

When Would Two Species Not Be Two Species?

Living things exist in many different shapes, sizes, and colors. If you consider just the animals, the variety of characteristics among them is seemingly endless. Even among animals in one group, such as mammals, the variety is amazing.

Similarities and Differences Dogs and horses have several physical characteristics in common. For example, both animals have four legs and are covered with hair. Both have two eyes, two ears, and two nostrils in a damp, skin-covered nose at the front of the head. Yet you would never mistake a dog for a horse—even a very big dog for a very small horse.

In spite of their similarities, the two animals are different in many ways. A horse has hooves; a dog has clawed toes. A horse has large, flat, uniformly sized teeth; a dog has sharp, pointed teeth of varying size and length. These characteristics show that the animals are genetically very different.

Suppose you were asked to compare two dogs: a Saint Bernard and a Chihuahua. At first glance, these two animals appear to be very different. The Saint Bernard is quite large and is covered with long, curly hair. The Chihuahua is smaller than most house cats and has very short, bristly hair. In such characteristics as feet and teeth, however, the two are quite similar.

Species A *species* is often defined as a group of individuals that are reproductively isolated. In other words, a male dog can mate with a female dog, but cannot interbreed with a female of another species, such as a cat or a pig. This definition works fairly well for animal species and is generally accepted by zoologists. However, it does not work as well with plants, or with bacteria and the many unicellular eukaryotes. Therefore, the operational definition of the term *species* generally applies only to animals.

Crossbreeding by members of different species may occasionally produce offspring.

Such offspring, called *hybrids*, often show some traits of both parent species. Perhaps the best-known example of a hybrid animal is the mule, the offspring of a male donkey and a female horse.

Mules cannot produce viable gametes and are thus sterile. In fact, most hybrid animals are sterile. Sterility is one of the mechanisms by which species maintain their genetic isolation. In nature, mating between members of different species is often prevented by *pre-mating mechanisms*. These mechanisms include mating calls or rituals and other signals used to attract members of the opposite sex. On the rare occasions when members of different species attempt to mate, or succeed in doing so, certain *post-mating mechanisms*—such as offspring sterility—maintain genetic isolation.

An Inter-Species Dilemma At one time, the black rhinoceros ranged over much of the African continent. As recently as 20 years ago, there were more than 65,000 of them in the wild. Today, that number is less than 3000 and declining.

The reason for the dramatic decline in the black rhino population is not drought or disease or any other natural phenomenon. The black rhinos are being killed by poachers—illegal hunters—for their horns. Rhinoceros horns sell for thousands of dollars on the black markets of Asia, where some people believe they have medicinal powers.

Government officials of several African countries would like to leave the black rhinos in the wild, but they may be forced to place the rhinos in animal sanctuaries to prevent their extinction. In the 1920s, officials were faced with a similar situation with the white rhinoceros. At that time, there were fewer than 100 of these animals, all of them in sanctuaries. Today they number more than 5000, and their numbers are growing.

Despite their names, both types of rhinos are large, gray animals. The white rhino can

weigh as much as 2300 kilograms, whereas the black rhino can weigh 1500 kilograms. The lips of the white rhino are slightly thicker, or wider, than those of the black rhino. The name *white* is believed to be a mistranslation of the Boer word *widje*, which means wide. This term was used to distinguish the wide-lipped from the narrow-lipped rhinos.

You may wonder why endangered black rhinos are not relocated to the sanctuaries where white rhinos are thriving. Presumably the

black and white rhinos would interbreed and repopulate. It's not that simple. Despite their similarities in appearance, the black rhino and the white rhino are different species of the genus *Rhinocerotidae*. So, although some hybrid offspring may be produced through crossbreeding, they probably would not be able to reproduce. Consequently, interbreeding would not increase the rhinoceros population over time or develop a new species. The only way to save the black rhinoceros is to protect these animals from their most dangerous predator—humans.

REVIEW *On the lines provided, answer the following questions.*

1. Why is the black rhinoceros in danger of extinction?

2. What is a mule? Why does a mule not belong to a species?

3. Would crossbreeding black and white rhinoceroses prevent black rhinos from becoming extinct? Explain your answer.

CONSIDER THIS *On the lines provided, answer the following questions.*

1. Do you think that it is important to save black rhinoceros from becoming extinct? Explain your reasons.

2. Do you think that it is important to try to save all endangered species from extinction? Give reasons to support your answer.
