

TUNNELWORKS

KS3 SCIENCE LESSON 3 WORKSHEET

SOUND

Harbour porpoise facts

- Harbour porpoises live along coasts and estuaries in the northern hemisphere, including around the UK and in the Thames Estuary. They mainly inhabit waters up to 150 m deep, although they are also known to be able to make quite deep dives.
- Harbour porpoises are small, reaching 1.4 – 1.9 m in length when fully grown and weighing 45 – 60 kg.
- They can live for as long as 20 or so years.
- Harbour porpoises are carnivores and mostly eat small fish and squid.
- They were considered a delicacy for royal feasts in the Middle Ages!
- Harbour porpoises use sound to communicate, find food and navigate.
- Their most distinctive sounds are the echolocation clicks which have a frequency range between 110,000 – 150,000 Hz.
- Their most distinctive sounds are the echolocation ‘clicks’ they use to find food and navigate. These have a frequency range of about 110,000 – 150,000 Hz.
- Like dolphins, harbour porpoises have a fat and oil-filled ‘melon’ – a bulge at the top of their head. Scientists have shown this helps transmit and focus sounds. This enables the porpoises to receive the echoes that bounce off fish, squid or other creatures.

Task 1: Select the right equipment to detect the harbour porpoises’ distinctive clicks

The researchers tow a hydrophone (underwater microphone) behind the boat. Select:

1. A hydrophone that will detect the full frequency range of the harbour porpoises’ clicks, without detecting too many other sounds.
2. The hydrophone has a sound-detecting element inside a liquid filled tube. Choose a liquid that will be a good medium for the sounds to travel from the sea to the hydrophone.

Use the harbour porpoise facts to help you.

	A	B	C	D	E
Hydrophone frequency range	0 – 10,000Hz	5,000 – 30,000Hz	10,000 – 120,000Hz	100,000 – 150,000Hz	150,000 – 200,000Hz
Liquid	Fresh water	Salt water	Oil	Pure alcohol	-

Task 2:

Which of these computer displays most accurately represents a harbour porpoise click?

The researchers need to identify when their hydrophone detects a harbour porpoise. Look at the clicks below and pick the spectrum which most closely displays a harbour porpoise click.

Use the harbour porpoise facts to help you.

