

Name: \_\_\_\_\_

# What Keeps Seabirds Frost Free?

Seabirds live in some of the coldest waters on Earth. Think about penguins swimming under ice, terns in an Arctic Ocean storm, and puffins living in chilly places like Greenland and Alaska. Why don't they freeze?

## Think & Predict

How can puffins and other seabirds survive icy water and extremely cold temperatures? What adaptations do you think they have that protect them from the cold conditions?

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How much of a difference do you think a layer of fat under the skin of these birds makes? In this experiment, how long do you think will you be able to stand the cold water wearing the insulated mitt on your hand? How long can you keep your hand in the water wearing the uninsulated mitt? Make a prediction in seconds for each case.

1) Insulated mitt: \_\_\_\_\_ 2) Uninsulated mitt: \_\_\_\_\_

## Experiment & Collect Data

1. Put an uninsulated mitt on your hand. When your partner says START, place your hand down into the icy water. Have your partner keep track of the passing seconds. When your hand is so cold it hurts, pull it out and say STOP.

How long was your hand underwater? \_\_\_\_\_ seconds

How did it feel? \_\_\_\_\_

2. Time your partner doing the same thing with an uninsulated mitt so #1 is filled in on his or her paper. How long was your partner's hand underwater? \_\_\_\_\_ seconds

3. Put on an insulated mitt. When your partner says START, place your hand down into the icy water. Have your partner keep track of the passing seconds. When your hand is so cold it hurts, pull it out and say STOP.

How long was your hand underwater? \_\_\_\_\_ seconds

How did it feel? \_\_\_\_\_

4. Time your partner doing the same thing with an insulated mitt so #3 is filled in on his or her paper. How long was your partner's hand underwater? \_\_\_\_\_ seconds

## Results

How many times longer did the insulating fat-filled mitt keep your hand warm? Divide the seconds in #3 by the seconds in #1 to find out. \_\_\_\_\_

How close were you to your predictions? \_\_\_\_\_

