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Learning Scientific Skills Outside the Classroom

Scientific Skills

Observing	Identifying and Classifying	Recording
Country of Origin	**Suggested Age Range**	**Suggested Theme**
Spain	11 - 12	Habitats

Location outside the classroom	Benefits of using this location
Wetlands	Biodiversity

Learning Objectives – Scientific Skills	Learning Objectives – Knowledge
To make careful observations of birds, crustaceans and plants in an ecosystem To classify birds using a bird study chart To classify crustaceans according to their sex To identify the three parts of Posidonia To record their data in a chart	To discover the great variety of birds in the area and their characteristics To find out the importance of tiny crustaceans as the basis of the ecosystem food chain To distinguish Posidonia among other marine remains and learn about their benefits To become aware of the ecological importance of a natural park and its great diversity of ecosystems

Key Vocabulary

Scientific skills vocabulary - observe, see, identify, classify, classification, record
Knowledge vocabulary – wetland, salt pans, forest, dune and the names of animals in the habitat (e.g. flamingo, avocet, little egret, black-headed gull, brine shrimp and Spanish tooth carp)

Resources / Equipment

- Equipment for observation of animals – binoculars, magnifying glasses
- Equipment for identification – bird study chart

Teaching Activities

Activity 1: Bird – watching

Explain – They are going to be observing different species of birds found in the wetlands using binoculars and identifying them using a bird study chart. They will be recording their data and thinking about any links between the species of birds they observe and the ecosystem where they live.

Demonstrate – Show children how to use the binoculars correctly to observe birds and demonstrate how to look for specific features of the birds which will help them to identify the species of bird.

Activity – In groups of five, with the help of binoculars, children observe real birds in the environment and match these to the images on the "The Bird Study Chart". They need to look at the bird's features and use these to help them identify the correct species of bird on the chart. Children are encouraged to comment on the different characteristics of the birds, such as colour, beak shape, feathers and size, and discuss whether these features are related to the ecosystem in which they are found.

Record – Children record appropriate data on "The Bird Study Chart". This data will include:

- Name of the Species
- Number of individuals
- The ecosystems where they live: pond, forest or dune

Discuss – What different birds have they found in the area? Do the characteristics of the birds depend on the ecosystem where they live?

N.B. - Although the study focuses on birds and mainly on water birds, it could also be used for the rest of the terrestrial vertebrates found in the Park, such as reptiles).

Activity 2: Shrimp Classification

Discuss - What is a crustacean? Where can they be found?

Explain – They are going to look for a very special crustacean found in this environment known as the primitive brine shrimp (Artemis Salina). These crustaceans are an important food source for many birds such as flamingos and fish such as the Spanish tooth carp and are therefore an important part of the ecosystem food chain.

Demonstrate – Show children how to use the magnifying glasses to observe the tiny crustacean and look for specific characteristics on the crustacean which will enable them to classify the crustaceans by their sex - males have a pincer around their mouth which they use for mating whereas the females don't.

Activity – Children observe the tiny crustaceans, with the help of magnifying glasses, and classify them by their sex, thinking about the relationship between the number of males and females.

Discuss – How easy was it to classify the shrimp according to its sex? Was there an even number of males and females or was one sex more prevalent? Discuss the process of Parthenogenesis (a form of asexual reproduction in which females produce eggs that develop without fertilisation) and whether this could be linked to the number of males and females identified. Is there a relationship between the colour of the flamingos and the pigments found in Artemis Salina? Finally, discuss the extreme salinity of the water which is resisted by these primitive crustaceans.

Activity 3: Posidonia Identification

Explain – They are going to be looking for a plant that lives on the seabed called Posidonia. Posidonia is not a seaweed and is very precious for the marine ecosystem because it is home to a large number of animals such as sharks, some molluscs and sponges. These animals live and reproduce in Posidonia meadows.

Demonstrate – Show children the different parts of the Posidonia plant – the stem, the leaves and 'sea-balls' which are formed from the hairs of the stem. Pupils will also need to be shown the different parts of the beach where the plant can be found.

Activity – Children are challenged to observe Posidonia and think about where it is located. They will also identify the three parts of the plant – the stem, the leaf and the sea ball.

N.B. – An additional activity could be to look for other animals remains on the beach, such as shells, and make scientific observations about the remains they found.

Concluding discussion – Why was it important to use binoculars and magnifying glasses to make observations? Discuss the importance of the birds, crustaceans and Posidonia in this ecosystem.

Examples of children's work and teacher comments from country of origin

NAME	Nº	ECOSYSTEM	CHARACTERISTICS

The instruction and rules of a protected natural space must be clear from the beginning. Noises should be avoided so they don't disturb the wildlife.
The species of animals and plants are specific to the area. Schools can identify places of scientific interest in their location to carry out similar studies.