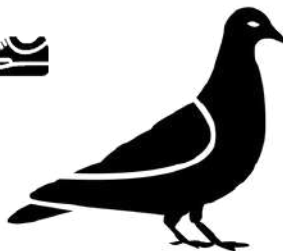
BIG BIRDS

LIKE A



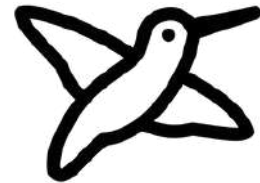
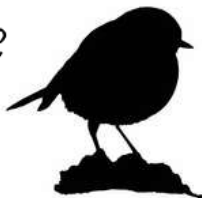
MEDIUM BIRDS

LIKE A



SMALL BIRDS

LIKE A



FLYING



RESTING
(ON PLANTS OR WALKING
ON THE GROUND)



EATING
(SEEDS, FRUITS, WORMS,
LEFTOVERS...)



NESTING

2.4.2 LEVEL 1 SUPPORT SHEET (LARGE BIRDS)

CAN YOU RECOGNIZE ANY OF THE BIRDS YOU'VE SEEN?



BIG BIRDS



YELLOW-LEGGED GULL



BLACK-HEADED GULL

2.4.2 LEVEL 1 SUPPORT FILE (MEDIUM BIRDS)

CAN YOU RECOGNISE ANY OF THE BIRDS YOU'VE SEEN?



MEDIUM BIRDS



EURASIAN COLLARED DOVE



COMMON PIGEON



EURASIAN BLACKBIRD



COMMON STARLING

2.4.2 LEVEL 1 SUPPORT SHEET (SMALL BIRDS)

CAN YOU RECOGNISE ANY OF THE BIRDS YOU'VE SEEN?



SMALL BIRDS



BARN SWALLOW



NORTHERN
HOUSE MARTIN



EUROPEAN ROBIN



SPANISH SPARROW



WHITE WAGTAIL



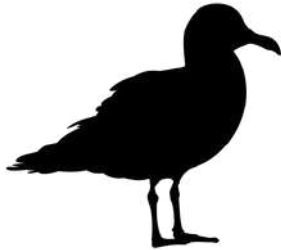
SARDINIAN WARBLER



TREE SPARROW

2.4.3 LEVEL 2 FILE

CAN YOU RECOGNISE ANY OF THE BIRDS YOU'VE SEEN?



