A 60 SECOND GUIDE TO . . .

Animal Adaptations (Extreme Cold)

Royal Geographical Society with IBG

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Definition

Adaptations are features and characteristics of an organism that help it to survive in its environment.

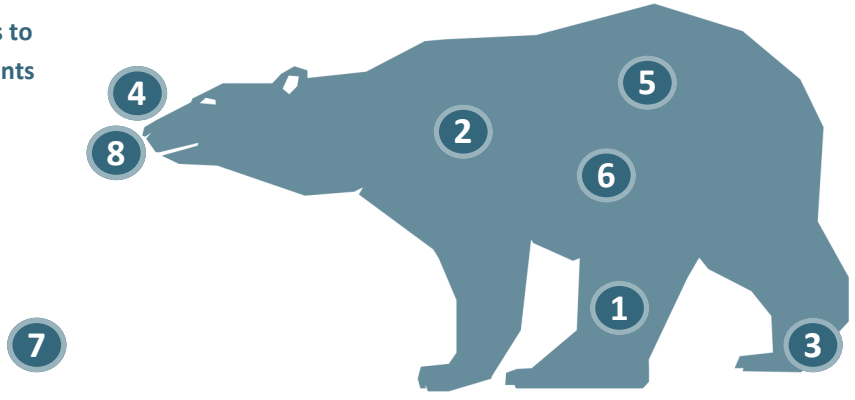
Types of Adaptation

Adaptations usually develop as a response to changes in an organism's habitat. Over time these adaptations form part of the organism's evolutionary history. They can be categorised as behavioural or physical adaptations. **Behavioural adaptations** are those that change the way that an organism or group of organisms act as a reaction to a particular environment. P**hysical (or structural) adaptations** are that change the organism anatomically. Some organisms have adapted to such specific niches that they can actually be categorised as a different species. This is called **speciation**.

Characteristics of an extreme cold environments

- Very cold and very dry conditions.
- Some extreme cold environments are found at high altitudes: air temperature drops by 1°C every 150m climbed.
- High latitudes (greater than 66° north or south) are colder as heat energy from the sun is less concentrated.
- Little or no sunlight for large parts of the year limits the amount of vegetation growth possible.
- Limited vegetation growth times can result in greater competition between organisms for food as well as water and shelter.

Examples of adaptations to extreme cold environments



The polar bear is typically found in the Northern polar extents.

	Description	Explanation
1	Small surface area to volume ratio (round body and short legs)	Reduces heat loss
2	White, translucent fur	Allows camouflage against icy landscapes making it easier to catch prey
3	Large, dimpled feet	Allows easier grip and spreads the weight of the animal on the ice
4	Acute sense of smell	Smell prey hiding under the ice and at a far distance
5	Layers of thick fat and fur	Protection against the cold and a store of fuel to sustain animal during hibernation. Metabolism of fat can also be a good source of water.
6	Oil based fur	Water particles bead off after swimming, reducing chance of water freezing on the animals
7	Rear their young in dens under the ice	Protects young from icy winds before fur growth occurs
8	Closable nostrils	Prevents water from entering the nose when swimming