



Project funded by
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NATURE OBSERVATION AND CITIZEN SCIENCE

Trainer's Booklet



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BIOLEARN-BSB142
ECO-CONSCIOUS MINDS TO STOP POLLUTION
IN THE VALUABLE WETLANDS OF BLACK SEA BASIN

NATURE OBSERVATION AND CITIZEN SCIENCE

Trainer's Booklet

Target Audience: 12+ years old

District Government of Enez

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 www.bio-learn.org

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About The Project

BIOLEARN (Eco-Conscious Minds to Stop Pollution in the Valuable Wetlands of Black Sea Basin - BSB142), which was initiated on 01.01.2020 within the scope of the first call for proposals of “Joint Operational Programme Black Sea Basin 2014-2020” where the Directorate for EU Affairs is the national authority, is led by District Government of Enez.

Representatives of the following partners are as follows:

1. District Government of Enez-Turkey
2. Division Directorate of Edirne under First Regional Directorate under General Directorate of Nature Protection and Nature Parks of Ministry of Agriculture and Forestry - Turkey
3. Foundation Caucasus Environment - Georgia
4. Agricola NGO - Ukraine
5. Green Balkans / Stara Zagora NGO - Bulgaria
6. Management Body of Evros Delta and Samothraki Protected Areas - Greece

The overall objective of the project is to provide information, experience transfer and capacity building training between partners and develop a common environmental protection and education approach, methodology and organizing campaigns that will raise awareness in the society to reduce pollution in important wetlands in the Black Sea Basin.

The main activities to be carried out within the scope of the 26-month project are as follows:

1. Establishment of a total of 4 environmental protection and training centres, one of which is on the shores of Gala Lake, and providing environmental protection training to visitors and especially to students. By providing equipment for the other 6 existing centres, there will be a network of 10 activity and training centres.
2. Workshops to be held in Bulgaria and Greece, focusing on discussions about examples of

successful training and awareness-raising campaigns for the protection of wetlands, sharing experiences and preparing the materials to be used in training which will be applied in all centres. Capacity building training for trainers.

3. Organizing massive and synchronized cleaning campaigns to reduce pollution in wetlands.
4. Award-winning photo contest and exhibition focused on wetland protection.
5. Organizing a wetland pollution-based painting contest and exhibition in primary and secondary schools.

Outputs of the Project:

1. “Stop Pollution” and “Save Nature” environmental education and activity centres, one of which is mobile, will be established in 5 countries and will sustainably carry out training and awareness-raising activities.
2. A report will be prepared on the nature and rate of pollutants in 5 wetlands in the Black Sea Basin.
3. A guide with examples of good practices consisting of training and campaigns focused on protecting wetlands will be prepared.
4. A wetland protection training set consisting of 12 sections will be prepared especially for students. Training sets will also be shared on the internet.
5. After 10 people from 2 each partner country received trainer’s training, they will train 25 people in each region (totally 125 people) and the sustainability of training activities will be ensured in the established centres.
6. A painting competition on environmental protection will be held in at least 15 primary and secondary schools and paintings selected by the jury will be exhibited.
7. Pictures taken in 5 regions with the participation of professional photographers will be exhibited. With the mobile ‘Stop Pollution’ vehicle, the exhibition will travel to 5 countries.
8. An environmental cleaning campaign will be held simultaneously with the participation of 1500 people in 5 regions.
9. With the international conference to be held in Georgia, the outputs of the project and future action plans will be shared with the public.

For more information, you can visit the project website: www.bio-learn.org





About The Booklet


This training booklet is a part of the training set prepared under the “BIOLEARN-BSB142 / Eco-Conscious Minds to Stop Pollution in the Valuable Wetlands of Black Sea Basin” project. The booklet is prepared to attract the attention of the countries in the Black Sea basin to the importance of wetlands, to prevent pollution in wetlands and to develop ecological literacy of the participants accordingly.


This training material targets groups age 12 and older and consists of two parts which are the educator booklet and participant booklet. The trainer booklet has detailed activity application instructions, necessary information on the subject, assessment questions and recommendations to enrich the activity.