BIG BIRDS



YELLOW-LEGGED GULL



BLACK-HEADED GULL



MEDIUM BIRDS



EURASIAN
COLLARED
DOVE



FERAL PIGEON



COMMON BLACKBIRD



COMMON
STARLING



SMALL BIRDS



BARN SWALLOW



NORTHERN
HOUSE MARTIN



EUROPEAN ROBIN



SPANISH SPARROW



WHITE WAGTAIL



SARDINIAN WARBLER



TREE SPARROW

2.4.4 BIRDS IN OUR PARKS, GARDENS AND COUNTRYSIDE



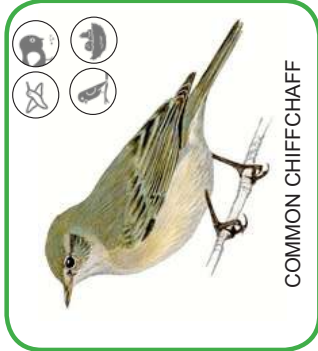
TREE SPARROW



EUROPEAN ROBIN



COMMON NIGHTINGALE



COMMON CHIFFCHAFF



SPANISH SPARROW



SERIN



EUROPEAN GREENFINCH



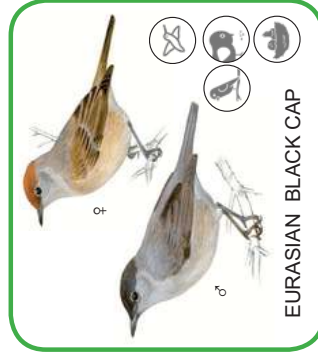
COMMON CHAFFINCH



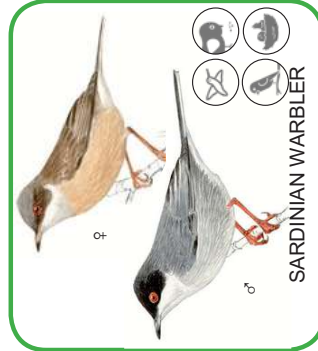
EUROPEAN GOLDFINCH



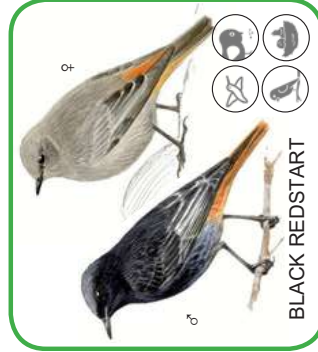
CETTI'S WARBLER



EURASIAN BLACK CAP



SARDINIAN WARBLER



BLACK REDSTART



SPOTTED FLYCATCHER

FOR EACH BIRD YOU IDENTIFY, MARK WHAT YOU SAW IT DOING



FLEW OVERHEAD



FEEDING



LANDED ON GROUND OR VEGETATION



NESTING

2.4.4 BIRDS IN OUR PARKS, GARDENS AND COUNTRYSIDE



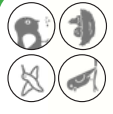
FERAL PIGEON



EURASIAN
COLLARED DOVE



WHITE WAGTAIL



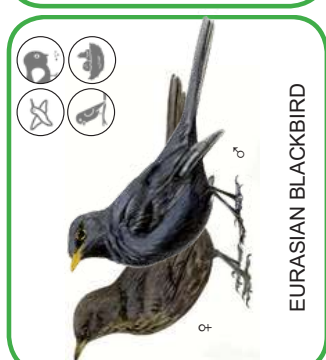
GREY WAGTAIL



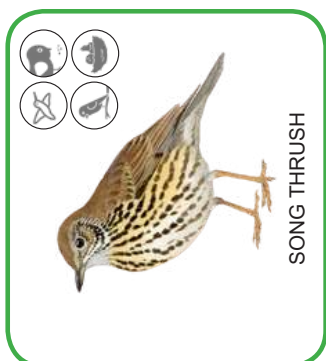
COMMON
HOOPOE



COMMON STARLING



EURASIAN BLACKBIRD



SONG THRUSH



COMMON SWIFT



COLLARED
SAND MARTIN



BARN SWALLOW



NORTHERN HOUSE MARTIN

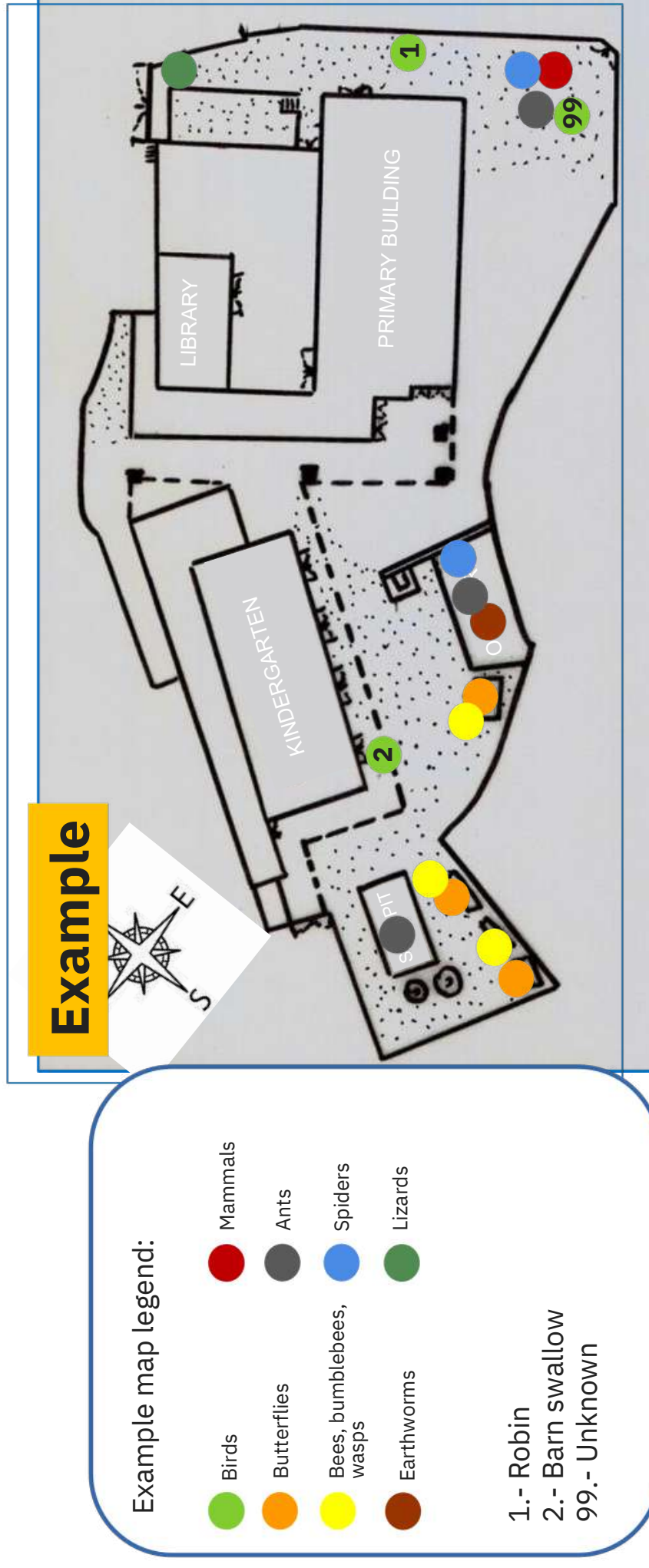


2.4.5 BIODIVERSITY MAP (FAUNA)

PHASE 1: ANALYSIS. BIODIVERSITY MAP: ANIMALS

On the map you have to locate:
the place where you saw the animals in your yard. If you know the species, put the name, otherwise put the generic group.

(see the identification sheets to see how we group the animals in different groups to locate them on the map)



2.5.1 EXPLANATORY SHEET - POLLINATORS -

A POLLINATOR IS AN ANIMAL THAT HELPS
FLOWERS PROUCE MORE FLOWERS.



MANY OF THESE POLLINATORS, WHICH WE CAN CALL
FRIENDS OF FLOWERS, ARE INSECTS.

THESE INCLUDE BEES,



WASPS



AND EVEN FLIES.



AND LET'S NOT FORGET THE
BUTTERFLIES AND BEETLES.



2.5.1 EXPLANATORY SHEET - POLLINATORS -



But not only insects help flowers, there are also some birds and mammals that pollinate flowers.



A GOOD IDEA TO REINFORCE LEARNING IS TO HAVE THEM REPRESENT EACH POLLINATOR THROUGH THE BODY. IT CAN ALSO HELP A LOT TO WATCH VIDEOS OF POLLINATORS IN ACTION.

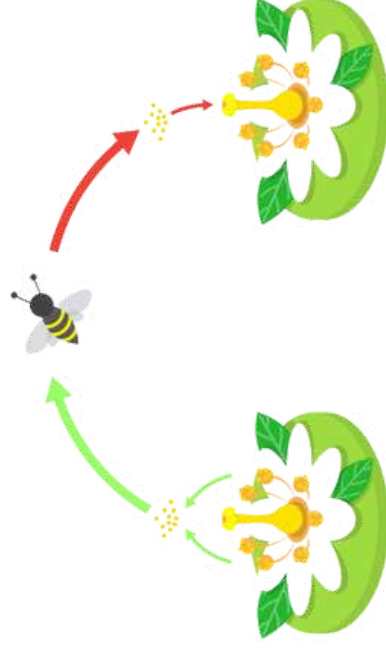


Imagine that flowers are like people, only that they have both male and female parts. But they can't move to meet each other. This is where pollinators come in

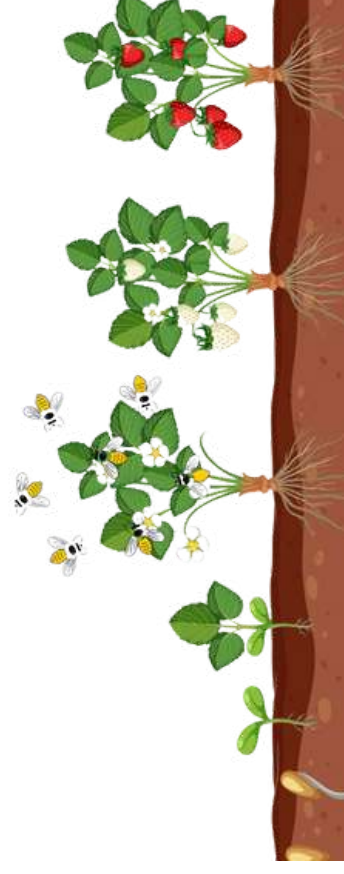


2.5.1 EXPLANATORY SHEET - POLLINATORS -

Pollinators, such as bees, visit flowers for food. When they do so, the pollen sticks to them. Then, when they visit another flower, some of that pollen falls. If it lands on the right part of the new flower, that one can make seeds for new flowers!



Pollinators are like flower postmen, carrying messages from one flower to another. And without them, we wouldn't have the fruits, vegetables and nuts we love to eat. They are very important!



2.5.2 INSECTS IDENTIFICATION GUIDE

ARTHROPODS: INSECTS 1

WHICH OF THESE GROUPS OF ANIMALS HAVE YOU SEEN IN YOUR YARD?

BUTTERFLIES LEPIDOPTERS

HERE ARE SOME PHOTOS OF EXAMPLE BUTTERFLIES, BUT YOU CAN FIND MANY DIFFERENT ONES.



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© Zeynel Cebeci CC BY-SA 3.0



© AnemoneProjectors CC BY-SA 2.0

BEEES, BUMBLEBEES, WASPS, ANTS HYMENOPTERA



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2.6.1 EXPLANATORY FILE

In your school yard, in addition to birds and pollinators (the friends of flowers) you can find other bugs, which are also very important for you and nature. Here are some examples:



