

Darwin's Finches

Few people have the tenacity of ecologists Peter and Rosemary Grant, willing to spend part of each year since 1973 in a tent on a tiny, barren volcanic island in the Galapagos. Even fewer would have the patience to catch, weigh, measure, and identify hundreds of small birds and record their diets of seeds.

In their natural laboratory, the 100-acre island called Daphne Major, the Grants and their assistants watched the struggle for survival among individuals in two species of small birds called Darwin's finches. The struggle is mainly about food -- different types of seeds -- and the availability of that food is dramatically influenced by year-to-year weather changes

The Grants wanted to find out whether they could see the force of natural selection at work, judging by which birds survived the changing environment. For the finches, body size and the size and shape of their beaks are traits that vary in adapting to environmental niches or changes in those niches. Body and beak variation occurs randomly.

The birds with the best-suited bodies and beaks for the particular environment survive and pass along the successful adaptation from one generation to another through natural selection.

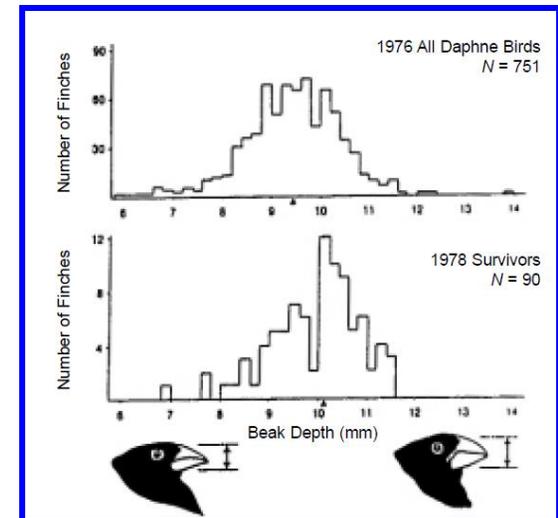
Natural selection at its most powerful winnowed certain finches harshly during a severe drought in 1977.

That year, the vegetation withered. Seeds of all kinds were scarce. The small, soft ones were quickly exhausted by the birds, leaving mainly large, tough seeds that the finches normally ignore. Under these drastically changing conditions, the struggle to survive favored the larger birds with deep, strong beaks for opening the hard seeds. Smaller finches with less-powerful beaks perished.

So the birds that were the winners in the game of natural selection lived to reproduce. The big-beaked finches just happened to be the ones favored by the particular set of environmental conditions.

Now the next step: evolution. The Grants found that the offspring of the birds that survived the 1977 drought tended to be larger, with bigger beaks. So the adaptation to a changed environment led to a larger-beaked finch population in the following generation.

Finch Research Data Collected on Daphne Major



Source:
<http://www.pbs.org/wgbh/evolution/library/01/6/101601.html>

Name _____ Period _____

Reading in Science



Read and annotate the informational text, *Darwin's Finches*. After reading the text, answer the questions below. Be sure your responses are complete and thorough.

1. Cite specific textual evidence from the text, describe how the different finch populations responded to the drought in 1977?

2. In paragraph 4, the author uses the word **exhausted**. What is the meaning of this word? Why did the author choose to use this word?

3. Review the scientific data about the finch population on Daphne Major from 1976 – 1978. How does the data in the graph support the statement in paragraph 7 “*So, the adaptation to a changed environment led to a larger-beaked finch population in the following generation.*”

4. Re-read paragraph 6 and 7. In paragraph 6 the author states “*So the birds that were winners in the game of natural selection lived to reproduce.*” What is the meaning of the term **natural selection** in this sentence?