Application Notes


 Before starting the activity, it is recommended to view the entire booklet and to get ready for the topic by using the information in the booklet.

 At the beginning of the activity, necessary materials and worksheets should be distributed to the participants.

 When activities are applied, it is important to undertake a facilitator/guide role and to ensure the active participation of the participants.

 The activities in this booklet are planned to be completed in a short time. All of these activities can be applied consecutively or one or two of the activities can be applied in desired order depending on the development stages and interest levels of the participants.

 Presenting the activities with a natural narrative rather than reading the information text in the instructions and keeping the interest of the participants with questions and answers would present positive benefits.

 The activity instructions can be followed exactly or adapted based on participants' ages, development stages and interest levels without diverging from the activity purposes.

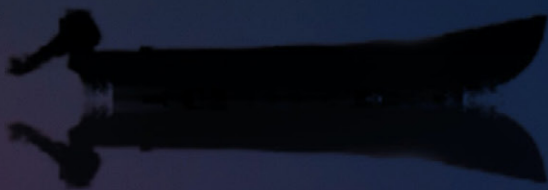


Nature Observation And Citizen Science

Why Do We Observe Nature?

Imagine a beautiful sunset view... Sun shining above the sea, gulls flying in the sky, dolphins dancing in the sea, trees swinging in the wind... What a unique moment, isn't it?

If we stop the time right at that moment and try to explain what this amazing view evokes in the depths of our soul... What will we end up with? Peace? Happiness? Excitement? For most of us, it is not always possible to watch this unique sunset view every day. But while nature has numerous beauties right beside us, why should we deprive ourselves of enjoying these beautiful feelings?





Nature observation means perceiving what is happening around us with our sense organs and carefully looking at birds, trees, all other living beings and all elements that form nature. When you watch carefully the flapping of a bird's wing, the stones rolled by a river or the blooming of flowers, you start to observe nature...

If we consider that technological devices, computers and phones take a lot of time of our day, we might think that our time we spend in nature decreases and it has become challenging to spend time in nature. But the truth is that humans always need to connect with nature. When we think about our lives surrounded by technology and stuck between concrete walls, it is already time to go back to nature! Moreover, nature is much closer than we think and it is right next to us.



When we think about
our lives surrounded by
technology and stuck
between concrete walls,
it is already time to go
back to nature!

Observing nature is one of the most inherent skills of a person. Our modern life is created with inspiration from nature and by closely observing the living beings. We were able to build planes because we understood how birds fly. We developed solar panels by observing plant leaves. But above all else, we have always observed nature because we enjoy swimming in the sea, walking in the forest and watching the unique sunset. The studies show that spending quality time in nature helps our concentration to increase, to be happier and to have a healthier body. On the contrary, a life disconnected from nature increases our level of stress and causes learning problems.



 The quality time that we spend in nature has positive contributions to both our physical and mental health.



You can think of the nature observation as mini-breaks that you give to yourself in the flow of your daily life. It will relax your mind and you will get into the flap of infinite motion and liveliness around you. You will be excited about what you see and you will start to wonder. You will learn the balance between life and death from dried branches and green leaves every spring. You will watch in amazement a seed turning into a tree or an egg turning into a huge eagle. As you observe nature, you will start to get to know yourself better and start understanding your role among billions of living beings on the planet.

Spending quality time in nature helps our concentration to increase, to be happier and to have a healthier body.

What Do You Need for Nature Observation?

There is only one thing necessary for nature observation: YOU! Your sense organs are the only necessary things for nature observation.


There are some simple activities to start nature observation. These activities help you to open



up your sense organs like you never did before and start perceiving what is happening around you. Thus, you learn how to use your sense organs in the following stages.