ANTS



SNAILS



CENTIPEDES



LARVAE



LOCUSTS



EARWIGS



GREEN
STINK BUG



BEEYLES



SPIDERS



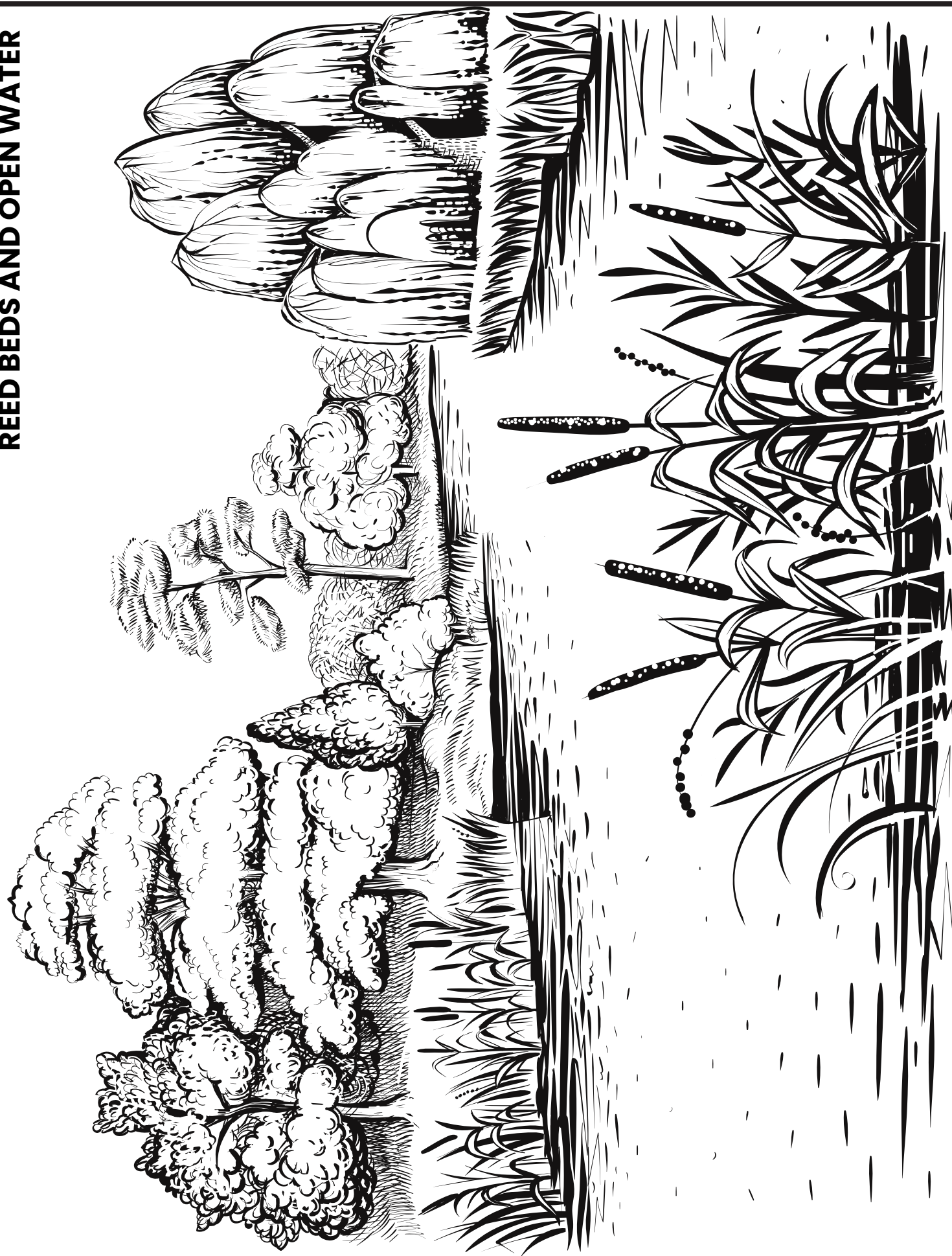
SLUGS



EARTHWORMS

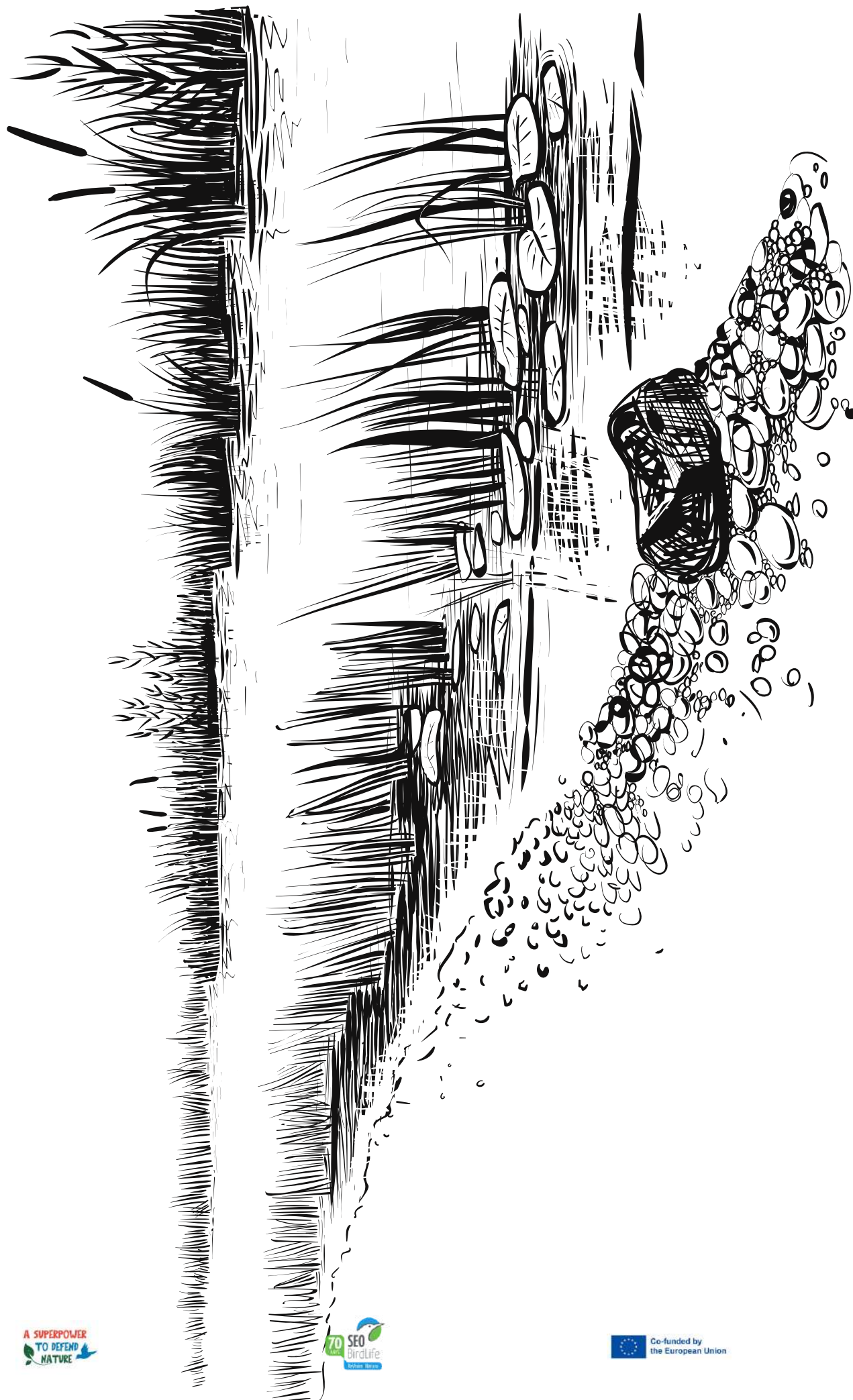
4.7.1 HABITATS TO PAINT

REED BEDS AND OPEN WATER



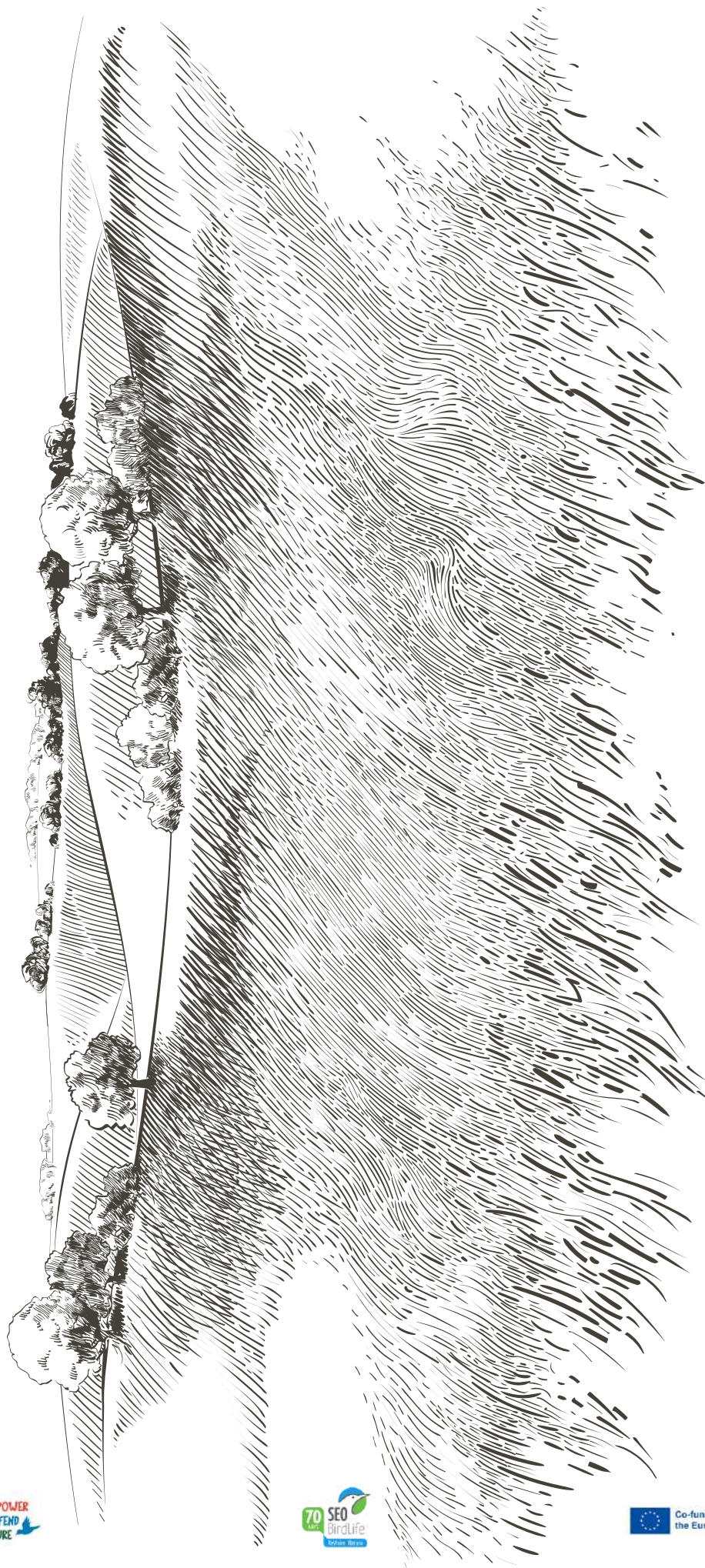
4.7.1 HABITATS TO PAINT

SHALLOW AND BRACKISH WATERS



4.7.1 HABITATS TO PAINT

STEPPES AND GRASSLANDS



4.7.1 HABITATS TO PAINT

FORESTS



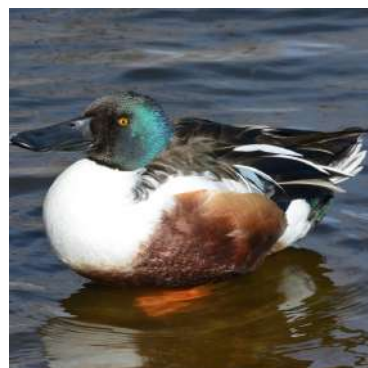
4.7.2 BIRD CARDS TO CUT OUT

HABITAT: REED BEDS AND OPEN WATER



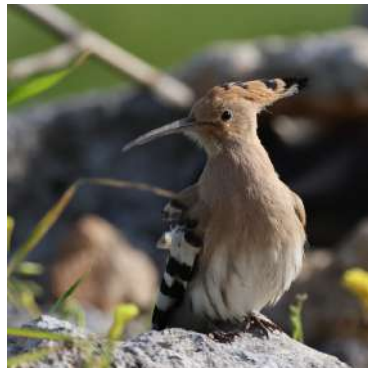
4.7.2 BIRD CARDS TO CUT OUT

HABITAT: SHALLOW AND BRACKISH WATERS



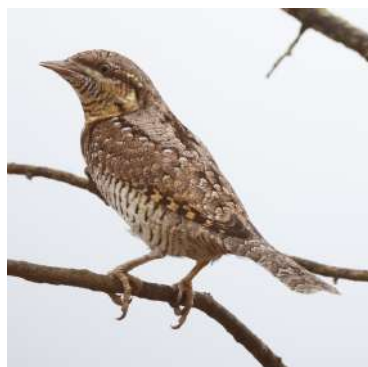
4.7.2 BIRD CARDS TO CUT OUT

HABITAT: STEPPES AND GRASSLANDS

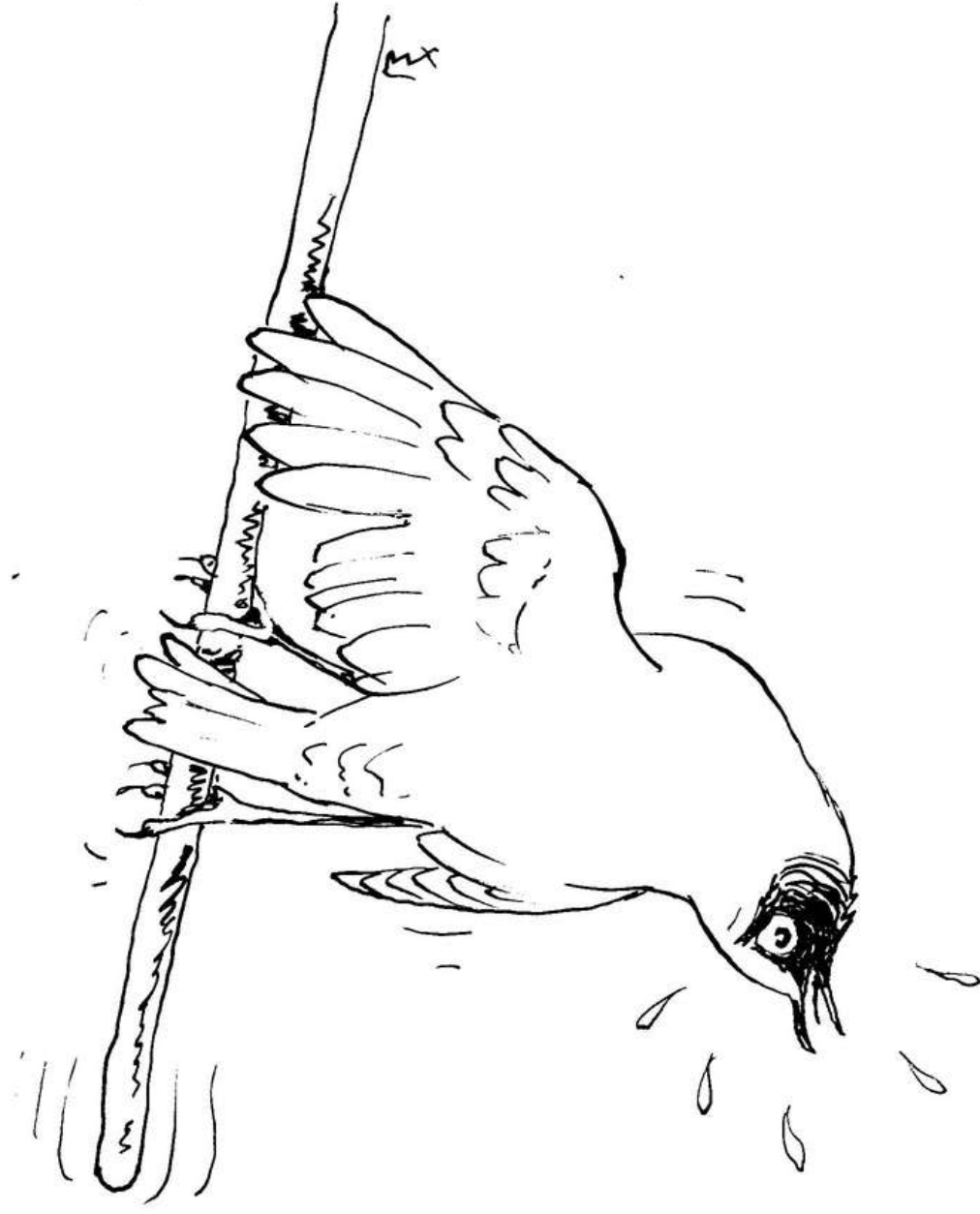


4.7.2 BIRD CARDS TO CUT OUT

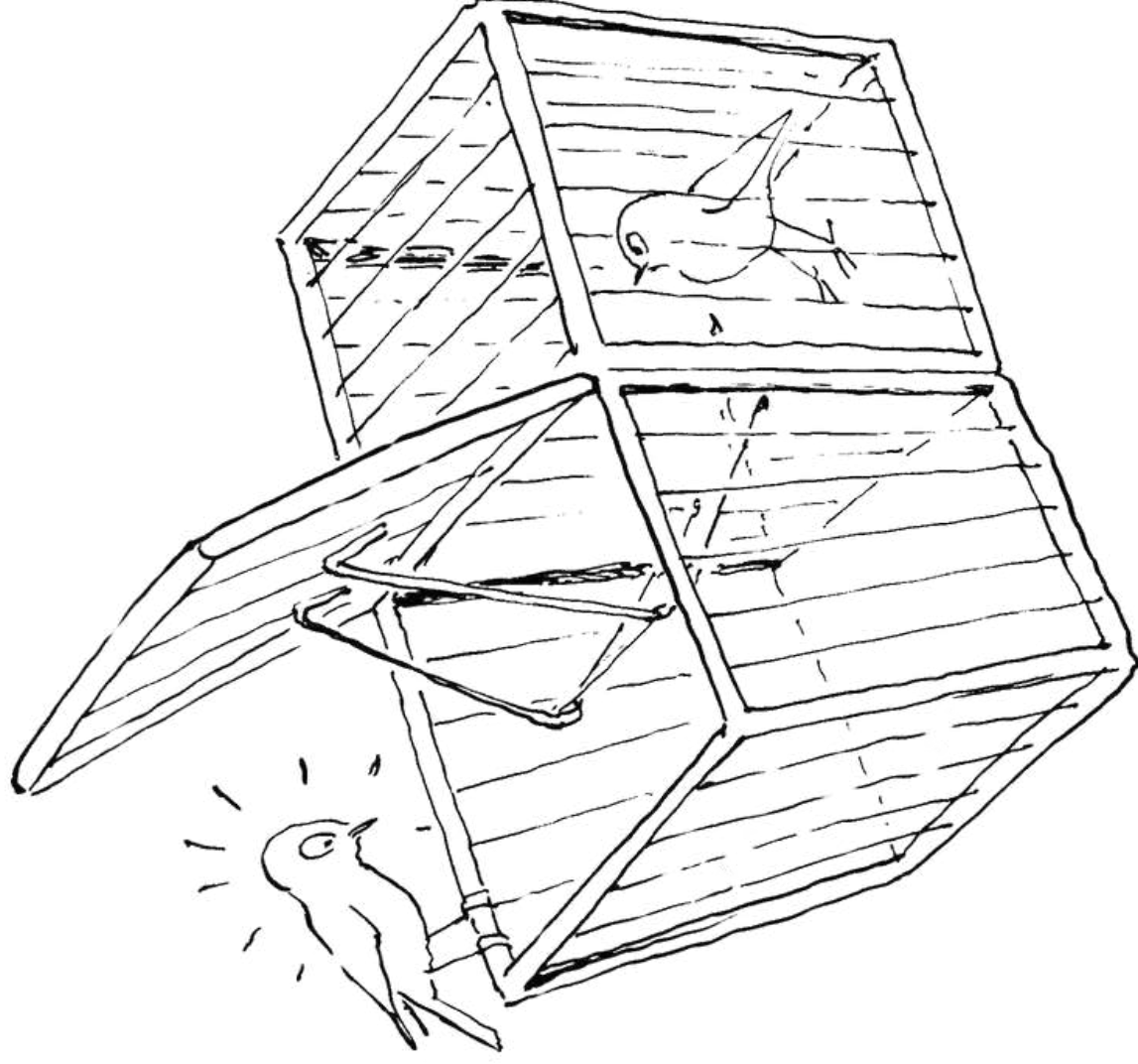
HABITAT: FOREST



4.8.1 TYPES OF ILLEGAL HUNTING: LIME-STICK TRAPPING



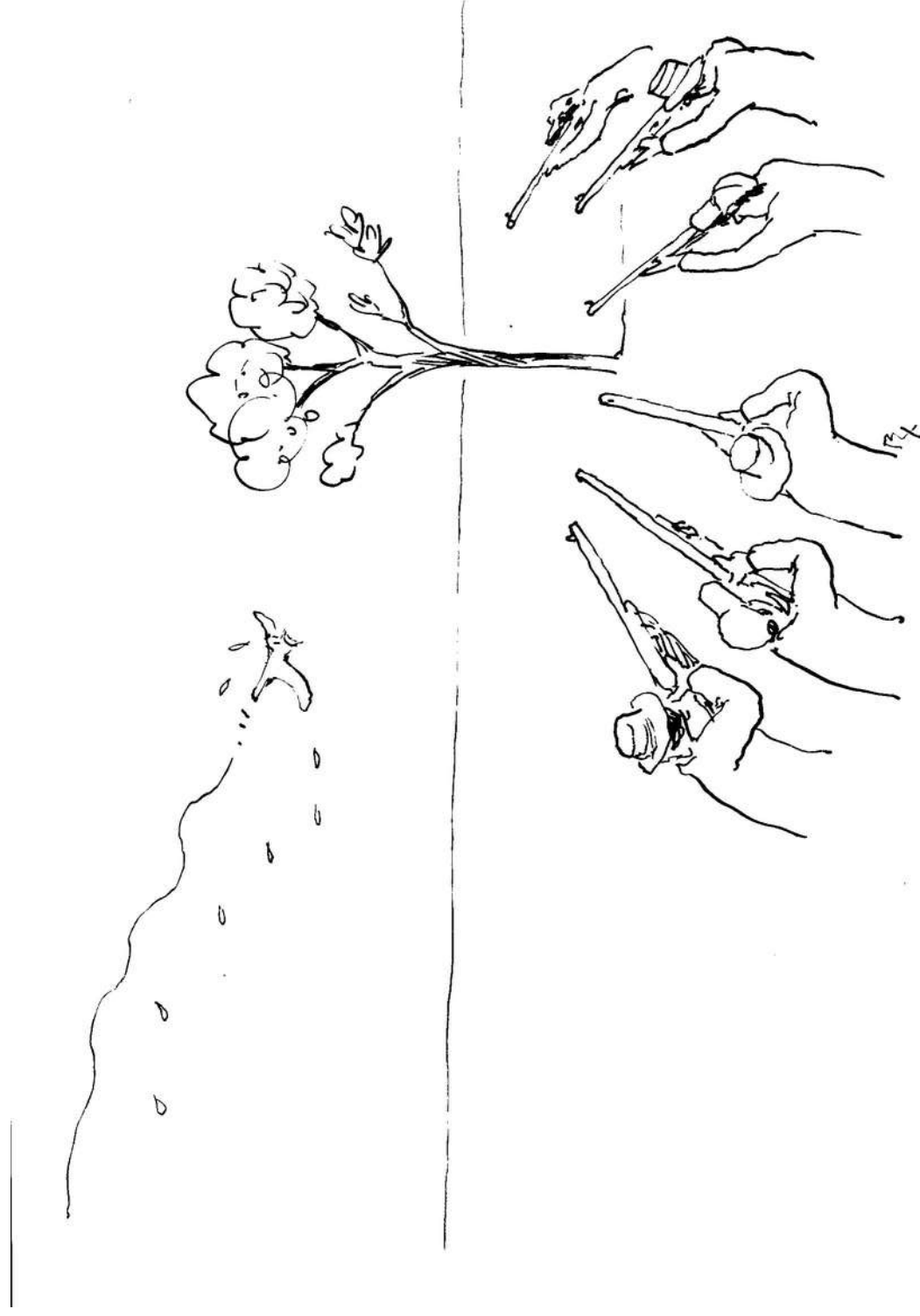
4.8.1 TYPES OF ILLEGAL HUNTING: TRAPS WITH LURE



V. Chatzivassanis / BirdLife Greece



4.8.1 TYPES OF ILLEGAL HUNTING: HUNTING DURING CLOSED SEASON



V. Chatzirvassanis / BirdLife Greece



TO KNOW MORE BIBLIOGRAPHY



Reconnect with Nature

- Louv, R. (2008). *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder*. Algonquin Books. This book discusses the growing disconnect between children and nature, coining the term "nature-deficit disorder."
- Larson, L. R., Green, G. T., & Cordell, H. K. (2011). Children's time outdoors: Results and implications of the National Kids Survey. *Journal of Park and Recreation Administration*, 29(2), 1-20. This study investigates the amount of time children spend outdoors and the implications for their well-being.
- Wells, N. M., & Evans, G. W. (2003). Nearby nature: A buffer of life stress among rural children. *Environment and Behavior*, 35(3), 311-330. This paper explores the role of nature in reducing stress among children.
- White, M. P., Alcock, I., Grellier, J., Wheeler, B. W., Hartig, T., Warber, S. L., ... & Fleming, L. E. (2019). Spending at least 120 minutes a week in nature is associated with good health and wellbeing. *Scientific Reports*, 9(1), 1-11. This study provides evidence on the health benefits of spending time in nature.
- Berman, M. G., Jonides, J., & Kaplan, S. (2008). The cognitive benefits of interacting with nature. *Psychological Science*, 19(12), 1207-1212. This research shows the positive effects of nature on cognitive functioning.
