

CHAPTER 8

COMPETING VIEWS ON EVOLUTION

THE MICROEVOLUTION OF PEPPERED MOTHS

In microevolution small changes in species, caused by the mechanisms of evolution, accumulate over a few decades or centuries, allowing species to adapt to an environment and sometimes to split into two or more species. One example of microevolution often cited in textbooks is the peppered moth (species *Biston betularia*) in Great Britain.

In 1848 nearly all peppered moths had white bodies with small black spots, but a few had black bodies. By 1895, 98 percent of moths in Manchester, England, had black bodies, and only two percent had the original white body color. What caused the change between 1848 and 1895?

Industrial coal plants in the Manchester area spewed soot into the air, and the coal soot settled on trees. This condition caused the tree bark and the lichen on the trees to become a darker color. Before the accumulation of soot the white moths were well camouflaged when they landed on the tree trunks. After the tree trunks became darker, the small population of black-bodied moths suddenly had the advantage. They were less likely to be eaten by birds and more likely to survive and lay eggs. In other words, darker moths had more reproductive success than the white moths. Microevolution had caused the species to change. Since the late 1800s pollution controls have reduced the amount of coal soot, and the original white-bodied moths have become numerous again.

Within the past decade or so a few people have disputed whether peppered moths are a good example of microevolution. But scientists who have actually study peppered moths as part of their research say that, while the story is a little more complex than is presented in textbooks, peppered moths are a good example of microevolution.

Additional Resource

www.millerandlevine.com/km/evol/Moths/moths.html