In short, regardless of who you are, whether you are a young person loving nature or an adult afraid of bugs and regardless of where you are, whether in a desolate village or city, nature is always right beside you. The important thing is how much you direct your sense organs and mind to nature. Most of the time, we live our lives so fast that we don't realise the soil we step on, the tree that we walk in its shadow or the birds flying above us. Let's stop the time for a while and try to focus on what is happening around us. Let's see what the things around us are trying to tell?



 *There are tens of natural wonders to discover even in a small city park.*



You look outside or go out to your balcony (Does your house have a garden? If yes, then you are lucky!). The clouds in the sky are moving slowly with the wind. They are starting to gather together. Maybe it is going to rain? Or the sun is right above you at noon. Maybe the season is turning from winter to summer. Or let's say you go out to the park in your street and it is May. The trees are getting greener and dandelions are growing on the grass. After last night's rain, a few snails and worms are slowly walking on the pavement. You smell the beautiful scent of the roses right there. You have already completed your first observations!

As you observe nature,
you will start to get to
know yourself better
and start understanding
your role among billions
of living beings on the
planet.

Nature Observation Activities

There are tens of enjoyable activities for nature observation. You can just sit on a bank and observe what is happening around you or you can take a long walk and get lost deep inside the forest. It is all up to you. Still, we have listed some of the easy activities for you.



The nature walk is the simplest activity that you can do easily and do not need anything else other than your sense organs. You can go on a nature walk in a park right next to you, a field near your home or in the city. The difference between a nature walk and a normal walk is the careful use of sense organs. Maybe new grass grew on the pavement you walk every day but you did not notice it. There was a sound from the park that you passed by while going to school but you didn't see the magpie nest nearby. When you start noticing such details in your walks, this walk turns into a nature walk!





 *Birdwatching is a common and popular nature observation activity.*

All other nature observation activities are the more detailed forms of nature walks. For example, birdwatching is among the most popular nature observation activities. During your walks, you can observe the crows flying around you, nightingales and robins singing in the bushes or buzzards carrying wood sticks to their nests. In this way, you can closely learn about bird species and observe their behaviours such as protecting their territory, finding mates and feeding their chicks. For birdwatching, a basic binocular and a bird identification guidebook will help you to improve your observation skills. But as we say, without these tools, you can observe the birds only with your sense organs as well.



















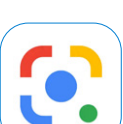


There are tens of enjoyable activities for nature observation. Birdwatching is among the most popular nature observation activities.

Other than these, you can follow the tracks of the wild animals in nature and investigate which tracks in the mud belong to which animals. Or you can observe the trees and learn the tree species such as pine, oak, cedar, fir by looking at their trunks and leaves. If you are on a summer holiday by the sea, you can discover the underwater world with snorkelling and find out which fish, sponges or shellfish live in the sea. In short, nature is full of numerous beauties waiting to be discovered. The only thing you need to do is start observing it.



 You can do numerous fun and instructive activities for nature observation.

You can benefit from technology while doing that. With tens of mobile apps, you can identify and record the birds, trees, flowers or butterflies you have observed. In this way, you can make your observations more fun. You can download the applications to your phone by scanning the QR codes.

| Application | Category | Apple Store | Play Store |
|---|----------|---|---|
|  iNaturalist | General |  |  |
|  iNaturalist Seek | General |  |  |
|  The Merlin Bird ID | Bird |  |  |
|  eBird | Bird |  |  |
|  PlantNet | Plant |  |  |
|  PlantSnap | Plant |  |  |
|  GoogleLens | General |  |  |



Nature is full of numerous beauties waiting to be discovered. The only thing you need to do is start observing it.

Doing Science While Observing!

Our planet has such rich biodiversity that you need great efforts to observe each living being, to understand their behaviours and relationships with other creatures. Despite hundreds of years of research, new species are still discovered and living beings that are believed to go extinct are found. All these discoveries happen not only with the efforts of scientists but with the contributions of ordinary non-expert individuals who love nature observation. This is called “**citizen science**”.

Every moment we are in nature and observe it, we see a section inside the flow of nature. We might witness a few hours of the forest or a few minutes of the underwater.



