

Fantastic Feathers

Time: 1 hour

Introduction This activity will help children understand how well penguins are adapted to surviving in the cold of Antarctica. It will also help them appreciate how other animals are well adapted for survival in their habitat.

Learning Objective:

To understand how penguin feathers enable penguins to survive in the icy waters around the Antarctic.

Resources:

1. Downy feathers from the inside of a jacket or duvet
2. Outer contour feathers found outside in a park or by the river – ask around!
3. Eyedropper or pipette
4. Water
5. Image of penguin feathers from 20 41 Images or Google Images.

1 Background information -Sea creatures such as whales and seals are less dense / heavy than water and therefore float. Others like sharks are denser and sink to the bottom of the sea if they are not swimming. Fish tend to be neutrally buoyant, so they don't rise to the surface or sink to the bottom. Whether sea creatures float or not depends on factors such as whether they have fatty blubber around their bodies or trapped air in their lungs (mammals and birds), whether they have swim bladders (fish) or whether they have feathers around their bodies (birds).

Feathers are important for helping warm-blooded birds like penguins maintain their body temperature.

There are two main kinds of feather - stiff contour feathers found on the outer body, wing, and tail, and soft, fluffy down feathers found close to the body. Contour feathers have side branches woven together so tightly that they keep water off the bird's skin. Down feathers, like the down in a coat or duvet, are soft and fluffy - good for keeping birds warm. When air is trapped between the outer contour feathers and the inner down feathers, it acts like an insulator to keep the bird's body heat in and the cold air out.

2 Ask the children to experiment with the two different types of feathers by adding water to them. What do they think will happen when water is added to each feather type? Using a small pipette, the children can add a few drops of water to the downy feathers. What do they notice? What do they notice if they add a few drops of water to the stiff contour feathers?

When the downy feathers become wet, they get soggy, but if you put water on the outer contour feathers, the feathers do not get wet as the water is repelled. This means that when a bird like a penguin comes out of the water, the water simply rolls off its body. So penguins

use their outer feathers like a raincoat, keeping the inner downy feathers and their bodies dry and warm when they are swimming.

When it gets very cold, penguins puff their feathers out to trap more air for even better insulation. When it gets too hot they fluff their feathers out even more, so that trapped warm air escapes and they cool down.

3 Discussion point: How do humans cope in cold or freezing climates? How does body hair, skin and different types of clothing help?

4 Using wildlife books get the children to look at other creatures from other habitats and identify what it is that helps them to survive where they live. Think of the animals shape, colour, size, skin/ fur, movement, and means of catching its food. Animals in nature are all adapted to their habitats!

Differentiation

Using the template below, less able children can choose an animal and complete the survival facts outlined. More able children can create their own survival facts.

Name of Animal:

Habitat:

Colour / Camouflage:

Skin, Fur, Feathers or Scales:

How Does It Move:

How Does It Catch Food:

Rating for Survival in the Wild (out of 10):

Drawn Image of Animal:

Success Criteria

The children appreciate that penguins and other creatures are adapted to their habitat.