- Caritas. (2022). Adolescent screen time study. [Unpublished raw data]. This study examines the screen time habits of teenagers and its implications.
- Kuo, F. E., & Taylor, A. F. (2004). A potential natural treatment for attention-deficit/hyperactivity disorder: Evidence from a national study. *American Journal of Public Health*, 94(9), 1580-1586. This paper discusses the potential of nature exposure as a treatment for ADHD.
- McCurdy, L. E., Winterbottom, K. E., Mehta, S. S., & Roberts, J. R. (2010). Using nature and outdoor activity to improve children's health. *Current Problems in Pediatric and Adolescent Health Care*, 40(5), 102-117. This review highlights the health benefits of outdoor activities for children.
- Faber Taylor, A., & Kuo, F. E. (2006). Is contact with nature important for healthy child development? State of the evidence. In C. Spencer & M. Blades (Eds.), *Children and their Environments* (pp. 124-140). Cambridge University Press. This chapter reviews the evidence on the importance of nature for child development.
- Wilson, E. O. (1984). *Biophilia*. Harvard University Press. This book introduces the concept of biophilia, the inherent human affinity for nature.
- Maller, C., Townsend, M., Pryor, A., Brown, P., & St Leger, L. (2006). Healthy nature healthy people: 'Contact with nature' as an upstream health promotion intervention for populations. *Health Promotion International*, 21(1), 45-54. This paper discusses how contact with nature promotes public health.
- BirdLife International. (2021). *Connecting children with nature: Educational and conservation strategies*. [Report]. This report by BirdLife International outlines strategies for reconnecting children with nature through education and conservation projects.

Discovering nature

- Louv, R. (2008). *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder*. Algonquin Books. This book discusses the importance of nature for children and the benefits of outdoor experiences.
- Miller, J. R. (2005). Biodiversity conservation and the extinction of experience. *Trends in Ecology & Evolution*, 20(8), 430–434. This article explores the relationship between human well-being and biodiversity, emphasizing the importance of experiencing nature.
- Wilson, E. O. (1984). *Biophilia*. Harvard University Press. This work introduces the concept of biophilia, the innate human affinity for nature, and discusses the psychological benefits of engaging with the natural world.
