

Activity Plan & Guidance (KS2 & KS3)

Overview: Otter populations are on the rise in Birmingham and the West Midlands. At the Canal & River Trust we're excited to find out how we can build on this positive change. Learners will find out how we use mathematical and scientific processes to gather and visualise data about otter locations and habitats.

Learning Objectives

- Discover processes that the Canal & River Trust use to monitor otter populations.
- Understand how GPS coordinates work.
- Use coordinates to plot potential locations of otters.
- Explore how other visualisation techniques including bar charts and pie charts are used to compare data.

Resources

- Otter Spotter PowerPoint Presentation
- Otter Spotter Activity Pack (printable worksheet)
- Protractors for Task 3 (vegetation pie chart)

Activity

Starter

Use the 'Otter Spotter PowerPoint Presentation' to introduce the topic of otter surveys and monitoring.

Use slides 4 to 9 to introduce the idea of using otter spraints to detect and monitor their population and talk about how GPS coordinates work.

Discuss rounding to two decimal places before moving on to the 'Otter Plotter' task.

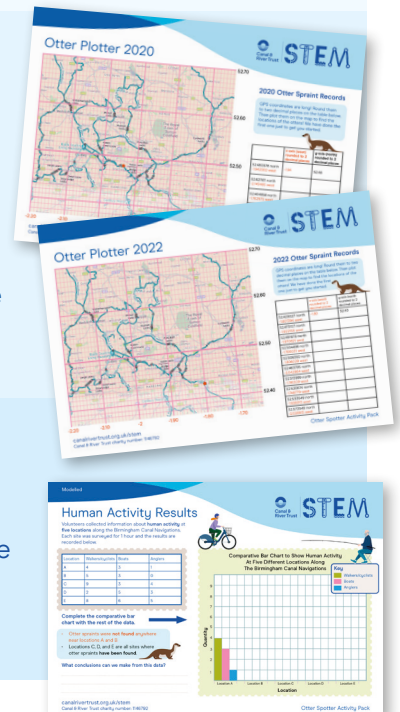
Task 1: Otter Plotter

There are two different 'Otter Plotter' activity sheets, one more challenging than the other. These could be done as a large group or printed and given out individually. Half of the class should be given the Otter Plotter **2020** activity sheet and the other half, the Otter Plotter **2022**.

When the task is complete learners should partner up to compare the results of the two surveys. Ask how the populations have changed and what they think the limitations of the survey might be. Discuss what the grids may look like in future years.

Task 2: Human Activity Results

Use slides 10 and 11 to talk about the otter survey. The 'Human Activity Results' sheet could be completed individually or in pairs to analyse human activity at five different canalside locations. After the activity, make conclusions about the data. The Canal & River Trust has noticed that areas that are popular with anglers are also where otter spraints have been found! Otters do not appear to be particularly affected by boats or human presence.



Task 3: Vegetation Results

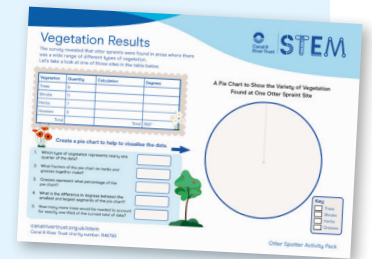
Use the survey results about vegetation at one location to construct a pie chart.

Steps to work through this activity:

1. First, we need to find the total number of people seen in the survey. Add up the 'Quantity' column (30).
2. If we share the 360 degrees between these 30 people, we'll see that they are represented by 12 degrees each ($360 / 30 = 12$).
3. We need to multiply each vegetation quantity by 12 to give us the number of degrees for the pie chart.

Model how to apply these figures to draw a pie chart (A protractor will be required).

Note: Results like these help the Trust to work out what types of vegetation are preferred by otters. This informs the Trust about what to plant in order to encourage the growth of otter populations in the future.



Differentiation

- The Otter Plotter 2020 activity sheet is suitable for students who are just starting out or not yet confident with rounding or plotting coordinates. This activity has 4 sets of coordinates to round and plot.
- The Otter Plotter 2022 activity sheet is great for more confident students who are ready for a challenge. This has 9 sets of coordinates to round and plot.
- There are also two differentiated worksheets for task 2 – Human Activity Results. Some learners will need support to get the comparative bar chart started. More confident and independent learners may be able to create their own graph axis labels, title and key with minimal modeling required.

Suggestions

This is a great opportunity to spark interest and engagement in maths through conservation and wildlife. Why not spend some time talking about ecosystems, pollution or how otters are highly adapted to a semi-aquatic environment: Strong tail for a rudder; webbed feet for better swimming; the ability to close their ears so water doesn't get in; the ability to close their nostrils so water doesn't get in.

Plenary

- Use ICT to understand maps and coordinates. Search for the full GPS coordinates on Google Earth.
- How would you improve the otter survey sheet? What other questions could you ask?

Curriculum Links

KS2 Maths (Ratio and proportion):

- solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison

KS3 Maths (Statistics):

- construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts, and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data

Useful Websites and Resources

- [Otters spotted in the heart of Birmingham spark largest-ever survey.](#)
- [Reintroducing The Elusive Otter | Wild Rescue |](#)
- [Build a lego otter](#)