LIVING STEM

AGE : 10 - 14

Observation of Biodiversity in a local park or forest with treasure hunt

Project number: KA201-050529

Activity n°2

Co-funded by the Erasmus+ Programme of the European Union

Générations.bio LogoPsyCom The Polish Farm Advisory and Training Centre EDUlab ed consult CITIZENS IN POWER Tràsit Projectes

AGE : 10 - 14

Educator's guide

This project has been funded with support from the European Commission. Its content and material reflects only the views of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

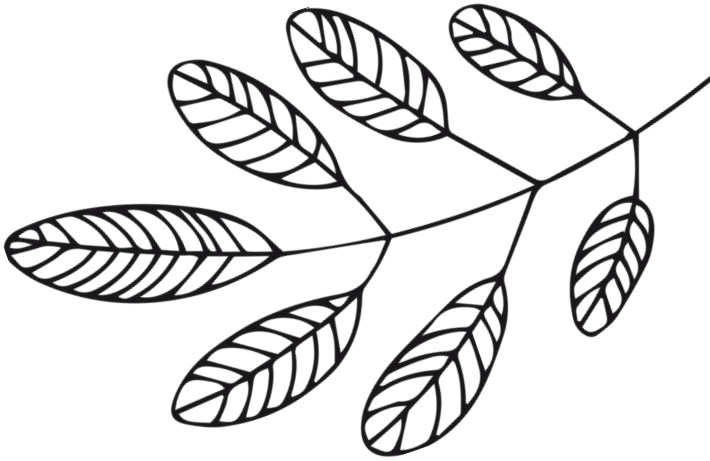
Calendar

Three seasons of the year (autumn to spring).
It can be divided into 3 main stages:

- Preliminary research: before starting the observation sessions in the local park, it is necessary to do some research and provide the students some knowledge sessions in order to get familiar with the area we are going to observe.

- The outings, observation and data collection sessions will take place at 3 different periods of the year that enables to see real differences in terms of flora and fauna. In this way, it will be possible to have a comparative view of the biodiversity of the urban ecosystem according to the changes in external factors and conditions (temperature, humidity, hours of sunlight, etc.).

- Finally, the comparison and conclusion sessions will take place after the last outing.



This project has been funded with support from the European Commission. Its content and material reflects only the views of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Duration

The sessions of the study of the urban ecosystem would be thought to have a duration of 1h-1h30min and would be structured in three different phases:

- **Phase 1: Research and knowledge of the study area.**

In this first phase, the project will be introduced and the analysis will be carried out in order to know the study area and make an identification of those elements that we will work later (fauna, flora, ecosystems and different areas within the urban park, etc.).

Work techniques will be also introduced to be able to study biodiversity: observation, measurement, data collection, sample collection, manipulation of devices and use of guides or identification sheets (dichotomous keys, herbariums, identification of birds, observation and identification of traces, remains and other signs of animal life, ...).

- **Phase 2: Outputs, observation and data collection in the urban ecosystem.**

Through outings and in-situ observations, there will be a collection of all those elements identified in phase 1 to collect the biodiversity of the park: fauna (birds, mammals, invertebrates, ...); flora (trees, shrubs, flowers, fruits, ...); possible differentiated ecosystems (wooded area, aquatic ecosystem, meadow, ...).

There will also be a collection of possible external factors and conditions that may influence in order to make a subsequent comparison (date and time of departure, temperature, humidity, ...)

- **Phase 3: Comparison and conclusions.**

Exercise to compare and analysis of all data recollected from the different observations. Final conclusions with emphasis on the importance of these urban ecosystems.

