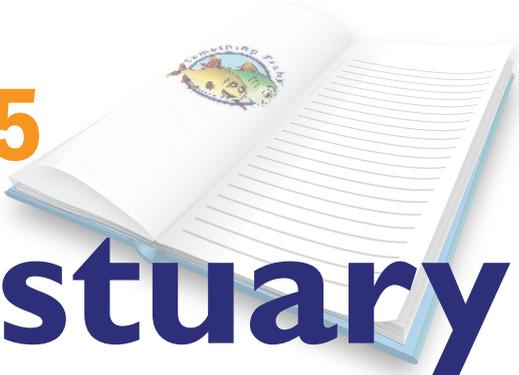


Lesson 5

Bradán's Journey into the Estuary



This part of the story focuses on Bradán as a smolt as she makes her way towards the estuary of the river in preparation for her entry into the sea.

LESSON SUMMARY

Geography
Ages: 10 to 11
Lesson time: 45mins

DOWNLOADS & ADDITIONAL RESOURCES

Image: Ballypolluted
Experiment: Deposition
Activity: Freshwater Aquarium
Activity Card (Lesson 5)
Whiteboard: Quiz and Questions (Lesson 5)



Downloads and Additional Resources can be found in the Resource page of Somethingfishy.ie

LESSON OBJECTIVES

To enable pupils to continue Bradán's journey into the estuary. From this lessons, pupils will be familiar with the differences between salt water and fresh water and they will have an increased awareness of the dangers to the smolt in this part of her journey

TEACHERS GUIDELINES

The lower part of a river where it flows into the sea is called the estuary or the mouth of the river. An estuary is a transitional zone between fresh water and the open sea. In the estuary, warm shallow water, tides, currents, and wind carry rich organic nutrients from the bottom of the estuary to the water's surface. With every tide these nutrients are carried from the estuary to the sea. This exchange of organic material between the estuary and the ocean creates a very productive habitat for many plants and animals.

Bradán is introduced in this lesson as a creature undergoing great body changes (a teenager).

She learns to "osmoregulate", which means to regulate the salt and water in her body. She must guard against the loss of water and be capable of secreting excess salt from her body fluids.

Lesson Plan

Pupils already know from the last lesson that Bradán has already reached smolt stage (6-8 weeks before migrating to sea) and has made her way down the river to spend a number of years at sea. By now she will have changed to a silver colour.

As salmon travel down the estuary area, there are increased challenges due to infrastructure expansion, car parks, bridges, pollution, effluent from factories, oil spills and port activity.

The river estuary is introduced as a busy place, which usually bears the brunt of human waste and pollution.

Any substance that has entered the river upstream such as waste from agricultural works, industries and towns affects the entire river downstream, including the estuary.

The environment is threatened by oil from ships and boats, and by industrial and domestic waste from heavily populated areas. There must be strict monitoring and control to ensure that water quality is maintained. Any change to an estuary can have considerable effects on the ecosystem in the coastal zone.

To test childrens observation skills and prompt oral work, show an image of Ballypolluted and ask pupils to point activities that might cause impact on life in the estuary and on the coast. Ask pupils "How will the local tourism and fishing industry will fare if this situation continues?" and "What ways can the people of the area might improve the water quality and ensure fish stocks for the future

SEE:-  **Image: [Ballypolluted \(Download\)](#)**

The concept of an estuary food web is introduced as a continual reminder of the interdependence of creatures.

A passage from The Iron Woman is included to highlight the global problem of pollution.

An experiment may be done to investigate deposition in an estuary.

SEE:-  **Experiment: [Deposition \(Download\)](#)**

Lastly, habitats need to be managed and protected so that enough salmon can survive to eventually revisit the spawning grounds. This means that we must look after the environment itself, protecting it from pollution while at the same time conserving stocks of fish.

FOLLOW UP WORK

Freshwater Aquarium

Set up a freshwater aquarium in class. A video link below illustrate the steps that need to be taken

SEE:-  **Activity: [Freshwater Aquarium \(Download\)](#)**

Lesson Plan

REVISION

Two different types of revision material accompany this lesson; activity cards and whiteboard material. The activity card is a 3 page document that is filled out by the pupils to test their knowledge of the lesson taught. The teacher can decide if the activity card is filled out individually or in teams

SEE:-  **Activity Card: *Lesson 5 (Download)***

The whiteboard resource tests the pupils knowledge of the lesson taught. Pupils are encouraged to actively engage in answering questions relating to challenges faced by life in the river estuary, the ecosystem of the costal zone, and management of water quality.

SEE:-  **Whiteboard: *Quiz and Questions, Lesson 5 (Resource)***

AT THE END OF THE LESSON, PUPILS SHOULD KNOW

- 1 The dangers posed to fish and water quality by human exploitation.
- 2 The responsibility we all have to ensure that catchments are properly managed.
- 3 The steps that need to be taken to ensure survival of resources for the future.