

Teacher's notes

General information about l'Encanyissada

There is a half hour ride to get to the *Encanyissada* lagoon. From a watch view tower we will talk about the *Encanyissada*: reedbeds and typical water bird fauna.

Some facts:

- *L'Encanyissada* is the biggest lagoon in Catalonia. It takes an equivalent area to one thousand football fields.
- Maximum depth is 114 cm.
- There are natural and man-made connexions between the lagoon and the Alfacs bay. In addition, the *Encanyissada* gets fresh water from the watering system. So, salinity varies across the year according to rice farming cycle.
- Fishing is one of the most important and oldest economical activities in the lagoon. The *Pantena* is a steady net placed blocking the natural canal that connects the lagoon with the bay and it serves to trap the fish when migratory seasonal trips start.

'Clues, scents and traces that shape the lagoon'

What's in the box? There are several items which have been found around the lagoon. These objects will help explain the singularity of the lagoon world.

There are natural and man-made objects. The natural ones give us information about natural wildlife (a water bird crane, a water bird plaster cast footprint, a bull excrement...) Man-made ones show trails of the main economical activities near the lagoon (fishing, hunting, rice-farming, cattle raising, tourism).



Game: Children sit down in groups of eight making a circle. Blindfold them and ask them to recognize the objects by using their senses.

Ask them not to name the object. Once they have experience it, they pass the object to the person on their right.

Ask each one a couple of questions once the round is finished:

- How many different items could you recognize?
- Could you describe one of them?
- In your opinion is that a natural or a man-made object?

- Is that object related to any human activity? Which one?
- What do you think is it?

Teacher's notes. In case we find footprints in our outdoor activity, plaster casts can be made:

- Mix a measure of plaster with one and a half measure of water.
- Stir the mixture for two minutes.
- Pour the material in the footprint.
- Wait for a while for the mixture to harden.



'The pond safari'

Teacher's notes. Children will learn about the variety of plant and animal life found at the lagoon edge and how they are classified into groups based on their relatedness (number of legs, for instance).

The lagoon animals and plants are adapted to help breathe, move, feed and evade enemies in their watery world.



Use pond nets to make clean, firm sweeps across the water (best catches are normally from the pond bottom or near vegetation). Empty catches into clean water in plastic white-bottomed trays. Scoop up bottom

mud with a sieve. Again, place catches in the water-filled tray.



Identify each catch by putting them into small vessels and using magnifying lenses, keys and field guides:



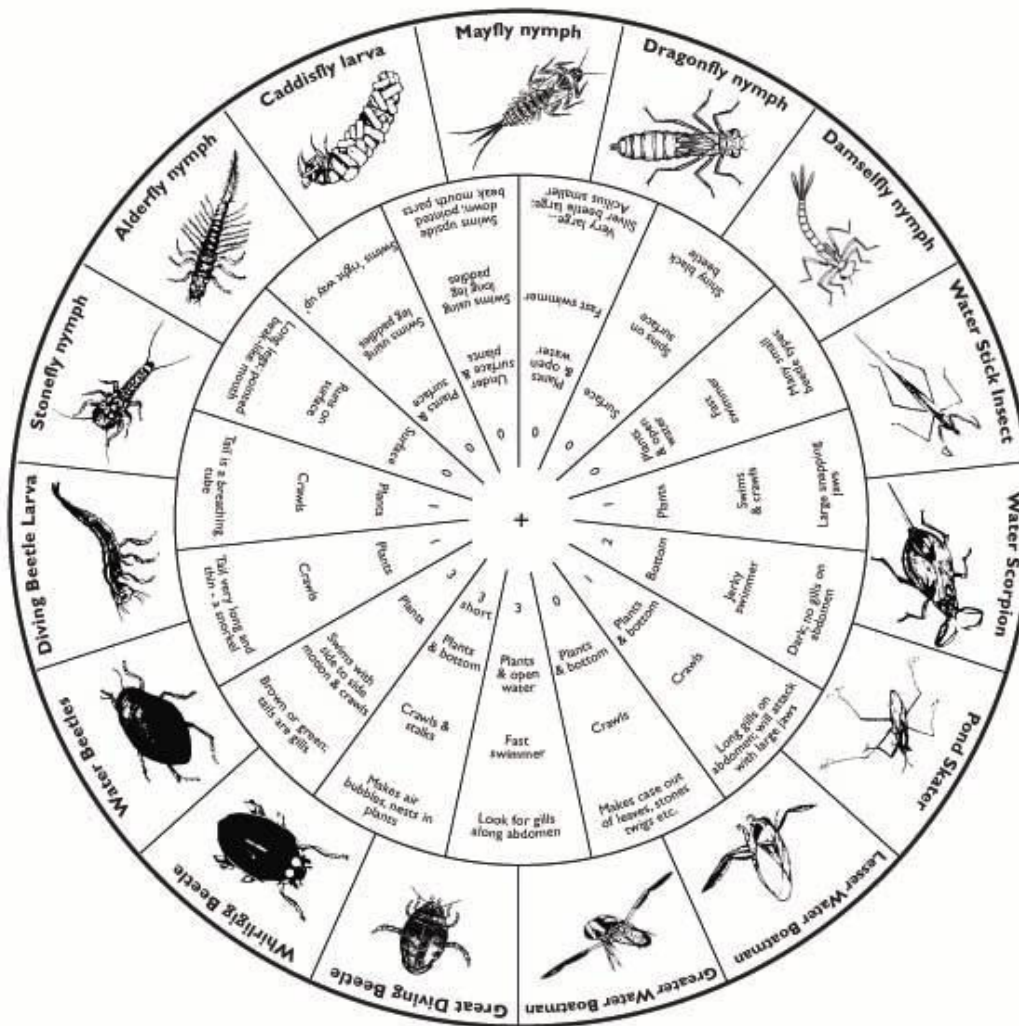
<p>Snails, fish, worms, molluscs: no legs. Amphibians: four legs. Insects: six legs. Arachnids: eight legs. Crustaceans: more than ten legs.</p>
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Teacher notes:

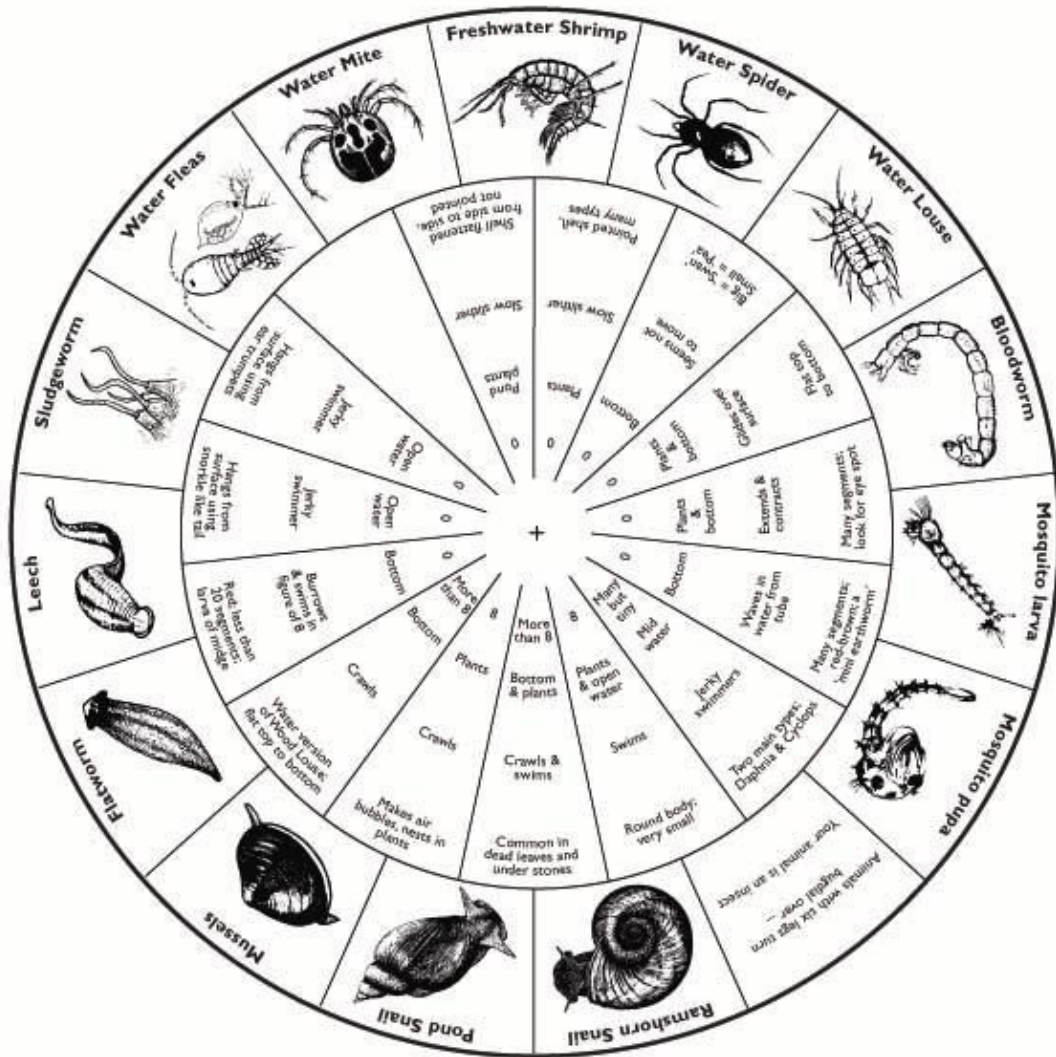
The way the lagoon looks like –its attractiveness, smell and colour- is a good indication of its health. Health can also be determined by examining the catch. Some species are far more tolerant of pollution or other factors that cause oxygen reduction than others. Pupils will use the pond watch bugdial (http://www.wwt.org.uk/uploads/worksheet-bug_dial.pdf) to identify catches.