- Kellert, S. R., & Wilson, E. O. (Eds.). (1993). *The Biophilia Hypothesis*. Island Press. This book compiles various research on the biophilia hypothesis, further detailing the human-nature connection.
- Sanders, D. L. (2010). *Guide to Backyard Birds*. National Geographic. This guide provides detailed information on bird species, making birdwatching more accessible through identification tips and bird call descriptions.
- Chapin III, F. S., Zavaleta, E. S., Eviner, V. T., Naylor, R. L., Vitousek, P. M., Reynolds, H. L., ... & Díaz, S. (2000). Consequences of changing biodiversity. *Nature*, 405(6783), 234–242. This article examines the essential roles biodiversity plays in ecosystem services and human well-being.
- Pollock, M. M., Naiman, R. J., & Hanley, T. A. (1998). Plant species richness in riparian wetlands – A test of biodiversity theory. *Ecology*, 79(1), 94–105. This study highlights the importance of biodiversity in maintaining healthy ecosystems.
- Spalding, M., Kainuma, M., & Collins, L. (2010). *World Atlas of Mangroves*. Earthscan. This atlas provides comprehensive information on mangrove ecosystems and their ecological significance.
- Pimentel, D., Wilson, C., McCullum, C., Huang, R., Dwen, P., Flack, J., ... & Cliff, B. (1997). Economic and environmental benefits of biodiversity. *BioScience*, 47(11), 747–757. This paper discusses the economic and environmental benefits provided by biodiversity, including agriculture and medicine.
- Primack, R. B. (2014). *Essentials of Conservation Biology*. Sinauer Associates. This textbook covers fundamental concepts in conservation biology, including the importance of biodiversity and strategies for its preservation.



Interconnection of nature and life chains

- Odum, E. P., & Barrett, G. W. (2005). *Fundamentals of Ecology* (5th ed.). Brooks Cole. This textbook provides a comprehensive overview of ecological principles, including ecosystem structure, energy flow, and nutrient cycling.
- Chapin III, F. S., Matson, P. A., & Vitousek, P. M. (2011). *Principles of Terrestrial Ecosystem Ecology*. Springer. This book explores the interactions within terrestrial ecosystems, including predator-prey relationships, mutualism, and decomposition.
- Hatcher, B. G., Johannes, R. E., & Robertson, A. I. (1989). Review of research relevant to the conservation of shallow tropical marine ecosystems. *Oceanography and Marine Biology*, 27, 337-414. This review discusses the interactions and relationships that sustain marine ecosystems, particularly coral reefs.
