



An Chomhairle Oidhreacht
The Heritage Council



Monaghan
County Council



FOCHLAIM • FEABHAS • FIONTAR



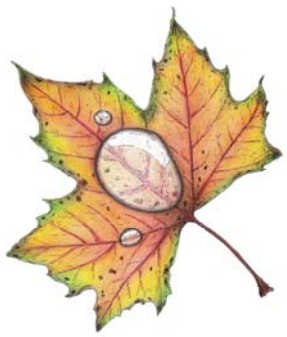
Module 4: Water and Biodiversity

Unit 1: An Introduction to Freshwater Ecosystems

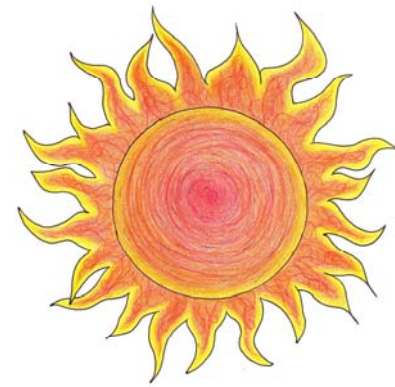


Objectives of this presentation

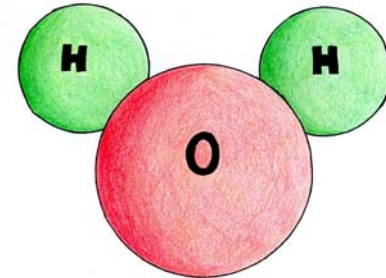
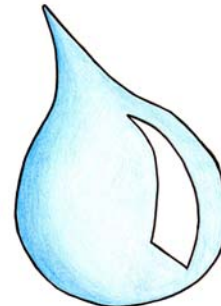
- To introduce the fundamental requirements of an ecosystem
- To investigate in some detail the ecosystems that are to be found in various water body types



Ecosystems



- Ecosystems can be as big as an ocean or as small as a puddle!
- They include all of the animals and plants in a particular area.
- The most diverse ecosystems depend on light, dissolved oxygen and water.
- No ecosystem can survive without water!





Importance of dissolved oxygen

- Oxygen comes directly from the air or via plants through a process known as photosynthesis.
- Most aquatic life-forms require oxygen to survive.
- Healthy aquatic ecosystems contain high amounts of dissolved oxygen.



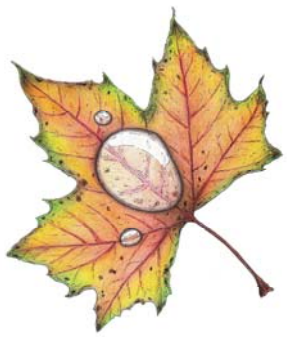


Case Study: Freshwater Ecosystems of the River Shannon

Specific ecosystems are found in:

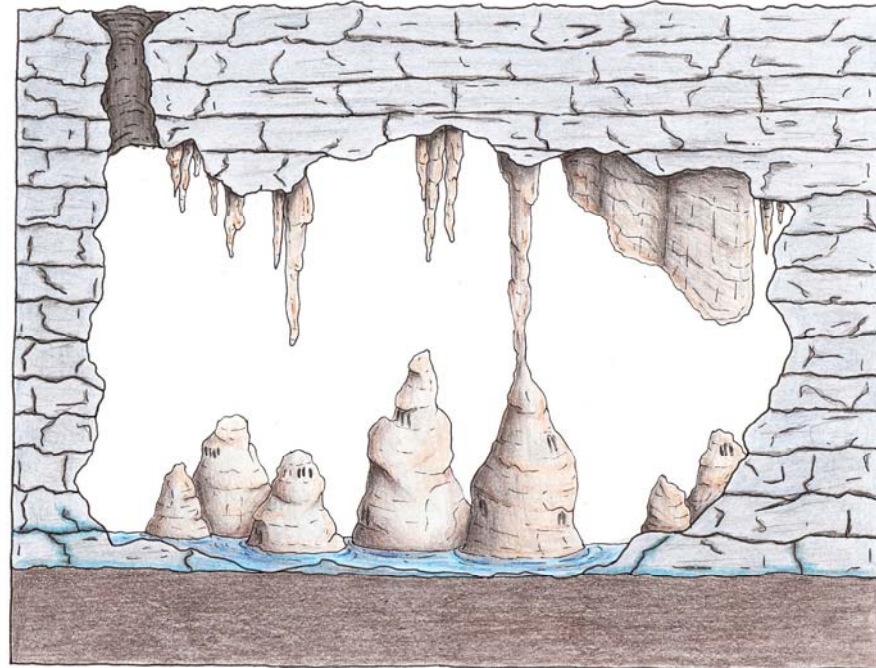
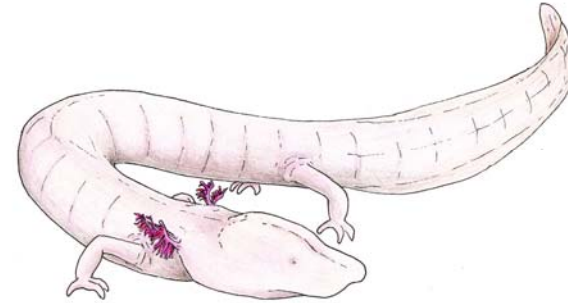
- Groundwater
- Blanket bog
- Upland streams/rivers
- Lakes
- Lowland rivers
- Wetlands
- Estuary



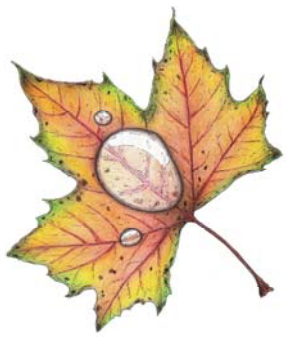


Groundwater ecosystem

Salamander - adapted to living in the dark in caves



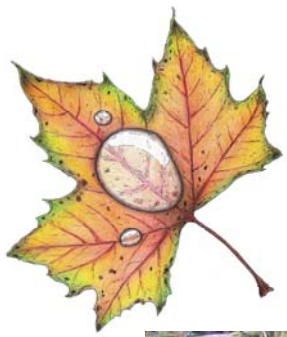
Underground cave - formed by groundwater



Blanket bog ecosystem



Hen Harrier



Upland stream/river ecosystem



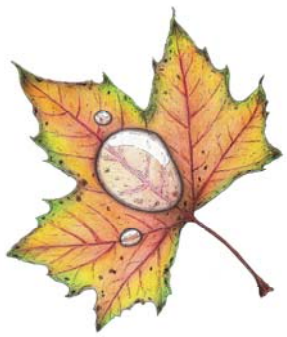
Mayfly



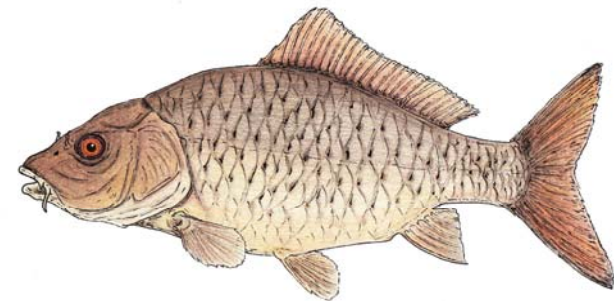
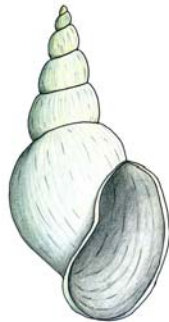
Kingfisher