This project has been funded with support from the European Commission. Its content and material reflects only the views of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

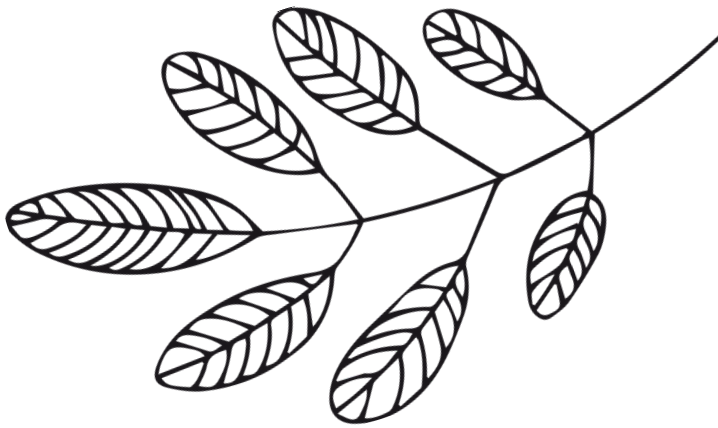
Gamification method(s)

The main objective of this activity is to get to know the biodiversity found in urban environments and take a comparative look at different times of the year. In order to motivate participants, a gamification system based on badge rewards has been established once the challenges proposed in each of the sessions of the different stages have been completed.

In this way, students are recognized and valued for all their work, the acquisition of knowledge and skills that they have acquired and developed during the work in the different sessions.

Preparation

- To motivate, facilitate and accompany participants throughout the process.
- To have the materials to identify flora and fauna (field guides, keys dichotomous, files ...)
- To have knowledge in the identification of the main groups of fauna and flora.
- Design how to collect study data.
- To know the basic work techniques to be able to study biodiversity
- (taking measurements, manipulating devices, using guides and identification sheets, ...)



This project has been funded with support from the European Commission. Its content and material reflects only the views of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Challenges that will lead to the completion of the main task:

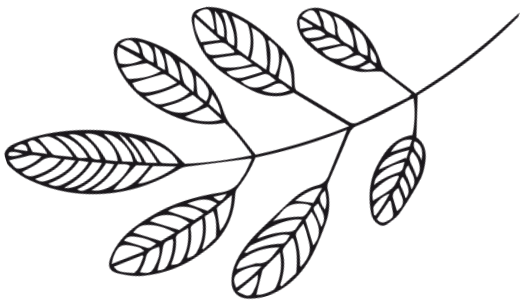
The main challenge of the study is that in the phase of outings and observation of biodiversity, children enjoy and may be able to do it without difficulty; it is crucial to maintain their motivation in the activity.

It is also important to be able to observe a high percentage of species that have been identified during the research phase in the different outings that are planned.

It is not easy to be able to see the wildlife. While walking you may observe those most apparent and usual animals; but observing the rarest and most hidden species will require more patience, skill, and also luck. For this reason, it is important at this stage, the support of the educator to help and motivate the children.

Tips for successful facilitation, supervision and organizing:

- Maintain the involvement and motivation of participants throughout the process.
- Make a correct accompaniment by the educator in the study.
- Ensure that the observation and collection of data is done correctly.
- Make an extensive visual recording of trips to the park.



This project has been funded with support from the European Commission. Its content and material reflects only the views of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Debriefing outcomes & obtained competences:

Through this project you will learn to carry out a study of the biodiversity of an urban ecosystem in a collective and participatory way.

Furthermore,

- Communication and teamwork.
- Systematization of data collection and processing.
- Knowledge of urban ecosystems and their importance.
- Knowledge of the most characteristic morphological features to identify main groups of urban fauna and flora.

Moment of formal education (optional)

All data obtained from the observations of the different groups will be shared in the classroom and conclusions will be jointly discussed among participants.
An important point to consider during this phase is to analyse the observation process and evaluate the general process of the study with all participants to find out which aspects they liked best, what difficulties they have found with and suggest possible improvements.

This project has been funded with support from the European Commission. Its content and material reflects only the views of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

AGE : 10 - 14

Students' worksheet

This project has been funded with support from the European Commission. Its content and material reflects only the views of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Related STE(A)M theory:

Biology is the science that studies life through the natural processes and phenomena of living things. It deals with both the description of the characteristics and behaviours of individual organisms and of species as a whole as well as the interactions that are established between them and with the environment.

