Challenge One

Waterways Ireland
Uiscebhealaí Éireann Watterweys Airlann

Nature Navvies Programme



www.learning.waterwaysireland.org

Nature Navvies Challenge One:
Biodiversity Inspection School Grounds

Having read the Crazy Canal Cycle we have learned that the waterways of Ireland have a rich biodiversity. This means that they provide the opportunity for a variety of life to exist. From invertebrates in the water to water-plants to trees to birds to animals in the hedges nearby. A rich biodiversity is extremely important for humans because it sustains life on earth. Within biodiversity, every species, no matter how big or small they are has an important role to play in an ecosystem.

There are two options when completing this challenge. Option one is to conduct a biodiversity inspection in your school grounds. Option two is to undertake a nature trail along the nearest waterway to your school. **The choice is yours!**

I challenge you to check out the biodiversity value of your school grounds.

Step 1 As a class discuss the areas around the school that are potentially rich in biodiversity.

Step 2 In groups draw a map of the school grounds. Highlight areas that are possible hotspots of biodiversity.

Step 3 Gather equipment. Make your clipboard using the clothes peg and A4 card. **Remember work as a team.**

Step 4 Each group should start at a different area. Open your eyes to biodiversity. Fill in your recording sheet as you go.

Step 5 Every time you spot a living species, from moss in the cracks of the pavement to bugs under a stone, record it. You don't have to know the name it. Only record a species once for example: If you spot 10 children record it as 1. If you spot 4 different types/species of trees record it as 4 – mark 1 for each type (even though there may be 30 trees on the school grounds). Only count the different types of species not the actual amount.

Human Being	-	1
Trees	-	1111

Step 6 Return to your classroom and count up how many species were found.

Step 7 Present your results orally or via a bar chart to the rest of the class. Discuss.

Are you surprised by your findings?

Is your school rich in biodiversity?

Can you make it richer?

How?

Equipment required:

A4 Cardboard, Paper, Pencils, Clothes Peg, Magnifying Glass, Bug catchers

Area of School Grounds (e.g. wall, front yard, pavement..)	Species Found (e.g moss,bugs,grass,flowers, trees,birds)	Amount of types of species (Mark 1 every time you spot another type of tree e.g. 4 types of trees 1111)

Area of School Grounds (e.g. wall, front yard, pavement..)	Species Found (e.g moss,bugs,grass,flowers, trees,birds)	Amount of types of species (Mark 1 every time you spot another type of tree e.g. 4 types of trees 1111)

Guidelines for taking a trip to the waterways

This Nature Trail incorporates active learning and enables children to experience a waterway by exploring it through all the senses thus gaining a rounded learning experience.

On planning a trip to a waterway it is important to check the weather forecast. A mild day is preferable as it promotes viewing of a richer biodiversity of species. Dull days inhibit many invertebrates being seen.

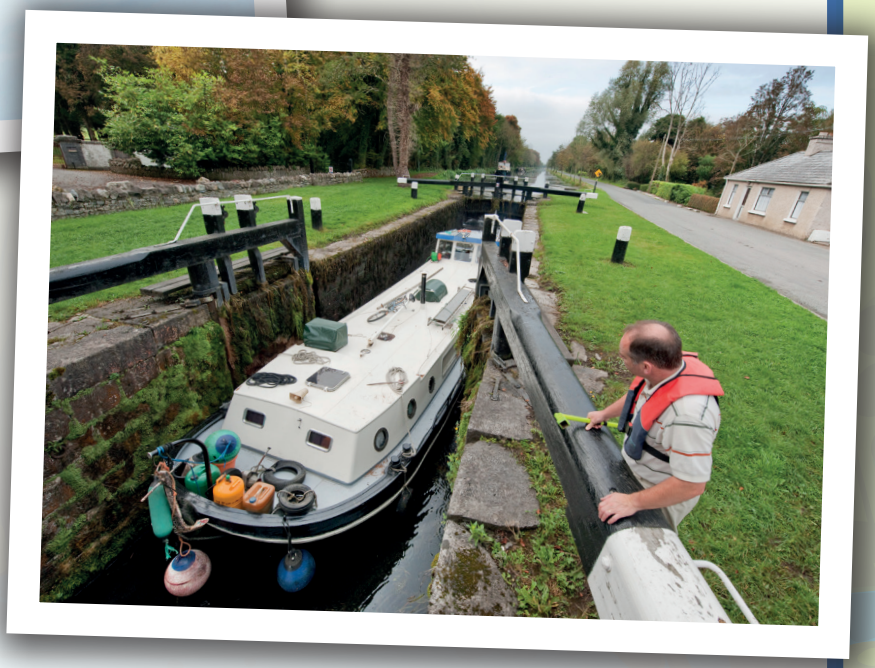
A preparation visit to the waterway by the teacher is recommended. This prevents time wasting on the day and allows an optimum location to be sourced where a rich variety of habitats can be found in close proximity to each other. It may be necessary to study the "bridge" habitat separately from other habitats. The nature trail may be adjusted in that case.