- Begon, M., Townsend, C. R., & Harper, J. L. (2005). *Ecology: From Individuals to Ecosystems* (4th ed.). Blackwell Publishing. This textbook covers fundamental concepts of ecology, including species interactions, food chains, and food webs.
- Smith, T. M., & Smith, R. L. (2015). *Elements of Ecology* (9th ed.). Pearson. This book provides detailed information on ecological concepts such as habitats, ecosystems, and the interdependence of species.
- Connell, J. H. (1978). Diversity in tropical rain forests and coral reefs. *Science*, 199(4335), 1302-1310. This paper examines the factors contributing to biodiversity and the complexity of interactions in tropical ecosystems.
- Vitousek, P. M., Mooney, H. A., Lubchenco, J., & Melillo, J. M. (1997). Human domination of Earth's ecosystems. *Science*, 277(5325), 494-499. This article discusses the impacts of human activities on ecosystems and the importance of preserving ecological interactions.
- Paine, R. T. (1969). A note on trophic complexity and community stability. *The American Naturalist*, 103(929), 91-93. This seminal paper introduces the concept of keystone species and their role in maintaining ecosystem stability.
- Hölldobler, B., & Wilson, E. O. (1990). *The Ants*. Harvard University Press. This book explores the complex social structures and interactions within ant colonies, illustrating interdependence in terrestrial ecosystems.
- Hughes, T. P., Baird, A. H., Bellwood, D. R., Card, M., Connolly, S. R., Folke, C., ... & Roughgarden, J. (2003). Climate change, human impacts, and the resilience of coral reefs. *Science*, 301(5635), 929-933. This paper examines the factors affecting the resilience of coral reef ecosystems and the importance of preserving their interactions.
- Loreau, M., Naeem, S., Inchausti, P., Bengtsson, J., Grime, J. P., Hector, A., ... & Wardle, D. A. (2001). Biodiversity and ecosystem functioning: Current knowledge and future challenges. *Science*, 294(5543), 804-808. This article reviews the role of biodiversity in ecosystem functioning and the interdependence of species.
- Estes, J. A., Terborgh, J., Brashares, J. S., Power, M. E., Berger, J., Bond, W. J., ... & Wardle, D. A. (2011). Trophic downgrading of planet Earth. *Science*, 333(6040), 301-306. This paper discusses the effects of removing top predators from ecosystems and the resulting cascading effects on biodiversity.