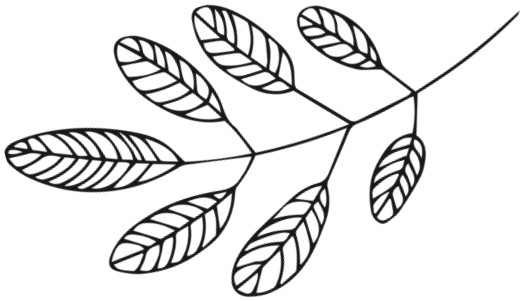
Through biology you can work on different disciplines or more specific fields:

- Zoology: the science that studies animals.
- Botany: branch of biology that deals with the study of organisms: plants. flowers, trees, etc
- Ecology: part of the science that deals with the study of the relationships of different living beings among themselves and with their environment.
- Anatomy: part of biology that studies the structure and organization of organisms.
- Physiology: is the science that is responsible for knowing and analysing the functions of organisms.

In order to work on this theory and achieve our goals, we propose an active teaching method, following the hypothetical-deductive inquiry method with the group.

Key words

Urban ecosystem, urban biodiversity, urban flora and fauna.



This project has been funded with support from the European Commission. Its content and material reflects only the views of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

General aim

The main goal is to make urban biodiversity know to participants by taking a comparative look at different times of the year.

Educational Objective(s)

- Discover the richness of urban biodiversity close to the school.
- Use the field techniques needed to study an ecosystem.
- Acquire the necessary skills to identify the main groups of fauna and urban flora and know their most characteristic morphological features.
- To know the presence and problems of invasive non-native species.
- Be aware of the importance of these ecosystems within the urban areas.
- Encourage attitudes of interest and motivation that allow you to participate in the protection and improving the environment and the environment in which you live.

Suggested Environmental Context

In order to better adapt each phase of the process, the sessions and phases of the study will be alternated between the classroom (initial phase of preparation, research and investigation + phase of analysis, comparison and data processing) and outdoor spaces (observation, outputs and data collection).

To be able to elaborate some activities, look for information and take advantage of pedagogical resources; contact will be established with different entities and / or associations of environmental education or scientific dissemination of the city (Catalan Institute of Ornithology, Catalan Society of Environmental Education and La Fàbrica del Sol; among others)

This project has been funded with support from the European Commission. Its content and material reflects only the views of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Necessary Equipment and Materials:

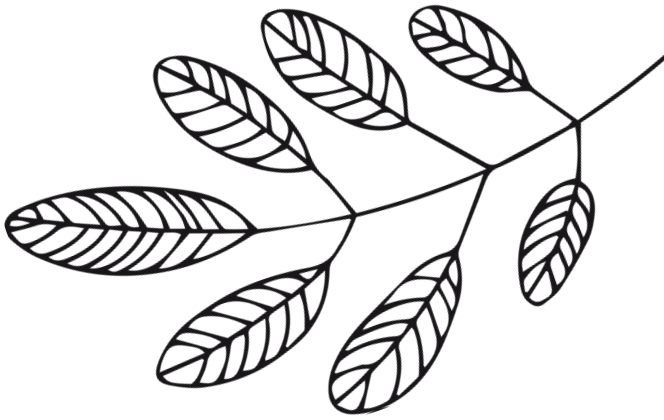
- Study area map.
- For the study of abiotic factors: thermometer, hygrometer.
- For the study of biotic factors: guides, dichotomous keys or identification sheets (trees; shrubs; plants; birds; trails, footprints, excrement, and other wildlife remains; mammals, reptiles, butterflies, etc.).
- Binoculars.
- Field notebook.
- Data collection sheets.

Media and Resources

- Consumable material: folios, cardboard, pencils, pens, scissors, bar glue ...
- Internet access.
- Digital camera or mobile phone to take photos during outings and observations.

Websites and resources:

https://ajuntament.barcelona.cat/ecologiaurbana/ca/atles-de-biodiversitat-de-barcelona
https://www.ocellsdelsjardins.cat/
http://www.ersilia.org/lab_biodiversitat/documents/OcellsdeBcn.pdf
https://drive.google.com/file/d/1W0oW55D6rFH4NBIoBxXszdTpctoQ15We/view



This project has been funded with support from the European Commission. Its content and material reflects only the views of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Tasks

To improve participation, motivation and involvement we will make groups of 4-5 participants.

