

Activity:

Why Puffins Don't Freeze

Objective: To feel how a layer of fat helps insulate the body from the chilling effects of cold water.

Materials:

- A can or two of Crisco shortening
- A dozen or more quart-sized, zipping plastic bags
- Duct tape
- Several basins of icy cold water

Method: Measure one cup of shortening and place it in a quart-sized zipping plastic bag. Turn a second bag inside out and put it inside the bag with the shortening, being sure to reverse the zipper tracks. Zip the bags together. For added protection, seal the bags around the zipper with duct tape. Push the shortening around, from the outside, to distribute it evenly in the "mitt."

For each mitt with shortening, make an empty mitt, without shortening. These mitts will be used to compare with the insulated models.

Give each student a chance to place one hand in an empty mitt and one in an insulated mitt (with the shortening). Then ask the students to place both hands in a basin or sink of icy, cold water. What happens? (Since this process doesn't take very long, you can get by with making only a few sets of mitts and taking turns with them.)

Discussion: While it is well-known that marine mammals such as whales, seals, and polar bears have thick layers of fat to help keep them warm, northern seabirds such as puffins also rely on internal layers of fat to help them survive frigid arctic waters. This fat, combined with their external water-repelling and air-trapping coat of feathers, allows seabirds to live in a seemingly harsh environment. (Older students could research other adaptations to the cold, for birds as well as other life forms.)