You may wish to contact the local lock-keeper if visiting a canal. They may be available to show how a lock works and have a talk with your class.

The website **www.woodlandtrust.org.uk/naturedetectives** is excellent for downloadable identification keys and dials for trees and plants.

Suitable footwear such as old runners is suggested. Wellington boots are not recommended.





Preparatory Lesson for the Nature Trail

The word habitat will be explored. The children will discuss their understanding of the term. It will then be explained to them that a habitat is a place which provides for the needs e.g. food, shelter, water etc. of living things. They may wish to look up the definition in their dictionaries. They may give examples of various habitats.

Outline to the children that a waterway has a series of habitats. The children will try to guess the series of habitats making up a waterway. A waterway features approximately six habitats. Different species live in different sections and some species can live in more than one section. Indeed some species begin life in one section and end life in another e.g. damselfly and caddisfly. Even the bridges are a home. Bats love to move in while mosses and unique plants flourish on these ancient monuments. I wonder if George Macquay (1758-1820), Director of the Grand Canal Company, ever realised the potential bio-diverse realm he was creating which flourishes today, over 250 years later, with an abundance of species. The individual sections will be briefly discussed highlighting what might live there and why:

1. Trees and hedgerow
2. Grass verge
3. Tow path (canal) / path (other waterways)
4. Reed fringe
5. Open water
6. Bridge



Equipment

- ❍ 5-6 colour copies of the nature trail
- ❍ Whistle and stopwatch
- ❍ 3 nets (available from toy shops)
- ❍ Numbers 1-6 (A4 laminated) to highlight each section
- ❍ 2 hula hoops
- ❍ 2 basins
- ❍ Bug-viewers
- ❍ Invertebrate identification keys (see guidelines)
- ❍ Identification books on trees, wild flowers, insects and birds
- ❍ Freezer bags (for samples to id) and permanent markers
- ❍ Disposable cups
- ❍ Ruler
- ❍ Measuring tape



How the Nature Trail works

The class should be divided into 5-6 groups depending if the bridge is included in the tail. Each group will decide on a group name.

Each group will be given a coloured copy of the trail, pencils, a clipboard/cardboard with clothes peg and a camera (if possible).

The groups will read through the trail. It will be explained to them that the equipment they need to complete each task will be left at each station and each station will be numbered.

The groups will be allocated a starting station and told on hearing the whistle (every 10 mins) they will move into the next station.

Rules for keeping safe at a waterway will be discussed.

A project, using power-point, on a section of the waterway (chosen randomly by the teacher on completion of the trail) could be completed by each group based on their findings during the trip. Photographs will be used in the project as evidence of work done. These projects may be uploaded to the school website therefore informing the community of work carried out by the children while highlighting the wonders of a local resource.

Arriving at the waterway

On arriving at the waterway it is a good idea to create an atmosphere if calm. In order to do thss ask the children to watch out for birds. Explain to them that the birds are aware of their arrival and are having a chat about it!

They will then be invited to close their eyes and listen.. They must count how many different bird sounds they hear within one minute.

1) Trees & Hedgerows

Group Name:

The trees and hedgerow provide a home to many types of birds, animals and insects. Trees can be identified by their leaves, fruits pr buds depending on the season.

1) List 1 reason why you think it makes a good home?

2) How many different species (types) of trees can you see?

3) Take photos of various leaves from the trees. Try to identify them using identification books supplied. Write down photo number and tree type. Collect samples that need to be identified.

4) Are the following trees present?

Circle those that are:

Equipment

- ❍ Tree and Plant identification books
- ❍ keys
- ❍ freezer bags
- ❍ permanent marker

Ash Hawthorn Willow Sycamore






Food Chain

Give an example of a food chain. Define a food chain and give an example.

A food chain is a chain of events showing how all living things need food for survival. It shows how plants, animals and humans rely on each other for food.

Berries - mouse - fox



2) Grass Verge

The grass verge exists in the shadow of the trees and hedgerow. It is made up of various species (types) of grasses, nettle, brambles, clover, cow parsley, buttercups and sometimes rare orchids. It is visited by many butterflies, rabbits, hares, foxes, mice, birds and insects but not all at the same time or there would be mayhem!

Equipment

- ❍ Hula hoop
- ❍ flower and Plant identification books
- ❍ keys
- ❍ freezer bags
- ❍ permanent marker

1) Why?

.....

2) Place the hula hoop in a random section of the grass verge. Don't move it from that position!! Now kneel down and look very closely into the hoop. Count how many different species you can see.

Number of species

.....

3) Take photos of as many species as possible. Try to identify them using identification books / keys supplied. Write down photo number and plant type. Collect samples that need to be identified.

4) Are the following plants present?

