



## Extreme Survivors

Animals have made homes in the world's most inhospitable places. Here we meet some of the planet's success stories.

### *Highest*

Life at high altitude holds a multitude of challenges: low oxygen levels, cold conditions and high winds to name but three. Despite this, animals do survive on the roof of the Earth. Snow leopards spend the summers at heights of up to 20,000 feet above sea level. Their thick spotted fur keeps them warm and offers camouflage against the rocks and snow. Their big paws help them grip on the rough terrain. Yaks too survive at these altitudes due to their thick coats and also have large lungs and hearts to help them take in oxygen and pump it around the body. Insects have found ways of making the mountains their home: the Himalayan jumping spider has to feed on insects blown up the mountain from less extreme altitudes.

### *Deepest*

Creatures of the deep ocean are amongst the weirdest and most wonderful species on Earth and they have to be if they are to cope with the enormous pressure described in Blue Planet 2 as being "equivalent of 50 jumbo jets stacked on top of one another". The Mariana snailfish is the deepest fish yet discovered. It has soft bones and special chemicals that help it withstand the pressure. One thing they do not need is functioning eyes; light does not reach to these depths in any case. In terms of the deepest land animal, there are worms thriving in the heat, low oxygen and crushing conditions up to 3.6km beneath the Earth's crust. These nematode worms reproduce asexually and eat bacteria at depths that scientists had previously believed were incapable of harbouring any life at all.

### *Coldest*

Polar bears are an icon of the Arctic extremes. Their white coats camouflage them against the snow and their enormous feet spread their weight on the ice and give them better grip. They have a layer



of fat and thick fur to keep them warm. Emperor penguins in Antarctica utilise an extra strategy to stave off the cold; they huddle in groups taking turns to be on the outside and suffer the onslaught of the cold and ice before then warming up on the inside of the huddle. Wood frogs however have yet another method: in the coldest weather, they freeze and their hearts stop! When the warmer temperatures return, they defrost and their hearts restart again.

## *Hottest*

Animals have found varied ways of coping with extreme heat. Camels have large feet to allow them to walk on hot sand, long eyelashes to protect their eyes from sand and nostrils that they can close to keep the sand out. They store fat in their hump rather than spread around their whole body where it might keep them too hot. Other species, including a rodent called a jerboa, work around the heat of the desert by sleeping in cool burrows during the heat of the day and only coming out at night. The fennec fox loses excess heat through the blood vessels in its over-sized ears. However, it is a worm which yet again takes the crown for extreme survivor: the Pompeii worm lives in 80°C hydrothermal vents in the ocean. Nobody is yet sure how they cope with the heat – the worms die when removed from their habitats in the deep ocean.

## RETRIEVAL FOCUS

1. Why are large lungs helpful to the yak?
2. What two environments are described as suffering from lack of oxygen?
3. What two extreme environments do worms survive in?
4. What animal survives even though its heart stops?
5. How does the jerboa cope with life in the desert?

## VIPERS QUESTIONS

**I** How do you think scientists reacted to the discovery of the nematode worm in the Earth's crust?

**E** What phrase tells us that there may be more animals living in the deep ocean?

**V** What does thriving suggest about how well worms are surviving in the Earth's crust?

**V** Find and copy a phrase in the section 'coldest' which is closest in meaning to avoid.

**V** Find and copy a word which is closest in meaning to 'attack'.