



**Canal &  
River Trust**

Making life better by water

## Big Bang Digital 2021 – Teacher’s Guide

This is a guide to using the Canal & River Trust’s Big Bang Digital session for 2021 - Keeping Waterways Working in Winter. There are three parts to this activity:

- Online video session
- Students’ activity pack
- Teacher’s guide

The session is focussed around the challenges of completing our winter maintenance plan, taking in aspects of engineering, ecology and project planning.

There are activities for the students to complete during the session, and the video will guide you through this and tell you where to pause. We suggest that the activities are completed in groups or individually, but they can also be completed as a class. We recommend 2-5 minutes per activity. Answers and additional talking points for these activities are included in this guide.

If you are interested in extending this session, there are more resources available on this case study on our website here:

[canalrivertrust.org.uk/stem-learning-programme/classroom-case-studies](https://canalrivertrust.org.uk/stem-learning-programme/classroom-case-studies)

## Activity 1 – Winter Works

### Learning Objectives:

This activity explores why the Canal & River Trust choose the winter to do their major maintenance work and introduce the idea of 'problem-solving' in relation to engineering.

### Advantages of winter work:

Least amount of boaters are around so the canal area can be closed off.  
Least number of people walking on the towpaths.  
Less chance of disturbing nesting wildlife.

### Disadvantages of winter work:

Cold, wet weather makes unpleasant working conditions for staff.  
Areas get muddy and dirty.  
Mortar takes longer to dry.

### For the Canal & River Trust care and respect means:

Using traditional techniques that protect the heritage of the canals for future generations.  
Least disruption to wildlife.  
Keeping the canal closed for the shortest length of time possible.  
Making sure the construction area is kept as tidy as possible.  
Not putting the general public at risk.  
Keeping our members of staff safe.  
Leaving the area as we found it.

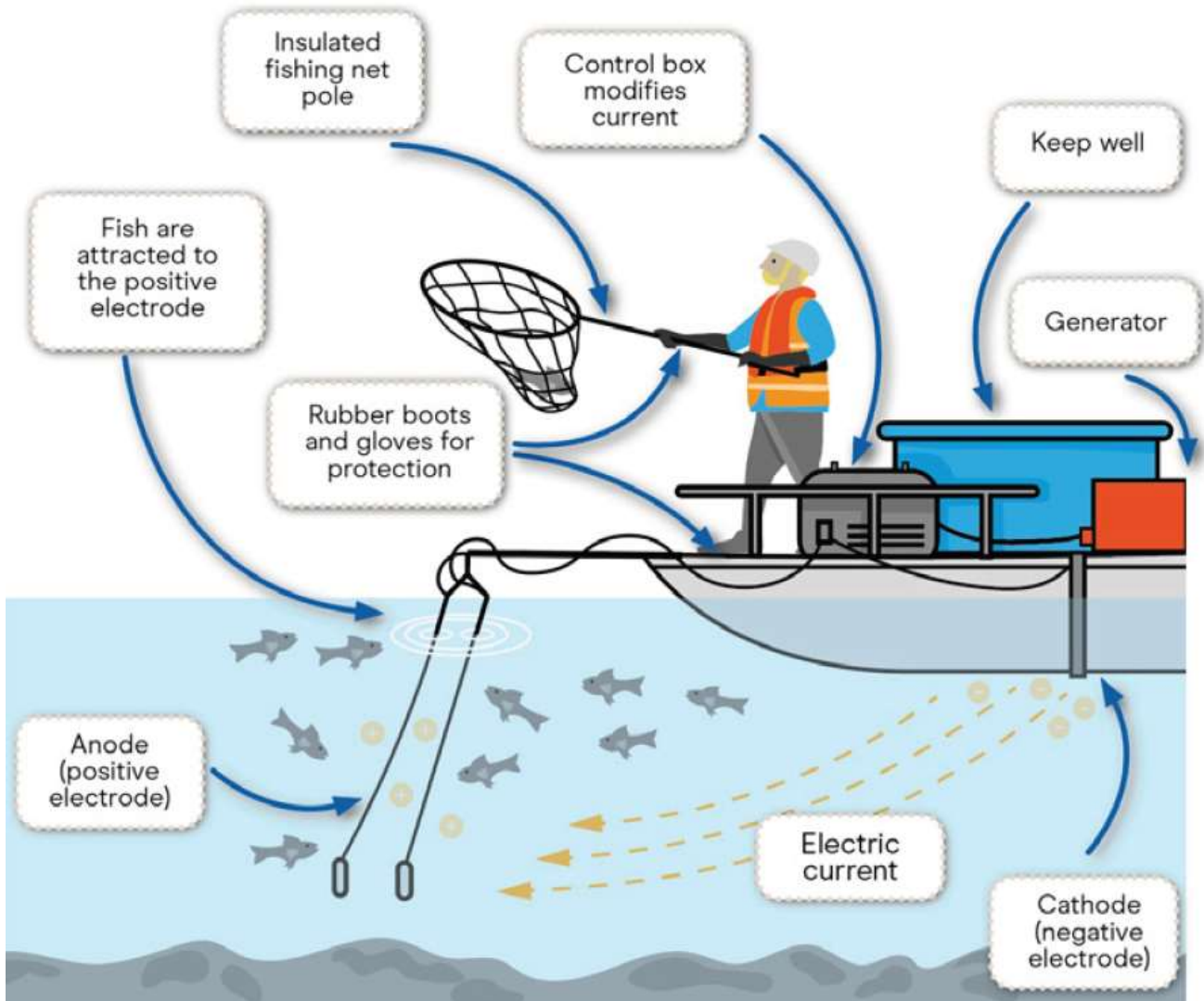
## Activity 2 – Fish Rescues

### Learning Objectives:

Students will be introduced to the process of electrofishing and understand how it works.  
Students will understand how non-native species can impact native fish populations.

### The Activity:

The technique that the Canal & River Trust use for catching fish is called electrofishing. It involves passing an electric current through the water to temporarily disengage the ability of fish to swim. They can then be easily netted. The rescued fish are placed in large containers of water. They recover after a few minutes, before being rehomed in a safe section of canal. Catching the fish also allows the Trust to check fish health and assess fish species populations.  
Ask students to complete the diagram labels.



### Activity 3 – Lock Gates

Discuss possible ideas with your class about how the heavy gates could be transported and put into position. The lock is surrounded by fields and no main roads run nearby.

During the project:

- The gates were driven on a lorry to a nearby location and lifted onto a boat.
- They were then floated to the lock area.
- A crane was used to lift the gates into position.