

Fur Seal Survey

OBJECTIVE

Given a current environmental situation, the student will be able to gather information, organize, analyze, and present data. They will participate in a decision-making process.

MATERIALS

per student group:

- copies of the *Seal Survey Cards* on pages 22 and 23

per class:

- maps of Antarctica
- markers
- graph paper
- library or Internet references



ACTION

1. Divide class into three student groups. Each group represents a different group of scientists and naturalists studying the Antarctic fur seal.
 - Group 1—studying habitat destruction caused by fur seals
 - Group 2—studying pollution in the Antarctic
 - Group 3—documenting the fur seal’s recovery from near extinction
2. After each student group has received a card, allow time (maybe one week) for students to become familiar with the situation and gather additional resources. Students may also want to gather information about the Antarctic Treaty, Antarctic fur seal, and other species at South Georgia Island (tussock grass, hair grass, king penguin, northern fur seal, subantarctic fur seal). In preparing the data, have each student group set objectives and goals, and organize information and data. They then design graphs, charts or other visuals to support their situation.
3. When students are ready, set up a “meeting of the minds” with all three groups. Allow each group three minutes to introduce their survey and suggestions.
4. After each group has spoken, compare and contrast ideas and goals of each one. Does a group need to change its original plans after hearing the other group’s presentation? Discuss new solutions.
5. As a class, write final reports for each situation including comments or information from the other groups’ situation.

FUR SEAL SURVEY GROUP 1 (THE TUSSOCK TEAM)

You are scientists investigating the Antarctic fur seal (*Arctocephalus gazella*) on South Georgia Island (54°S, 36°W). About 95% of the world's Antarctic fur seals use South Georgia Island as their rookery (breeding area). The Antarctic fur seal population has rapidly increased since 1958. It's estimated that 1.8 million Antarctic fur seals live on South Georgia Island.

Population increases in indigenous species is usually good news. But not this time. The seals are trampling the native plants (tussock and hair grass) as they travel from the shore to the rookery. According to once source, more than 60% of the grass habitat has been destroyed. Birds, like the pipit and pintail, need the tussock grass for nesting. The destruction of the grasses is also adding to the erosion of the area.

Research and investigate the natural history of the area. Discuss what may happen if the Antarctic fur seal population continues to grow.

- How will it affect the *ecosystem* of the island?
- What other animal species live on South Georgia Island? How will they be affected?
- What's the effect on the local predators and prey of the fur seal? The effect on birds? The effect on tussock grass consumers?
- Is there a way to estimate if the Antarctic fur seal population is at carrying capacity (maximum number of individual species which the ecosystem can support)?
- Should the scientific community step in? If so, how? If not, why not?
- Do you think controlled hunting should be allowed?

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FUR SEAL SURVEY GROUP 2 (DEBRIS CAN BE DEADLY)

You and your colleagues are concerned about the excessive amount of *debris* in the Antarctic and subantarctic. At this time you are focusing your attention on how debris is affecting the Antarctic fur seal (*Arctocephalus gazella*) on South Georgia Island (54°S, 36°W). The Antarctic fur seal population has increased since 1958. It's estimated that 1.8 million Antarctic fur seals live on South Georgia Island.

As many as 1% of the Antarctic fur seals on South Georgia Island may have "debris collars" of plastic packing bands, nylon string, or broken fishing nets around their necks. As a seal grows, the plastic cuts into the skin causing lacerations which can lead to infection, strangulation, and even death.

You wonder how many of these animals may be dying from entanglement. You know that the northern fur seal (*Callorhinus ursinus*) population is declining in part due to entanglement in debris. In fact, some estimate that up to 30,000 northern fur seals die each year due to entanglement in nets or other debris.

You and your colleagues must hypothesize how the debris is getting to this area. Investigate ocean currents, current fishing activities in the area, and nearby human populations to determine where the debris is coming from. How could it affect the Antarctic fur seal population?

Make some suggestions about how to control pollution. What other information is needed to make decisions?

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FUR SEAL SURVEY GROUP 3 (BACK FROM THE BRINK CLUB)

You are members of a unique organization that celebrates the regrowth of populations of animals that were once reduced due to human influences. For example you highlight animals such as the gray whale and northern elephant seal because the populations have grown from near extinction to large, thriving populations.

One of the animals on your “winners” list is the Antarctic fur seal (*Arctocephalus gazella*). The Antarctic fur seal hunting trade began in 1790 and during its 117-year history caused this species to become nearly extinct, twice.

From 1790 to 1820 Antarctic fur seals were hunted on South Georgia Island (54°S, 36°W) to near extinction. During the period from 1870 to 1907 all Antarctic fur seals on South Georgia Island were killed. Scientists estimate that as many as 1.2 million fur seals had been killed by this time. Fur seals were not seen on South Georgia Island again until 1915 when one was shot during an elephant seal hunt.

In 1820 fur seals were also discovered on the South Shetland Islands (62°S, 58°W) and in 1821 nearly 250,000 seals were killed. They were also discovered on the South Sandwich (57°S, 26°W) and South Orkney (60°S, 45°W) Islands. These populations were quickly depleted. Only a few hundred fur seals survived throughout their range.

By 1907 the Antarctic fur seal was “commercially extinct” (and the species itself was thought by many to be extinct). Since 1958 the Antarctic fur seal population has increased. Today, 1.8 million Antarctic fur seals (95% of the world’s population) live on South Georgia Island.

You and your colleagues need to make some graphs and charts, such as timelines, to show the original decline and eventual growth of this population. Discuss why the fur seal might have been hunted. What treaties and conventions protect the Antarctic fur seals?

What other information is needed to make decisions?

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Some Antarctic fur seals have “debris collars” on their neck made of packing bands, nylon string, and broken fishing nets. If not removed, the “collars” can cause open wounds.