Trees

- Chapin III, F. S., Matson, P. A., & Vitousek, P. M. (2011). *Principles of Terrestrial Ecosystem Ecology*. Springer. This book covers the fundamental roles of trees in ecosystems, including carbon sequestration, water cycle regulation, and habitat provision.
- Lal, R. (2004). Soil carbon sequestration impacts on global climate change and food security. *Science*, 304(5677), 1623-1627. This paper discusses the role of trees as carbon sinks and their impact on mitigating climate change.
- Perry, D. A., Oren, R., & Hart, S. C. (2008). *Forest Ecosystems* (2nd ed.). Johns Hopkins University Press. This textbook provides an in-depth look at the structure and function of forest ecosystems and the ecological roles of trees.
- Jackson, R. B., Jobbágy, E. G., Avissar, R., Roy, S. B., Barrett, D. J., Cook, C. W., ... & Murray, B. C. (2005). Trading water for carbon with biological carbon sequestration. *Science*, 310(5756), 1944-1947. This study highlights the water cycle regulation functions of trees and their importance in reducing soil erosion and maintaining hydrological system.
- Eldridge, D. J., & Myers, C. A. (2001). The impact of tree age on epiphytic lichen diversity in Mediterranean-type ecosystems. *Journal of Biogeography*, 28(3), 471-482. This paper discusses the biodiversity supported by trees in Mediterranean ecosystems.
- Blondel, J., Aronson, J., Bodiou, J. Y., & Boeuf, G. (2010). *The Mediterranean Region: Biological Diversity in Space and Time* (2nd ed.). Oxford University Press. This book provides information on the diversity and ecological roles of Mediterranean tree species.
- Terral, J. F., & Arnold-Simard, G. (1996). Beginnings of olive cultivation in eastern Spain in relation to Holocene bioclimatic changes. *Quaternary Research*, 46(2), 176-185. This research provides insight into the historical and ecological significance of native and non-native tree species in the Mediterranean region.
- Turner, N. C. (2001). Adaptation and acclimation of crops to drought: A case study on Mediterranean tree species. *Acta Horticulturae*, 537, 59-65. This study focuses on the drought resistance and ecological adaptations of key Mediterranean tree species.
- Lindenmayer, D. B., Laurance, W. F., & Franklin, J. F. (2012). Global Decline in Large Old Trees. *Science*, 338(6112), 1305-1306. This paper discusses the ecological importance and the lifecycle of large old trees in forest ecosystems.
- Harmon, M. E., Franklin, J. F., Swanson, F. J., Sollins, P., Gregory, S. V., Lattin, J. D., ... & Cummins, K. W. (1986). Ecology of coarse woody debris in temperate ecosystems. *Advances in Ecological Research*, 15, 133-302. This research highlights the role of dead and decaying trees in nutrient cycling and ecosystem dynamics.
- Fisher, R. F., & Binkley, D. (2000). *Ecology and Management of Forest Soils*. Wiley. This book provides an overview of the processes of nutrient uptake, photosynthesis, and the overall growth cycle of trees.
- FAO (2016). *Global Forest Resources Assessment 2015: How are the world's forests changing?* Food and Agriculture Organization of the United Nations. This report provides global insights into forest health, biodiversity, and the contributions of trees to human well-being.

Birds

- Sekercioglu, C. H. (2006). Increasing awareness of avian ecological function. *Trends in Ecology & Evolution*, 21(8), 464–471. This paper discusses the ecological roles of birds, including pollination, seed dispersal, and insect predation.
- Gill, F. B. (2007). *Ornithology* (3rd ed.). W.H. Freeman and Company. This textbook provides comprehensive coverage on bird behaviour, ecology, and the importance of bird watching.
- Green, R. E., & Hirons, G. J. M. (1991). The relevance of population studies to the conservation of threatened birds. *Ibis*, 133(s1), 6–13. This study highlights the role of birds as environmental indicators.
- Sutherland, W. J., Newton, I., & Green, R. E. (Eds.). (2004). *Bird Ecology and Conservation: A Handbook of Techniques*. Oxford University Press. This handbook includes techniques for bird watching and monitoring, contributing to conservation efforts.
- Newton, I. (2013). *Birds and Pollution*. Academic Press. This book provides detailed insights into how birds bioaccumulate contaminants and what it signifies for environmental health.
- Bibby, C., Burgess, N., Hill, D., & Mustoe, S. (2000). *Bird Census Techniques*. Academic Press. This guide covers methods for studying bird populations and their importance in monitoring ecosystem health.
- Blondel, J., Aronson, J., Bodiou, J. Y., & Boeuf, G. (2010). *The Mediterranean Region: Biological Diversity in Space and Time* (2nd ed.). Oxford University Press. This book provides information on the bird species and habitats specific to the Mediterranean region.
- Kelsey, M. G. (1992). The importance of birds as bio-indicators. *British Birds*, 85(1), 18–21. This article discusses the use of birds as indicators of environmental change.
- FAO (2019). *The State of the World's Biodiversity for Food and Agriculture*. Food and Agriculture Organization of the United Nations. This report discusses the ecosystem services provided by birds and other species.
- Harris, J. B. C., & Pimm, S. L. (2004). Bird species' tolerance of secondary forest habitats and its effects on extinction. *Conservation Biology*, 18(6), 1607–1616. This study highlights the adaptability of certain bird species to urban and altered environments.
- BirdLife International (2020). *State of the World's Birds 2020*: BirdLife International's flagship science publication. This report provides insights into bird population trends and the role of birds in ecosystem health.



Global Environmental Challenges

- IPCC. (2021). *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press. This report provides comprehensive information on the science of climate change, including its impacts on ecosystems and biodiversity.
- Millennium Ecosystem Assessment. (2005). *Ecosystems and Human Well-being: Biodiversity Synthesis*. World Resources Institute. This synthesis highlights the role of biodiversity in ecosystem services and the consequences of its loss.
- Hanski, I. (2011). Habitat loss, the dynamics of biodiversity, and a perspective on conservation. *Ambio*, 40(3), 248-255. This article discusses the impacts of habitat loss on biodiversity and ecosystems.
- Rockström, J., Steffen, W., Noone, K., et al. (2009). A safe operating space for humanity. *Nature*, 461(7263), 472-475. This paper introduces the concept of planetary boundaries, including the impacts of pollution and overuse of natural resources.
- Barrow, C. J. (2014). *Environmental Management for Sustainable Development*. Routledge. This book covers various environmental challenges, including habitat destruction, pollution, and sustainable practices.
- Vitousek, P. M., Mooney, H. A., Lubchenco, J., & Melillo, J. M. (1997). Human domination of Earth's ecosystems. *Science*, 277(5325), 494-499. This seminal paper discusses the widespread impact of human activities on ecosystems and biodiversity.
- WWF. (2020). *Living Planet Report 2020: Bending the Curve of Biodiversity Loss*. World Wildlife Fund. This report provides insights into global biodiversity trends and the urgent need for conservation action.
- MEA. (2005). *Ecosystems and Human Well-being: Current State and Trends*. Millennium Ecosystem Assessment. This volume provides detailed analysis of the state of global ecosystems and the services they provide.
- Primack, R. B. (2014). *Essentials of Conservation Biology*. Sinauer Associates. This textbook offers a comprehensive overview of conservation biology, including threats to biodiversity and strategies for protection.
- Sala, O. E., Chapin, F. S., Armesto, J. J., et al. (2000). Global biodiversity scenarios for the year 2100. *Science*, 287(5459), 1770-1774. This study presents scenarios for future biodiversity based on different environmental and policy changes.
- Pimm, S. L., Jenkins, C. N., Abell, R., et al. (2014). The biodiversity of species and their rates of extinction, distribution, and protection. *Science*, 344(6187), 1246-1252. This paper discusses current biodiversity status and the rate of species extinction.
- Bradshaw, C. J. A., Sodhi, N. S., & Brook, B. W. (2008). Tropical turmoil: A biodiversity tragedy in progress. *Frontiers in Ecology and the Environment*, 6(9), 421-428. This article addresses the severe biodiversity losses occurring in tropical regions due to human activities.
- FAO. (2020). *The State of the World's Forests 2020: Forests, Biodiversity and People*. Food and Agriculture Organization of the United Nations. This report discusses the link between forests and biodiversity, and the impacts of deforestation.
- Davidson, E. A., & Janssens, I. A. (2006). Temperature sensitivity of soil carbon decomposition and feedbacks to climate change. *Nature*, 440(7081), 165-173. This paper examines the impact of climate change on soil carbon and ecosystem dynamics.
- Allan, E., Manning, P., Alt, F., et al. (2015). Land use intensification alters ecosystem multifunctionality via loss of biodiversity and changes to functional composition. *Ecology Letters*, 18(8), 834-843. This study explores how intensified land use affects biodiversity and ecosystem functions.