Although we are not aware of them, these observations play an important role. We cannot expect scientists to visit every corner of our planet, to see every living being and to observe all behaviours. But there might be such a moment that we can find a mushroom species that no one has ever seen during our walk in the forest, come across a rare mammal footprint or witness a unique behaviour of a common gull species.

With advanced technology, almost everyone uses a smartphone and therefore, almost everyone has a camera. Moreover, we travel and visit new places a lot more than ever before in the history of mankind. All these observations of ordinary people have scientific

Every moment we are in nature and observe it, we see a section inside the flow of nature.



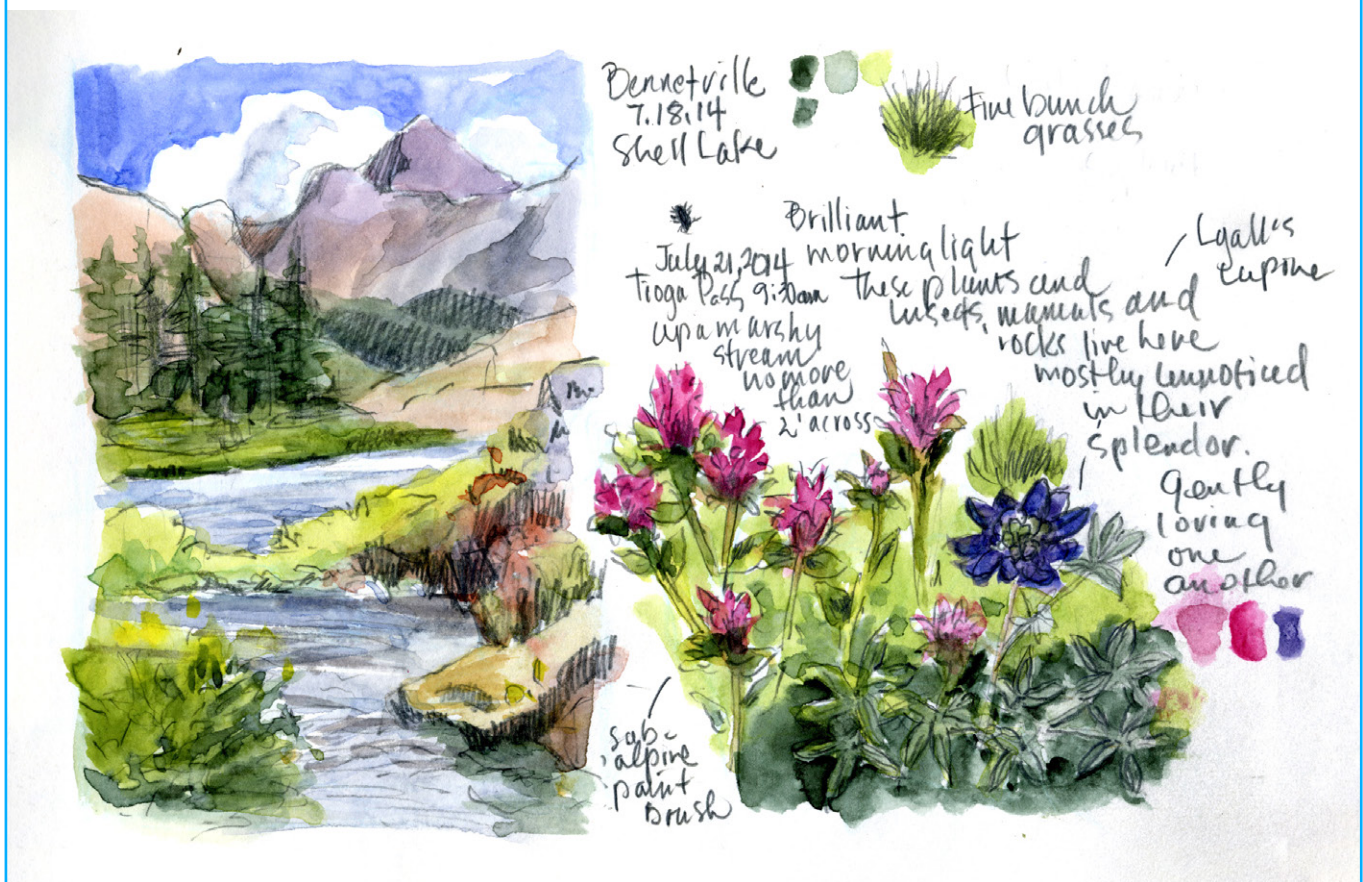
value and contribute to the development of various studies. This method called citizen science especially opened the way for numerous new discoveries around the world in recent years. Some living beings who were thought to go extinct were rediscovered with the photographs taken by ordinary people during their trips. Bird species that are thought to be impossible to observe were found in the photos of the tourists. Studies that would take years for scientists were completed rapidly and successfully by the data sent by individuals from their nature observation. Therefore, you need to be extremely careful when you are in nature and listen to every sound; a new species might be waiting for you to discover!



