

## ECHOLOCATION AND COMMUNICATION

### 11. Human impact

**Objective:** Students will learn the impact humans may have on whale communications.

**Level: 4-7**

**Background:** Whales have well-developed hearing, and have been observed to respond to sounds such as cameras clicking underwater and boat-engine noise. Grey Whales have shown avoidance behaviours at sound levels of 120 decibels.

An example of an unknown human impact on whales is a set of experiments that a group of scientists want to conduct to measure global warming. They have proposed using loud sounds to precisely measure the temperature of the world's oceans. Sound travels in sea water about 1445 metres per second at zero degrees Celsius. For each degree above zero, sound travels about five metres per second faster. Scientists can calculate the average temperature of the oceans by timing how long it takes sound to travel long distances. In order to get a sound to travel great distances, it has to be very loud. Even though the sounds made in this experiment will be well below the frequencies heard by humans, they can be easily heard by whales. Some scientists are concerned about the effect these sounds will have on marine mammals. Loud, frequent sounds may alter fertility and growth rates, disrupt feeding behaviour or muffle communication. More research is needed discover the effects of human-made sounds on whales.

**Level: K-3**

**Materials:** noise makers (optional)

**Procedure:**

- 1) Have two students stand three metres apart and talk to each other.
- 2) Next, have another student make a motorboat noise.
- 3) Gradually add more students talking and making noise.
- 4) After a few minutes, gather all the students and discuss the activity. How easy was it for students to communicate? Would they like this amount of noise around them all the time?

**Level: 4-7**

**Materials:** flip chart paper, felt pens

**Procedure:**

- 1) Have the students discuss the impact of human technology on whale communication.
- 2) Discuss the problems that the noise from power boats, hydroelectric power stations, commercial ships, etc. can cause to communication. What impact does whale watching have on whales, especially during breeding season? Whale watching can be a valuable way to learn about whales and increase respect for whales, but if not done carefully it can disturb them. Discuss the importance of keeping a respectful distance from whales in the wild.