

Peppered Moths and Natural Selection

The peppered moths, *Biston betularia*, is often referred to as the textbook example of evolution in action. H.B. Kettlewell (1955), who performed most of the early classic experiments, said that if Darwin had been alive to see this, "He would have witnessed the consummation and confirmation of his life's work." (Kettlewell 1978)

Coloration due to industrial pollution in peppered moths became the textbook example of natural selection in action during the 1950's. Since then pictures of the peppered moth have appeared in most high school and college science textbooks.

According to Majerus, 40 years of evidence since Kettlewell's original work shows that "the basic peppered moth story is wrong, inaccurate, or incomplete, with respect to most of the story's component parts" (Majerus 1998). Listed below is a summary of some of the problems that have been discovered in the classic moth story.

- The peppered moths alight on tree trunks and later are eaten by birds. Fact: Moths do not alight on the tree trunks they hang from the tree branches in the upper canopy.
- Pictures of Moths on tree trunks as shown in research journal articles are real life occurrences. Fact: If you look closely at the top and middle pictures you will see that the white moth is identical in both pictures. Moths were glued or manually placed on tree trunks and then the birds ate them. This is something that does not occur naturally. Many researchers have commented on the gluing techniques used—see Lee 1975.
- Moths are active during the day. Fact: Moths do not fly during the day. They are inactive during the day and only fly at night. Therefore coloration, light or dark, would have no survival benefit during nighttime conditions.
- The peppered moth's color change is an example of evolution in action. Fact: The moth's color change is due to variation and was simply a case of genetic selection among available genes. The moth did not evolve into something else.
- The ratio of light and dark colored moths depends on the polluted environment and predation by birds and is a result of natural selection. Fact: Scientists have discovered, through further research that the moths color change was probably due to diet, metabolic, genetics, and/or other unknown factors.

Because of these factors present day scientists consider the earlier research work done on peppered moths flawed and inaccurate.

Yet the scientific community continues to use the peppered moth example in textbooks even though it is not correct.