1. Research, and knowledge of the study area.

1.1. Carrying out a research and analysis to know the study area.

1.2. Identification of the elements to work on:
- differentiated areas / ecosystems within the park: meadow, wooded area, aquatic system (pond, pond, lake ...), etc
- urban flora: trees, shrubs, vines, ornamental plants, ...
- urban fauna: invertebrates, birds, mammals,etc.

1.3. Introduction to work techniques:
- direct and indirect identification
- data collection methodology
- manipulation of devices (thermometer, hygrometer, binoculars, ...)
- use of guides, cards or identification keys

2. Outputs, observation and data collection

2.1. Trips to the study area to collect data and identify biodiversity.
For each session, it will be prepared a sheet with the following information:
- date and time of departure
- temperature and humidity of the study area
- list of identified fauna with direct observation.
- list of fauna identified with indirect observation (traces, footprints, excrement, leftover food, songs, ...)
- list of identified flora with direct observation.
- observations and other elements to take into account.

Each group will have a mobile phone or digital camera to capture images and make a visual recording.

This project has been funded with support from the European Commission. Its content and material reflects only the views of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

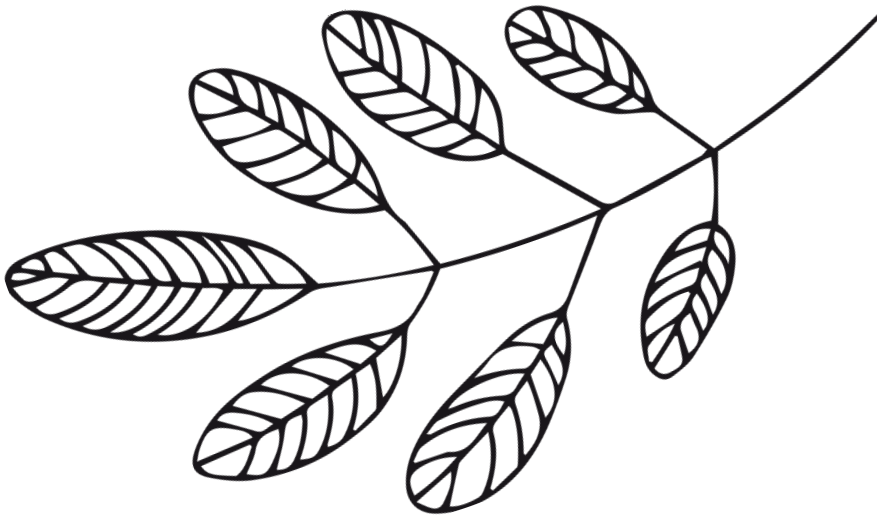
Tasks

3. Final conclusions.

3.1. Data analysis: collection and sharing of all information obtained in the observation sessions.

3.2. Conclusions of the study: carrying out the comparative study of the data and explanation of the differences between the different epochs.

3.3. Presentation and explanation of the study carried out.



This project has been funded with support from the European Commission. Its content and material reflects only the views of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

1 Data Template

(to be completed according to the specific flora and fauna of the urban park analysed)

Area of study			
Observers			
Date		Start time & final time	
Temperature		Humidity	
Comments (other observations that may be taken into account in the subsequent study: previous period of high heat, heavy rainfall, reforms in the area, etc.)			

This project has been funded with support from the European Commission. Its content and material reflects only the views of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Flora

Instructions

- With the information taken from the previous study of the area, put all the possible biodiversity to observe.
- Mark if observed and add plant comments (photo record)

Arbutus unedo (strawberry tree)

Agave americana (Atzabara)

Salix babylonica (Weeping Willow)

Plumbago uriculata (Cape Leadwort)

Hedera helix (Ivy)

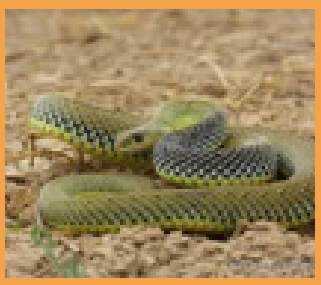
Viburnum tinus (Lauristine)

This project has been funded with support from the European Commission. Its content and material reflects only the views of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Fauna

Instructions (Live Observation)

- With the information taken from the previous study of the area, put all the possible biodiversity to observe.
- Mark if it has been observed and add comments of the animal (photographic record, number of individuals, environment where it is ...)