KEEPING A NATURE JOURNAL

During a nature observation, you come across various living beings and behaviours. If you cannot remember what you have seen in nature when you go back home, it does not have a lot of meaning. You can keep a simple nature journal both to increase your observation quality and to keep your memory alive.

There are two ways to keep a nature journal. First, you can record what you see, hear, smell or feel during nature observation with rough sketches/drawings and short notes. Second, you can try to remember what you have in mind after nature observation and try to note them. No matter which method you choose, you can be sure that your observations will be more enjoyable with a nature journal. All you need is a small notebook and a pencil.



 A sample journal page.



The illustration features a large, dark blue notebook with horizontal lines. On the left side of the notebook, there is a yellow telescope, a pair of green binoculars, and an open book with a red cover. On the right side, there is a large yellow pencil and a folded yellow map. A beam of light from the map illuminates a man and a woman standing on a green hill. The man is wearing a purple cap, a yellow jacket, and dark pants, and is looking through binoculars. The woman is wearing a yellow sweater, a pink skirt, and a purple backpack. A green frog is visible on the grass in the bottom left corner.

Activities

BioBlitz



Objective

To perceive the biodiversity; to observe and record different species.



Learning Outcomes

- ✎ S/he will observe the biodiversity in the region and do research.
- ✎ S/he will record his/her observations.



Target Audience

12+ years old



Preparation

- ✎ Before the activity, you can download the mobile apps to your smartphone to help you with species identification.
- ✎ Determine a place to observe the biodiversity and make your preparations to do the activity there.
- ✎ You can invite an expert to the activity to support you with your field trip.



Materials

BioBlitz Worksheet, smartphone, mobile apps or guidebooks for species identification, binoculars, a telescope (if any)



Duration

75 min.



Method

Field trip-observation

Application

1. Inform the participants about citizen science.

Our plant is home to millions of living beings. How many of them do we know about? We do not know most of the insects, birds, fungi and trees around us. We might know some of them by name but do we know their behaviours and relationships with other living beings? Scientists make various observations and collect data to understand biodiversity. However, whether they have scientific education or not, everyone can identify the biodiversity, record data and

protect this richness. This is called citizen science. All these observations of ordinary people have scientific value and contribute to the development of various studies. Thanks to citizen science, scientists and citizens work together to contribute to the conservation of biodiversity. It is possible to find a mushroom species that no one has ever seen during our walk in the forest, come across a rare mammal footprint or witness a unique behaviour of a common gull species.

2. Then, talk about BioBlitz activity. This activity focuses on finding and identifying as many species as possible in a certain area within a certain time. Here, scientists, students, teachers, parents and other community members work together to collect the current biodiversity data of a region. This activity can be carried out in any habitat, city, rural area, in small areas like backyard or large areas like countries.

Today, it is easier to identify the





species with smartphone applications like iNaturalist (iNaturalist.org). If there is a species you do not know, you can take the photo and upload it to the app. Then, you can detect the species and access information about it on the system. In addition to the identification of the species, you can add your observation data to this app and share your data with scientists.

