

## Animals that Live in Extreme Environments

### Emperor Penguin *Aptenodytes forsteri*

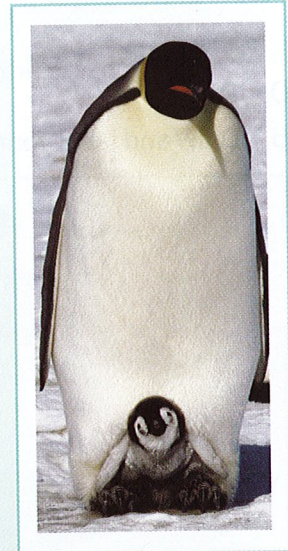
Antarctic animals survive in extremely cold temperatures. To live in such harsh environments these animals have developed specific adaptations.

Emperor penguins are capable of enduring the long, dark and freezing winter nights in Antarctica. They have four layers of scale-like feathers that are both windproof and waterproof.

Just like seals, emperor penguins have a thick layer of fat (or blubber) that acts as insulation, trapping the animal's body heat. They have a short, stiff tail and flippers that have adapted to ensure only the smallest amount of their bodies make direct contact with the icy ground.

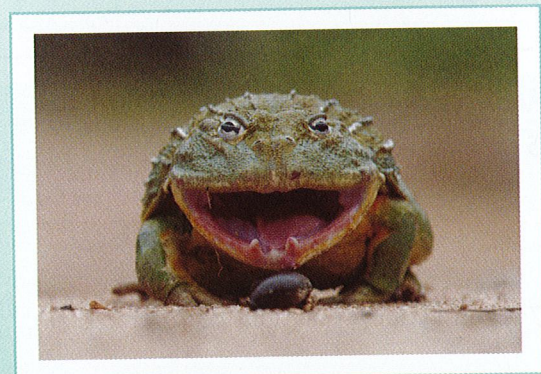
Emperor penguins are known to huddle together in winter to conserve body heat. An emperor penguin's nasal passage is able to recapture about 80% of the heat lost through breathing.

Females lay their eggs during winter so the chicks are mature enough to fend for themselves by the time summer arrives. Once an egg is laid, the female penguin immediately passes it over to her male partner and then leaves for two months to hunt for food. It is the male's job to sit the egg on his feet and wait for the female to return from her time at sea. Once the chick hatches from the egg the male is required to feed and protect it. Amazingly, the male is able to produce 'milk' in his oesophagus to feed the chick. Males can fast for up to 100 days.



### African Bullfrog *Pyxicephalus adspersus*

Hot, dry parts of Africa aren't usually regions you would expect to find frogs. However, this amazing creature has some clever adaptations to help it escape the dry season. The African bullfrog, the largest amphibian found in southern Africa, uses its spade-like heel to burrow to the cooler temperatures below ground and rest in a hibernation-like state. In fact, their bladder stores enough water to enable them to lie buried for over a year! The bullfrog casts off skin and uses it to form a cocoon around itself with the purpose of holding in the body's moisture while absorbing the water stored in the bladder. It is not uncommon for the bullfrog to lose over a third of its body weight while lying dormant.



African bullfrogs return to the surface to feed and breed when the wet season arrives. They eat almost any animal that will fit in their huge mouths, including reptiles, small birds, small mammals, other frogs and often, each other.