Salmon



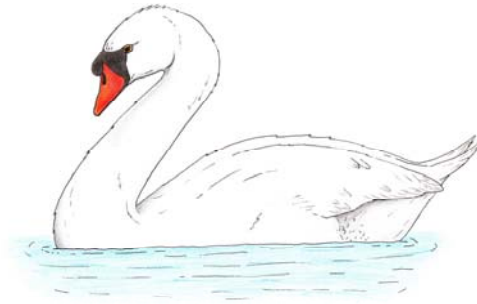
Lake ecosystem



Carp

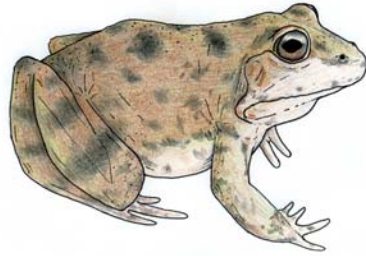


Lowland river ecosystem





Wetland ecosystem

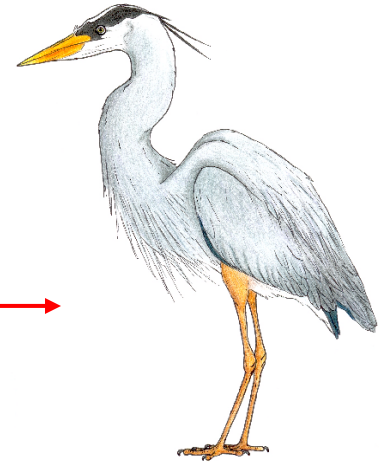
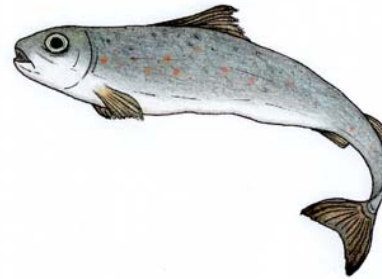
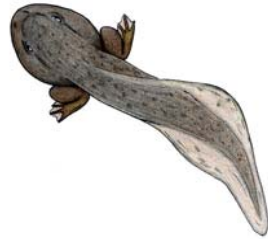
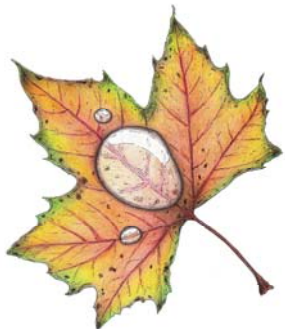


