



Has your experience with red pandas come from Master Shifu in the *Kung Fu Panda* movies, or perhaps from watching entertaining videos of these adorable creatures on YouTube? Maybe you were lucky enough to glimpse one curled up and partially hidden high in a tree at a zoo. The captivating red panda on the cover of this book was photographed in the Wolong National Nature Reserve in Sichuan Province, China. This reserve is best known for its work in the conservation of giant pandas, who share part of their name, portions of their habitat in the Himalayan Mountains, and their preference for bamboo with red pandas.

But genetic studies have shown that red pandas (*Ailurus fulgens*) are actually more closely related to the raccoons you might encounter in your own habitat than to the giant panda. Part of the challenge of biology is figuring out the evolutionary history of Earth's inhabitants. Another part of the challenge—and fun—of biology is investigating the lives of these inhabitants. Observations reveal that red pandas are agile tree climbers and always descend to the ground head first, gripping the tree with their hind claws. They use their bushy long tail for support and balance in the trees, as well as for warmth when wrapped around them during cold winters. Red pandas even have thick fur on the soles of their paws, providing protection as they walk on snow or ice-covered tree limbs. In hot weather, a red panda may sleep stretched out on a limb with its legs dangling.

Much of what we know about red pandas comes from research done on captive animals residing in zoos. Biologists have investigated their stomach biota that helps them digest their not-very-nutritious diet of bamboo, the genes for their taste receptors that relate to their unusual ability to detect sweet flavors (although sweets are not a normal part of their diet), and the details of their reproductive cycles to help support red panda captive breeding programs. Studying these solitary, mostly nocturnal animals in their native mountainous habitat, however, is challenging, especially as there are so few of them left in the wild. The International Union for Conservation of Nature (IUCN) lists the red panda as endangered, with a population decline of as much as 50% over the past two decades. The threats the species faces are many: habitat loss and fragmentation because of human activity, poaching (despite being protected by legislation in the countries where red pandas are found), and climate change, which will further reduce its habitat. Protecting such a captivating animal as the red panda shown here will require international cooperation and commitment to conservation efforts as well as continuing scientific research. The red panda story illustrates how an understanding of biology can help us preserve the remarkable diversity of life on Earth.

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