3. You can tell the participants about common smartphone

apps to identify species and add observation data. You can recommend the participants to download the app to their smartphones to help them during the field trip. You can encourage them to use binoculars. If you want to apply this activity with a younger age level group, you can use these apps only on your smartphone to help them or invite an expert for this activity.

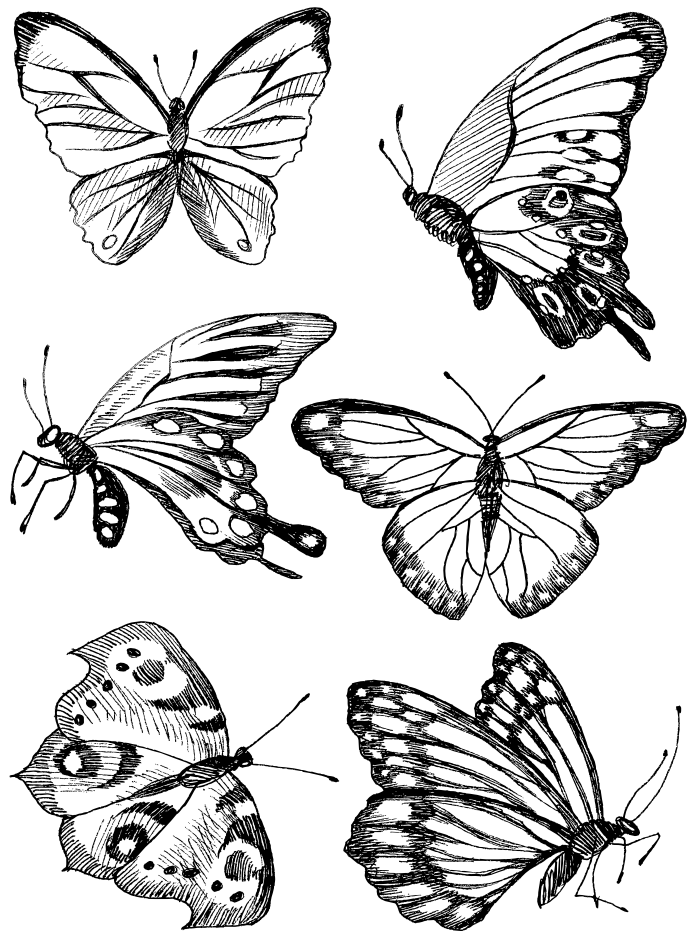
- With the **iNaturalist Seek** application, you can identify the species by uploading photos of the plant, animal and fungi species. You can share your observation data with a wider audience with iNaturalist app.
- Other than that, you can use **PlantNet** or **PlantSnap** apps to identify plants; **The Merlin Bird ID** and **eBird** apps to identify bird species and add bird observation data; **Google Lens** for general species identification.

4. Then, divide the participants into groups and give them 1 hour for observation. Ask the groups to observe plant, animal and fungi species in the given area within the given time and take photos of these species when necessary. Note the observation date, start and end time and location. Tell them that it is important to record the date and location information to compare whether there is a difference in species diversity when we visit the same site during different seasons. Ask them to record the identified species on the BioBlitz Worksheet. Tell them to take the photos, draw a sketch and write reminder notes of the species



they are unable to identify for later research. During the observation, warn them to be careful, not to eat the species they find as they might be poisonous and not harm any living beings.

5. Calculate the total number of species recorded in the area when you complete your observations. Identify rare and common species. You can get expert support at this stage.
6. Discuss whether this activity that demonstrates the species diversity of the area can be used for the protection of the area.



Assessment Questions

You can ask the following questions to the children during or at the end of the activity.

- ▶ Are there any species that you have seen for the first time? Which one?
- ▶ Have you imagined you can see this many species in one hour?
- ▶ What is the importance of this activity?

Extensions

- ▶ You can turn the data obtained at the end of the activity into a report, brochure or poster to raise awareness for the biological diversity of the region.