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'Bird rest area control'

Teacher notes.

Bird watching and recording identified birds require skill and practice. Binoculars, telescopes and field guides help us well.

Predict which water bird species you will find according to the observed place (rice field or lagoon). After the observation, ask why species are different considering the water depth variable.



'The flock of wildfowl'

Teacher's notes. Rice fields and lagoons have different conditions of temperature, light, wind, water and soil. Those habitats (community of living and nonliving things who are all connected to each other) supply the conditions that water birds need to survive like food and water, mates, shelter and protection from the elements. Conditions may vary throughout the year in the rice fields and the lagoons.

Handling and interpreting data reveals patterns and trends such as species diversity, species habitat preferences or increasing/decreasing population.

Cens de moixons aquàtics hivernants

	1995	1996	1997	1998	1999	2000	2001	2002
Cabussons	607	660	1.483	1.327	1.386	1.098	1.653	1.812
Ardèids	5.306	5.211	3.487	4.412	4.666	5.590	9.457	11.260
Ànecs	76.141	65.914	65.532	40.116	93.998	91.832	56.463	85.333
Fotges	15.963	20.326	22.640	18.380	14.974	11.034	25.668	16.804
Limícoles	28.836	29.129	35.166	37.298	39.357	26.142	54.437	62.823
Rapinyaires	196	303	393	263	332	369	410	456
Flamencs	3.542	5.008	4.929	4.124	7.169	5.231	6.628	7.314
Corbs marins	1.605	2.562	3.772	2.189	1.228	2.440	2.057	2.678
TOTAL	132.196	129.113	137.402	108.109	163.110	143.736	156773	188.480

Rice fields and lagoons are giant service areas with daily arrivals and departures as birds fly in and out. The Ebro delta has a core of resident bird species that live there throughout the year. In addition, there may be different 'flight schedules' for different seasons.

Knowing what bird species visit the Ebro delta is very important, as well as keeping records of the numbers. By doing so, we learn about bird population: is it increasing or decreasing? What are the natural and human reasons for this? How can we take care of our wetland habitats to create the right conditions for water birds? How can we preserve them?

The activity is aimed to:

- Realising about the constant changes of the ecological systems.
- Being aware of the fluctuation of populations according to habitat conditions.
- Understanding that habitat protection is a key factor for the preservation of species.

This is a very active game in which a population of wildfowl moves around looking for food, water and shelter to survive. Depending on the resources available, the wildfowl population increases, decreases or can even disappear.

Rules:

- Children are placed face to face in two parallel lines separated by ten meters. A quarter of them shape one of the lines: they are the migratory black-winged stilt Ebro delta 2009 population made up of some males and females. They have arrived this spring to Ebro delta to breeding. They need to find water, food and shelter to be successful. Every time, we know what a particular black-winged stilt needs by the gesture it takes (see the picture bellow).
- The other kids shape the second line. They are the resources water birds will find at Ebro delta: water, food and shelter.
- We play the game several times. At every round the game starts children turning back to back. At that moment every one choose the gesture to take. At conductor's commands, kids turn face to face showing the gesture each other. After a new indication, black-winged stilts start 'to fly' towards the resources they need, without loosing the gesture. We foresee two different possibilities to happen:
 - a.- A water bird is successful and finds what it needs. The taken resources will be energy for breeding. We simbolize that success in the next play: instead of one only black-winged stilt coming at Ebro delta, it will be two (the resource takes the role of a water bird).
 - b.- A particular water birds doesn't find what it needs. The black-winged stilt lacks of the energy it needs. Probably it will die (famine, illness,...) and its body will return to wetland after a slow decay. This is simbolized by the player being one more Ebro delta resource when a new round of the game is played.
- A birdwacther counts the number of birds at the end of every round and draws a chart (see picture bellow).
- After a few rounds everybody realize the result. It is quite easy to be aware that black-winged stilt population increases when resources are abundant and decreases when resources are scarce, following a natural cycle. But, what does it happen when an extraordinary natural event is introduced?
- In a especific moment , the conductor introduces a strong draught (extraordinary dry year), heavy winds or a natural fire that cause a particular resource to desappear. At this particular round, every black-winged stilt looking for this especific resource will die (no one between the children simbolizing the resources take the gesture). This natural event has an unexpected effect that will be recorded in the charter.
- An other interesting possibility is introduce man-made events (hunting, pesticides, human disturbances...) and see the effects on the final number of breeding black-winged stilts.
- As children see, natural an artificial events change the natural population cycle. However, the water birds recover the expected numbers when every thing returns to calm. There is a only event that changes the situation for ever: a permanent lagoon draining (expressed by no one taking a gesture in the resource line) will force the black-winged stilts to migrate to another wetland.

Water bird populations are dynamic

Water bird populations are modified by means of...

NATURAL EVENTS

Speedy and directional winds.

- Level of water.
- Temperature of water.
- Salinity of water.
- ...

MAN ACTIVITIES

- Rice farming.
- Hunting and fishing.
- Tourist disturbances.
- ...