Circle those that are:

Bramble **Lords and Ladies** **Nettles** **Purple Vetch**






Equipment

- ❍ Hula hoop
- ❍ flower and Plant identification books
- ❍ keys
- ❍ freezer bags
- ❍ permanent marker

3) Tow Path (Canals) / Paths (waterways)

The tow path was used by the horses that "towed" the boats along the canal. Discuss the differences between the towpath and the grass verge! The plants on the tow path are very strong and have developed survival strategies to cope with being trampled on.

1) Place the hula hoop in a random section of the grass verge. Don't move it from that position!

2) Look into the hula hoop. How many different types of plant can you see?

.....

3) Can you think of 2 survival strategies developed by these plants?

.....

4) Take photos of as many species as possible. Try to identify them using identification books / keys supplied. Write down photo number and plant type. Collect samples that need to be identified.

5) Circle the plants that are in the hula hoop.

Silverweed **Clover** **Buttercup** **Daisy**








4) Reed Fringe

The fringe of reeds along a waterway helps to protect the bank. They also provide a home for water birds. Make a length of about 5 metres along the reed fringe.

Equipment

- ❍ Hula hoop
- ❍ flower and Plant identification books
- ❍ keys
- ❍ freezer bags
- ❍ permanent marker

1) On looking at the 5 metre stretch count how many different plants you can see?

.....

2) Discuss the differences between the reed fringe and those growing along the grass verge. Why won't the reeds or yellow flag iris grow in the grass verge?

.....

3) Take photos of as many species as possible. Try to identify them using identification books / keys supplied. Write down photo number and plant type. Collect samples that need to be identified.

4) Circle the plants that are present;

Meadowsweet **Yellow Iris Flag** **Horsetail** **Common Reeds**






5) Choose a plant you have identified! Feeling its leaves draw it with your eyes closed closed and then draw it with your eyes open. Compare!

5) Open Water

The open water provides a home for many fish, birds, insects and plants. It is a hive of activity utilised by barges, fishermen, birds (to get their dinner), fish, invertebrates and water plants.

1) How many plants can How many plants can you see in the open water?

Water lily



Arrowhead



Pondweed



Swans, Moorhens, Mallard ducks, Kingfishers and Grey Herons are common visitors. Can you think why? Look around for evidence of a feathered visitor! Below the water and amazing world of invertebrate life exists. The caddisfly larva being one of the habitats.

2) Using the nets provided, carefully go to the water's edge and kneel down. Place the net deep into the water and sweep it from side to side. Take it out and remove any big debris. Pinch the bottom of the outer net and carefully tilt the contents into the basins containing water. On first view it may appear that nothing but pebbles and mud are in it. Look closer... invertebrates are very good at hiding.

3) Catch them with bug viewers and using id keys try to name them. What do you think they eat?

Majestic dragonflies, bright blue damselflies and caddisflies all begin life in the water and eventually move into the open air. On moving out of the pupae casing and exposing their wings they use the reeds at the water's edge as a ladder to make their first journey into the open air.

The invertebrates found in an aquatic environment can inform us about whether the water is clean or polluted. Certain invertebrates live in clean water while certain ones live in polluted water. Because they can teach humans this they are called bio-indicators.

Equipment

- ❍ Bug viewers
- ❍ basins
- ❍ nets,
- ❍ identification books
- ❍ keys (for birds, insects, plants and trees)
- ❍ freezer bags
- ❍ permanent marker
- ❍ measuring tape



6) Bridge

Equipment

- Ruler

The bridges along any waterway provide a home to bats, birds, lichens and mosses. Each bridge has an interesting history. Sometimes you can come across a plaque on a bridge containing a name or a date. On the canals you can compare the dates between two consecutive bridges and calculate how long it took the navvies to complete that stretch.

On the canals the horses towing the boats had a lot of hard work to do. Evidence of this work exists in the trodden tow paths and also on the bridges in the form of cuts into the stone made by the ropes on the horses.

1) Count the number of cuts you find on the bridge

2) Measure the indent made by the most prominent one

Lichens are made up of two very small living things, a fungus and an alga. The alga makes food while the fungus collects water. Their relationship is called symbiosis. It's a good relationship and means that lichens will survive harsh weather conditions that could kill the fungus or alga growing alone. They have a crust like appearance and vary in colour. Lichens are bio-indicators. This means they can tell humans environmental information. They can inform us about the quality of the air. Certain lichens grow in clean air environments while other lichens grow in polluted air environments. By looking at the type of lichen growing we can determine the quality of the air!

3) Describe a lichen you can see on the bridge. Measure its length and width.

7) Early Finishing Activities

If you are waiting to move to the next station you make like to make a scent. Using a disposable cup place a variety of flowers/leaves/twigs which you think have a nice scent inside. Add a few drops of water and mix well. Share and compare your classmate's scents. Give your scent a name.

Look out for a dandelion

Did you know that the word comes from the French "dent de lion" meaning lion's teeth. Look at the leaves and notice the jagged leaves which resemble lion's teeth.



Try to find a horsetail plant

Pick it and turn it upside down. Note the similarity to a horse's tail. Did you know that this plant is as old as the dinosaurs.



Notes



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