



There's nowhere to nest, and nothing to make a nest with, so a male emperor penguin takes the one egg that his mate has laid and balances it on his feet. Then he stands around in the snow and hundred-mile-an-hour freezing winds for sixty-five days, until the egg hatches.

This sounds impossible — not to mention miserable and boring — but emperor dads manage it because of their amazing coat of feathers. It's more than an inch thick, with stiff feathers to keep the wind out and fluffy feathers to keep the warmth in. The coat is so good at keeping heat in and cold out that there can be a temperature difference of 140°F between the inside and outside of the feathers.

A feathery fold of skin keeps the egg cozy. But daddy penguins' feet have no heat-saving cover. So, to keep their body heat from leaking out that way, they use a "counter-current mechanism." This is a fancy way of saying that warm blood headed to the feet instead passes most of its heat to the cold blood going back into the body from the feet. So the feet are kept just barely warmer than freezing, but very little precious body heat ends up escaping through the tootsies.



Cold Cuddling

Having a warm coat isn't the only way to cheat life-threatening cold; sharing body heat also works remarkably well. Emperor penguins do it, gathering together in a huddle to beat the Antarctic chill. Very, very slowly, hundreds of penguins shuffle along, changing position, so that everyone gets a turn in the warm center of the huddle.

For very small birds, even an ordinary frosty winter night can be life-threateningly cold. Tiny birds like wrens just can't keep warm, so up to thirty of them will roost together. Cuddled up, they can survive temperatures that otherwise would have frozen them to the branch by morning.

Many birds and other animals use huddling to keep warm, but Inca doves from the southwestern United States and Mexico are the only ones that do it in formation. They make themselves into a living pyramid to warm up after the deep chill of winter nights.



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