BioBlitz WORKSHEET

Record the observed species within the given time. Don't forget to pay attention to clues like sounds, animal droppings, animal footprints, bones, feathers and nests.

| | | | | | |
|---------------------|--|--|--|------------------|--|
| Date: | | Start and End Time: | | Location: | |
| Temperature: | | Wind (intense, light, no wind): | | Observer: | |

My Observation Notes

Sound Map



Objective

To develop auditory awareness and to realise the sounds.



Duration

30 min.



Method

Observation



Learning Outcomes

✎ S/he will recognize the sounds by using his/her auditory sense.

✎ S/he will have increased awareness of his/her environment.



Materials

Sound Map Worksheet, pencil



Preparation

✎ You can choose an area including different habitats like meadows, lakes, forests to hear different sounds in nature.



Target Audience

12+ years old

Application

1. Go to an area where participants can hear different sounds from nature and inform the participants about the sound map.

Making a sound map is an activity that enables us to deeply realise the sounds around us and to record these sounds in our notebook. We can do this activity alone as well as with other people. But the important point here is to be quiet to hear the sounds around us better. Everyone can make a map with what they heard at a certain time and share the differences and si-

similarities between the sounds. This activity will help us to slow down and calm down.

2. Then, explain how to apply the activity by using the text below. Open the Sound Map Worksheet. The “X” mark on the middle of the paper represents where you are. When you hear a sound, you will mark the paper to represent this sound. The location of the mark on the paper should show the direction and distance of the sound. You don’t need to do a detailed drawing for every sound you hear; you can do a simple drawing to represent it. For example, you can use wavy lines to represent

the sound of the wind or draw a simple bird or musical notes to represent a bird singing. Simple marking will help you to focus on listening to the sounds rather than on the drawing. To increase your hearing ability, you can close your eyes or use your hands like bowls by keeping your hands behind the ears. Also, you can record the interesting sounds on your phone and later research which species makes this sound.

3. Then, give 20 minutes to participants and remind them that everyone must be very quiet. Tell them to sit down in suitable places and start the activity.



4. At the end of 20 minutes, create a circle with participants and encourage everyone to share their own sound map. Talk about whether there are similar or different sounds. If anyone has recorded the sounds, listen to them and try to figure out the thing making that sound. You can end the activity with the following short explanation.

With a sound map, we can know about the existence of creatures from different species in that field even though we do not see them. For example, hearing the sound of a woodpecker's beak hitting a tree will give us information that a woodpecker is living in that area. Such records are part of citizen science and these are important as they can be used for the protection of that area or scientific studies.

Assessment Questions

You can ask the following questions to the children during or at the end of the activity.

- ▶ Which were the most familiar sounds?
- ▶ Is there any sound you have never heard before? If any, what could this sound belong to?
- ▶ What was the most interesting sound you heard? Can you imitate it?
- ▶ Which sound did you like the most? Why?
- ▶ Why is it important to make a sound map?

Extensions

- ▶ You can provide information about <https://www.xeno-canto.org/> to participants and listen to sound recordings of different birds. You can talk about citizens sharing the bird sounds they have recorded with other people and these efforts are a part of citizen science.

SOUND MAP WORKSHEET

Find a quiet place and listen to the sounds around you... The “X” mark on the middle of the paper shows where you are. Mark the sounds you hear by positioning them based on your location. You can do simple drawings to represent the sounds.

X

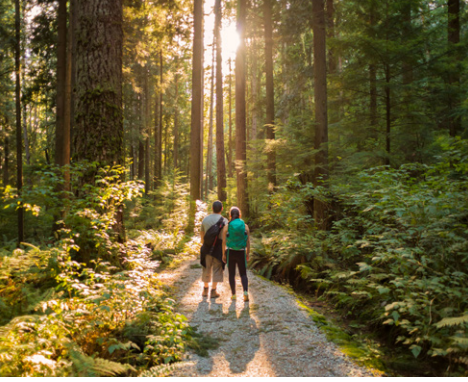
Notes

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