

Whales, Darts, and DNA

Excerpt from – Nelson Science Connections 9, OSSLT Preparation

Crime shows on television often show criminal cases being solved using evidence such as DNA fingerprinting. This same technology is now being used to save endangered species of whales.

For years, scientist Scott Baker, from the University of Auckland, New Zealand, studied endangered humpback whales in the Pacific Ocean (Figure 1). Baker was puzzled that humpback whales were not increasing in number after a hunting ban was imposed in 1986. Baker had a hypothesis. He knew that Japan allowed the sale of whale meat from species that were not protected. He suspected that some whale meat being sold was also from whales that were protected.



Figure 1- Whale meat is still sold in Japanese supermarkets.

Gathering the Evidence

Baker needed to gather evidence to prove his suspicions. He designed special darts. When fired from a crossbow, the darts hit the whale and bounced off, removing a small sample of the whale's flesh. (Figure 2)

He used the samples to produce a DNA fingerprint for each whale. Baker gathered DNA samples from different whale species.

Fighting Illegal Whaling

In 1993, Scott Baker made a trip to Tokyo. He bought samples of whale meat being sold at fish markets (Figure 3). Baker used his hotel room as a lab and tested the samples to find out which species each sample came from. His results confirmed that many of the samples were from endangered species.

Because of Baker's efforts a new program to protect endangered whale species was started with closer monitoring to prevent illegal whaling.



Figure 2 - At maturity, humpback whales are about 15 m long and have a mass of about 36 000 kg. They eat krill, a shrimplike marine invertebrate, and small fish.

Figure 3 - Scott Baker analyzing the DNA of whale meat in his hotel room.



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OSSLT Questions

Multiple-Choice (Indicate the best or most correct answer)

1. How did the darts that Scott Baker used help him obtain whale DNA?
 - a. They bounced off the whale and removed a small piece of whale’s skin.
 - b. They drugged the whale so that he could cut a small piece of skin off the animal.
 - c. They put an electronic tag on the whale so he could follow the animal until it died.
 - d. They removed a blood sample from the whale so he could study the animal.
2. Where did Scott Baker test the whale meat samples he bought in Tokyo?
 - a. At his laboratory in New Zealand
 - b. At a university in Tokyo
 - c. On board a whaling ship
 - d. In his hotel room.
3. What did Scott Baker learn from his DNA tests about the whale meat sold in Tokyo?
 - a. Most of it contained poisons from the darts used to kill the whales.
 - b. Some of it came from whale species that had been illegally hunted.
 - c. Some of it was from animals other than whales.
 - d. Most of it was unsafe for people to eat.
4. What was the result of Scott Baker’s discovery?
 - a. Fewer people now eat whale meat.
 - b. All whaling has been made illegal.
 - c. Endangered whale species are better protected from whaling.
 - d. Whale species that are not endangered are increasing in number.

Short Answer

5. What made Scott Baker first think that some whale meat that was being sold was from endangered species?
