

WINTER ANIMAL ADAPTATIONS

This experiment is a great way to bring biology, winter adaptations, and survival strategies together while encouraging critical thinking and hands-on exploration.

INSTRUCTIONS:

STEP 1: Fill one large bowl with ice water. This will simulate cold winter temperatures.

STEP 2: Place each insulating material inside a separate rubber glove or wrap it around a participant's hand. For the blubber test, coat a hand with vegetable shortening, then cover it with a plastic bag.

STEP 3: Submerge each insulated hand into the ice water for 30 seconds. Remove and note the sensation: Which materials kept the hand warmest?

STEP 4: Try different materials and compare results. Use a simple chart to rank the effectiveness of each material.

Materials

- 2 large bowls
- Ice water
- Rubber gloves (optional)
- Various insulating materials:
 - Wool (represents animal fur)
 - Feathers (bird insulation)
 - Vegetable shortening (blubber simulation)
 - Cotton
 - Faux fur or fleece
- Timer or stopwatch
- Notebook and pencil

HOW DO ANIMALS SURVIVE IN THE WINTER?

Fur & Wool: Traps air close to the body, reducing heat loss.

Arctic foxes and red foxes grow thicker fur in winter months.

Feathers: Provide an insulating layer and trap warm air near the skin, helping birds like monarch butterflies migrate to warmer regions.

Blubber: Acts as a thick, fatty layer to prevent heat loss in marine animals like polar bears, beavers, and mammals adapted to cold waters.

Cotton (Control Material): Unlike natural insulators, cotton absorbs water and does not trap heat effectively.



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INSULATING MATERIAL	HOW DOES IT FEEL (COLD, COOL, WARM)	RATE INSULATION 1-10 (10 BEST)	NOTES:

Which material provided the best insulation? _____

Which material provided the least insulation? _____

Why do you think certain materials worked better than others? _____

Why do aquatic animals rely on blubber instead of fur? _____

How do humans use insulation in winter clothing? _____