	◯ Anas platyrhynchos (Mallard)		◯ Myopsitta monachus (Quaker parrot)
	◯ Ardea cinerea (Grey Heron)		◯ Comumba livia (Common pigeon)
	◯ Sturnus vulgaris (Common starling)		◯ Pica pica (Common magpie)
	◯ Trachemys scripta (Red-eared slider)		◯ Malpolon monspessulanus (Montpeller snake)

This project has been funded with support from the European Commission. Its content and material reflects only the views of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Fauna

Instructions (Live Observation)

- With the information taken from the previous study of the area, put all the possible biodiversity to observe.
- Mark if it has been observed and add comments of the animal (photographic record, number of individuals, environment where it is ...)

	◯ Erinaceus europaeus (European Hedgehog)		◯ Pipistrellus pipistrellus (Pipistrellus)
	◯ Scirus vulgaris (Red Squirrell)		◯
	◯		◯
	◯		◯

This project has been funded with support from the European Commission. Its content and material reflects only the views of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Fauna

(Traces, footprints, remains and other clues)

(*)Make a photographic record and write down all those traces found at the exit

This project has been funded with support from the European Commission. Its content and material reflects only the views of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Additional information

- Make a list of all those observations and comments that may help us with the subsequent comparative study

-
-
-
-
-

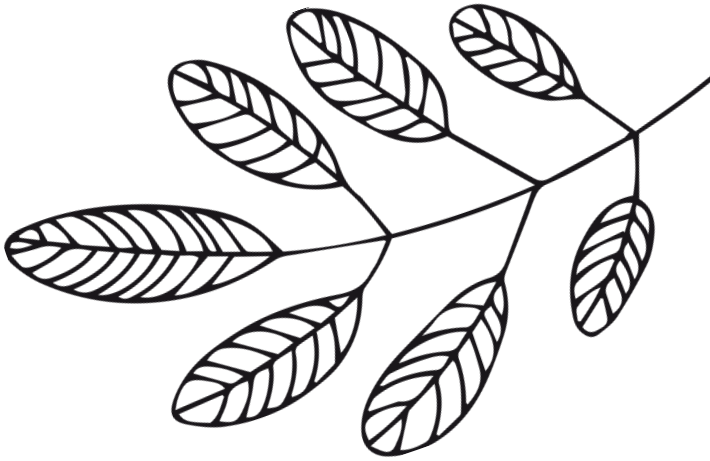
This project has been funded with support from the European Commission. Its content and material reflects only the views of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Safe and security checklist

There may not be any phase or session that involves any kind of risk for the participants.

Impact on external stakeholders

- Be aware of the importance of these ecosystems within urban areas.
- Encourage awareness to allow respect for and conservation of these environments.
- Give evidence that biodiversity takes place not only in forests or other natural places but also in an urban environment.
- Know that there are species of animals and plants that have already established urban environments as their natural environment; cohabiting normally with people and their activities.



This project has been funded with support from the European Commission. Its content and material reflects only the views of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Project's partners

Générations.Bio (Belgium)

Web: www.fermebiodupetitsart.be

LogoPsyCom (Belgium)

Web: www.logopsycom.com
Facebook: @Logopsycom

The Polish Farm Advisory and Training Centre (Poland)

Web: www.farm-advisory.eu
Facebook: @PolishFarmAdvisory

EDU lab (Italy)

Web: www.edulabnet.it
Facebook: @edulabnet

Ed-consult (Denmark)

Web: www.ed-consult.dk
Facebook: @benji.leinenbach

C.I.P. Citizens In Power (Cyprus)

Web: www.citizensinpower.org
Facebook: @citizensinpower

Trànsit Projectes (Spain)

Web: www.transit.es
Facebook: @MakingProjectsCEPS, @TransitProjectes

This project has been funded with support from the European Commission. Its content and material reflects only the views of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.