Monitoring nature

- Louv, R. (2008). *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder*. Algonquin Books. This book emphasizes the importance of connecting children with nature and the benefits of outdoor activities like field trips and nature journaling.
- Schulze, E.-D., Mooney, H. A. (Eds.). (2012). *Biodiversity and Ecosystem Function*. Springer Science & Business Media. This book provides insights into the role of biodiversity and the significance of observing and documenting wildlife in understanding ecosystem functionality.
- Bonney, R., Cooper, C. B., Dickinson, J., et al. (2009). Citizen Science: A Developing Tool for Expanding Science Knowledge and Scientific Literacy. *BioScience*, 59(11), 977-984. This paper discusses the impact of citizen science projects like eBird and iNaturalist in scientific research and education.
- Smith, M., & Sutton, A. (2020). *Nature Journaling: A Creative Practice for Observing and Recording the World Around You*. Timber Press. This book provides guidance on how to use nature journals for enhancing observational skills and appreciation for nature.
- Dickinson, J. L., Zuckerberg, B., & Bonter, D. N. (2010). Citizen Science as an Ecological Research Tool: Challenges and Benefits. *Annual Review of Ecology, Evolution, and Systematics*, 41, 149-172. This review highlights the benefits of engaging in citizen science projects for ecological research and education.
- Newman, C., Buesching, C. D., & Macdonald, D. W. (2003). Validating Mammal Monitoring Methods and Assessing the Performance of Volunteers in Wildlife Conservation—"Sed quis custodiet ipsos custodies?". *Biological Conservation*, 113(2), 189-197. This article examines the effectiveness of various wildlife monitoring techniques, including the use of camera traps.
- Root, N. T., & Hughes, L. (2014). *Weather and Climate: A Teacher's Guide to the Atmosphere*. Routledge. This guide includes information on the educational benefits of using weather stations for monitoring environmental conditions and understanding climate patterns.
- Dennis, R. L. H., Shreeve, T. G., & Van Dyck, H. (2006). Habitats and Resources: The Need for a Resource-Based Definition to Conserve Butterflies. *Biodiversity and Conservation*, 15(6), 1943-1966. This paper discusses the importance of habitat surveys in assessing biodiversity and conservation needs.
- Kress, W. J., & Stine, J. E. (2016). *Living in the Anthropocene: Earth in the Age of Humans*. Smithsonian Institution Scholarly Press. This book provides context on the significance of monitoring biodiversity and ecosystem health in the Anthropocene era.
- Legg, C. J., & Nagy, L. (2006). Why Most Conservation Monitoring is, but Need Not Be, a Waste of Time. *Journal of Environmental Management*, 78(2), 194-199. This article explores the importance and effectiveness of conservation monitoring techniques in environmental education and management.
- Primack, R. B., & Sher, A. (2016). *Introduction to Conservation Biology*. Sinauer Associates. This textbook covers a wide range of conservation biology topics, including wildlife observation and the role of citizen science in conservation efforts.
- Sutherland, W. J., Dicks, L. V., Ockendon, N., & Smith, R. K. (Eds.). (2018). *What Works in Conservation 2018*. Open Book Publishers. This book provides evidence-based practices for conservation, including the use of tools and technologies for wildlife monitoring.
- Devictor, V., Whittaker, R. J., & Beltrame, C. (2010). Beyond Scarcity: Citizen Science Programmes as Useful Tools for Conservation Biogeography. *Diversity and Distributions*, 16(3), 354-362. This paper highlights the role of citizen science in conservation biogeography and environmental monitoring.
- Lin, B. B., & Fuller, R. A. (2013). Environmental Education and the Role of Citizen Science in Conservation. *Wiley Interdisciplinary Reviews: Climate Change*. This review discusses the educational benefits of involving students in environmental monitoring and citizen science projects.

Helping nature and the planet

- Miller, J. R., & Hobbs, R. J. (2007). Habitat Restoration—Do We Know What We're Doing? *Restoration Ecology*, 15(3), 382–390. This article provides insights into the importance of habitat restoration and practical steps for successful conservation efforts.
- Sobel, D. (2008). *Childhood and Nature: Design Principles for Educators*. Stenhouse Publishers. This book emphasizes the role of educators in fostering environmental stewardship among learners through hands-on activities and experiential learning.
- Bonney, R., Phillips, T. B., Ballard, H. L., & Enck, J. W. (2016). Can Citizen Science Enhance Public Understanding of Science? *Public Understanding of Science*, 25(1), 2–16. This paper discusses the benefits of engaging learners in citizen science projects for both conservation and education.
- Wratten, S. D., Gillespie, M., Decourtye, A., Mader, E., & Desneux, N. (2012). Pollinator Habitat Enhancement: Benefits to Other Ecosystem Services. *Agriculture, Ecosystems & Environment*, 159, 112–122. This article explores the advantages of creating pollinator-friendly habitats and their impact on ecosystem services.
- Jensen, B. B., & Schnack, K. (2006). The Action Competence Approach in Environmental Education. *Environmental Education Research*, 12(3–4), 471–486. This paper highlights the importance of empowering learners to take practical actions for environmental conservation.
- Keller, R. P., Lodge, D. M., & Finnoff, D. C. (2007). Risk Assessment for Invasive Species Produces Net Bioeconomic Benefits. *Proceedings of the National Academy of Sciences*, 104(1), 203–207. This study underscores the ecological and economic impacts of invasive species and the importance of management strategies.
- Pachauri, R. K., & Meyer, L. (Eds.). (2014). *Climate Change 2014: Synthesis Report*. Intergovernmental Panel on Climate Change (IPCC). This report provides comprehensive information on climate change impacts and the importance of conserving resources like water and energy.
- McKinney, M. L. (2002). Urbanization, Biodiversity, and Conservation. *BioScience*, 52(10), 883–890. This article discusses the impact of urbanization on biodiversity and the role of conservation initiatives in urban settings.
- Steffen, W., Crutzen, P. J., & McNeill, J. R. (2007). The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature? *AMBIO: A Journal of the Human Environment*, 36(8), 614–621. This paper provides context on the Anthropocene and the necessity of sustainable living practices to mitigate human impact on the environment.
- Chivian, E., & Bernstein, A. (Eds.). (2008). *Sustaining Life: How Human Health Depends on Biodiversity*. Oxford University Press. This book explores the interconnectedness of human health and biodiversity, highlighting the need for conservation efforts.
- Kollmuss, A., & Agyeman, J. (2002). Mind the Gap: Why Do People Act Environmentally and What Are the Barriers to Pro-environmental Behavior? *Environmental Education Research*, 8(3), 239–260. This paper investigates the barriers to pro-environmental behavior and strategies for effective environmental education.
- Schultz, P. W. (2011). Conservation Means Behavior. *Conservation Biology*, 25(6), 1080–1083. This article emphasizes the role of individual behavior in conservation efforts and the importance of environmental education in promoting sustainable actions.
- Fryxell, J. M., Sinclair, A. R. E., & Caughley, G. (2014). *Wildlife Ecology, Conservation, and Management*. John Wiley & Sons. This textbook provides comprehensive information on wildlife ecology and conservation practices, including waste reduction, invasive species management, and habitat restoration.
- United Nations Environment Programme (UNEP). (2018). *Single-Use Plastics: A Roadmap for Sustainability*. This report outlines strategies for reducing plastic waste and promoting recycling initiatives.
- Stern, P. C. (2000). Toward a Coherent Theory of Environmentally Significant Behavior. *Journal of Social Issues*, 56(3), 407–424. This paper discusses the factors influencing environmentally significant behavior and the role of education in fostering pro-environmental actions.

Credits [SPDN logo]

The project

This Handbook for Outdoor Environmental Educators is part of the Erasmus+ project "A Superpower to Defend Nature", which aims is to promote a world in which children with developmental disorders have the opportunity to become leaders of nature and advocates of climate justice. A world in which children, families, professionals and environmentalists from all backgrounds come together through experiences of bonding with nature.

The partners

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