The Shannon Callows

Estuarine ecosystem



Food chains



Algae

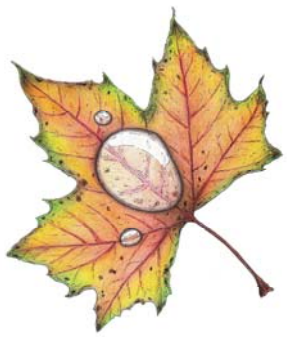
Tadpole

Fish

Heron

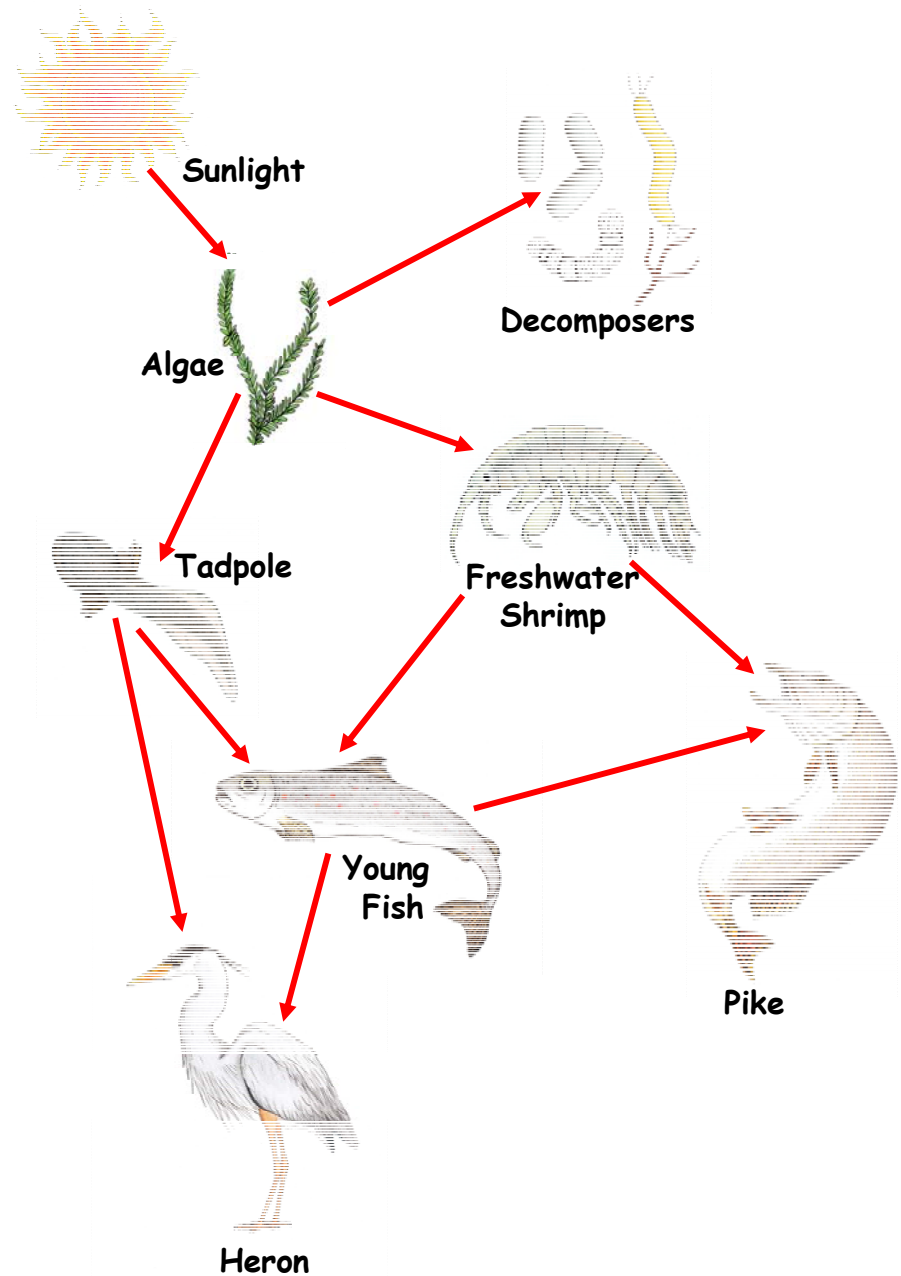
There are three different types of organisms involved in a food web/chain:

1. Producers (plants)
2. Consumers (animals)
3. Decomposers (e.g. microbes)



Food web

There are lots of different connections within an ecosystem. These form a food web





Threats to aquatic ecosystems

- Different types of pollution threaten our aquatic ecosystems. These include:
 - chemical pollution
 - organic pollution
 - physical pollution

It is important to address pollution sources and restore the health of ecosystems.

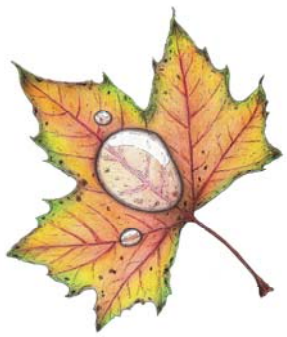


Climate change as a threat to freshwater ecosystems

Changes in water temperature and rainfall patterns are likely to:

- exacerbate pollution problems (e.g. eutrophication)
- alter ecosystem conditions causing some species to become invasive while displacing others

Hence climate change is likely to effect our water heritage.



Activity

- No study of water is complete without some practical experience. A guided field trip at Ballybay Wetlands Centre or at a similar field study centre is recommended.
- A booklet such as Monaghan's Wonderful Wetlands provides some useful information on freshwater ecosystems. Find out if there is a similar publication for water bodies in your locality.

