

CASE TEACHING NOTES

for

“The Rocky Mountain Locust: Extinction and the American Experience”

by
Charles R. Bomar, Biology Department, University of Wisconsin—Stout

INTRODUCTION / BACKGROUND

This is a fascinating tale of the American experience during the 1870s, textured by stories of immigration, homesteading, and a battle of humankind with nature to occupy the land and overcome the forces of nature. We don't know what the history of this species was or the impact it had on the Great Plains prior to settlement. The basic assumption is that the Rocky Mountain Locust had an irruptive population cycle and expressed some level of destruction, much like fires. We hypothesize this based on what we see grasshoppers and locusts doing today. The end of this story leaves us with a transformed Great Plains, occupied by swarms of homesteaders and an extinct species.

I have used this case with my freshman non-majors environmental science students. Components of it could be used in other courses such as ecology, general biology, public policy, history, and political science. Depending on the direction the individual instructor may wish to take, all or select problem sets may be used.

Objectives

During the course of this case study students will:

- Consider the historical impact of human activity on the American Great Plains and the Rocky Mountain Locust by early settlers.
- Grapple with questions and issues related to the extinction of a species, including issues related to biodiversity, habitat and species restoration, and biological conservation.

CLASSROOM MANAGEMENT

- *Read case:* either before class or 10–15 minutes in class.
- *Discuss questions:* There is way too much here for one day, and the questions address very different issues. My recommendation is to take one section at a time, per class period. Each question should take about 10 minutes for group discussion, and then 10–15

minutes for class discussion. Some of the questions may require prior reading to really dive into the subject, such as either of the following:

- Lockwood, J. A. and L. D. DeBrey. 1990. A Solution for the Sudden and Unexplained Extinction of the Rocky Mountain Grasshopper (Orthoptera: Acrididae). *Environmental Entomology* 19:1194–1205.
- Lockwood, J. A. 2001. Voices from the Past: What we can learn from the Rocky Mountain Locust. *American Entomologist* 47: 208–215.
- Break class up into groups of 3–5 individuals; depending on the size of the class, you may have multiple groups addressing the same question. This has been effective in the classroom for generating discussion.

ANSWER KEY

Answers to the questions posed in the case study are provided in a separate answer key to the case. Those answers are password-protected. To access the answers for this case, go to [the key](#). You will be prompted for a username and password. If you have not yet registered with us, you can see whether you are eligible for an account by reviewing our [password policy and then apply online](#) or write to answerkey@sciencecases.org.

REFERENCES

Literature Cited

- Atkins, A. 1984. *Harvest of Grief: Grasshopper Plagues and Public Assistance in Minnesota, 1873–78*. St Paul, Minn.: Minnesota Historical Society Press.
- Evans, H.E. 1966. “Year of the Locust” from *Life on a Little Known Planet*, New York: Dutton.
- Lockwood, J.A., and L. D. DeBrey. 1990. A Solution for the Sudden and Unexplained Extinction of the Rocky Mountain Grasshopper (Orthoptera:

- Acrididae). *Environmental Entomology* 19:1194–1205.
- Lockwood, J.A. 2001. Voices from the Past: What we can learn from the Rocky Mountain Locust. *American Entomologist* 47: 208–215.
- Riley, C.V., A.S. Packard, Jr., and C. Thomas. 1880. Second report of the United States Entomological Commission. Washington, DC: Government Printing Office.
- Tallgrass Historians L.C. 1998. *Tallgrass Prairie National Preserve Legislative History, 1920–1996—Administrative History*. Prepared by Tallgrass Historians L.C. for the National Park Service. http://www.cr.nps.gov/history/online_books/tapr/index.htm.
- Thoopal R. K. 2002. Why Do Locusts Swarm? <http://www.pitara.com/discover/5wh/161.htm>.
- Wilder, Laura Ingalls. 1937. *On the Banks of Plum Creek*. New York: Harper Collins Publishers.
- Glacier: Characterization of a vanishing biological resource. *American Entomologist* 36:18–27.
- Rocky Mountain Locust Plague: A Natural Tragedy Stalls the Triumph of the Plow. http://www.nationalhistoryday.com/03_educators/teacher/rockymt.htm.
- The SER Primer on Ecological Restoration—A Publication of the Science & Policy Working Group. April 2002 (First Edition) ©2002 Society for Ecological Restoration International. http://www.ser.org/content/ecological_restoration_primer.asp.
- Yoon, C. K. 2002. What plagued the locust? St. Paul Pioneer Press. April 28, p.4A.

Supplemental Reference Material

- Chapco, W., W.R. Kuperus and G. Litzenberger. 1999. Molecular phylogeny of melanopline grasshopper (Orthoptera: Acrididae). The genus *Melanoplus*. *Ann. Entomol. Soc. Am.* 92: 617–623.
- Custer National Forest. <http://www.fs.fed.us/r1/custer/recreation/grasshopper.shtml>.
- Lockwood, J. A. 1989. Taxonomic Status of the Rocky Mountain Locust: Morphometric Comparisons of *Melanoplus spretus* (Walsh) With Solitary and Migratory *Melanoplus sanguinipes* (F.). *The Canadian Entomologist* 121:1103–1109.
- Lockwood, J.A., J.C. Burne, L.D. DeBrey, R.A. Nunamaker and R.E. Pfadt. 1990. The preserved fauna of grasshopper glacier (Crazy Mountains, Montana): Unique insights to Acridid biology. *Bol. San. Veg. Plagas* (Fuera de serie) 20:223–236.
- Lockwood, J. A., S. P. Schell, J. K. Wangberg, L. D. DeBrey, W. G. DeBrey and C. R. Bomar. 1992. Preserved Insects and Physical Condition of Grasshopper Glacier, Carbon County, Montana, U.S.A. *Arctic and Alpine Research* 24:229–232.
- Lockwood, J. A., C. D. Thompson, L. D. DeBrey, C. M. Love, R. A. Nunamaker and R. E. Pfadt. 1991. Preserved Grasshopper Fauna of Knife Point Glacier, Fremont County, Wyoming, U.S.A. *Arctic and Alpine Research* 23:108–114.
- Lockwood, Jeffrey A., Richard A. Nunamaker, Robert E. Pfadt, and Larry D. DeBrey. 1990. Grasshopper



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