ActionBioscience.org lesson

To accompany the interview with Connie Barlow:
"Rewilding Megafauna: Lions and Camels in North America?" (March 2007)
http://www.actionbioscience.org/newfrontiers/barlow.html

Deep-Time Rewilding of North America (May 2007)

Lesson adapted from the lesson, "Rewilding North America"
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Grades & Levels

- High school (all levels) – undergraduate (year 1)

Time Recommendations:

- 2-3 class periods for article review and discussion activities
- Assignment time, as needed

NSES (USA) Content Standards, 9–12:

- NSES 4.3. Life Science: Biological Evolution
- NSES 4.4. Life Science: Interdependence of organisms
- NSES 7.3. Science in Personal/Social Perspectives: Natural resources
- NSES 8.1. History & Nature of Science: Science as a human endeavor

Note: View the NSES content standards on this site to choose other curricular applications for additional activities at www.actionbioscience.org/educators/correlationcharts.html

Lesson Objectives: Students will…

- Consider a novel, in some ways controversial, approach to conservation biology
- Examine how animals take an active role in shaping the environment
- Understand the principles of conservation and biodiversity management

Key Words Include:
Biodiversity, conservation biology, classification, keystone species, megafauna, Pleistocene, reintroduction, rewilding, species

Preparation

Article Discussion: Several approaches are possible to work with the questions on page 2.

- Have students read the article on their own, or distribute questions to groups.
- Give students copies of the questions and have them do the reading and complete the content questions on their own, perhaps as a short-answer writing assignment.
- Have them discuss their answers and the more complex questions either as a large group or in small groups.
- Some of the extension questions may be more suitable as homework.

Handouts: There are three handouts:

- Rewilding Species
- Conservation Impact Assessment
- Analysis and Report

Students will need access to the library, internet, and media to gather information on animals and conservation biology for these handouts.

Resources: Refer students to "useful links for student research" at the end of the Barlow interview. These links help students with their activities and provide a source for research information.

For Educators: Interview Discussion

About the interview with Connie Barlow:
"Rewilding Megafauna: Lions and Camels in North America?"
http://www.actionbioscience.org/newfrontiers/barlow.html

Article Content Questions

1. What is restoration ecology?
2. Why choose the end of the Pleistocene for the rewilding idea?
3. How would introducing a camel to North America help the environment?
4. What about the benefits elephants might bring?
5. Why are megafauna brought to extinction wherever humans go?
6. Why would the rewilding plan need to use proxies of animals?
7. Which animals were originally from North American but are only found in other parts of the world?
8. How do scientists intend to contain potentially dangerous animals?

Article Extension Questions

1. What do you think of the rewilding concept?
2. What do you think a "keystone" species might be? Give specific examples and supporting reasons. (A keystone species is responsible for maintaining the environment on which other organisms depend, e.g., wolf.)
3. Do you think the animals that scientists propose for rewilding in deep time were keystone species? Why?
4. If you said yes to the previous question, could these animals play that role today?

Podcast

Ask students to listen to the podcast interview at http://www.sciencefriday.com/pages/2005/Aug/hour2_081905.html. This web page includes a link to the original *Nature* article mentioned in the ActionBioscience.org interview with Connie Barlow. You may want more advanced students to read the *Nature* article. After listening to the podcast, ask students if they feel the same as they did when they answered question 1 in Extension Activities.

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Student Handout 1: Rewilding Species

Complete the chart. The chart covers animals that are suggested for rewilding of North America. Many of them are mentioned in the Connie Barlow interview you read at: http://www.actionbioscience.org/newfrontiers/barlow.html. Some have already been reintroduced.

Modern Animal	Scientific Name	Pleistocene Equivalent	Modern Location	Status
Wild burros		Extinct American species	North American deserts	Flourishing
Wild asses (onagers, kulan, khur)		Extinct American species	Limited throughout Asia	Vulnerable/Endangered
	Camelus bactrianus	*Camelops*		
	Acinonyx jubatus	American cheetah		
Asian elephant		Mammoths, mastodons, gompotheres	Asia	
African elephant			Africa	Endangered
	E. caballus	Extinct American species	Western U.S.	
Przewalski's horse		Extinct American species	Mongolia	
	Panthera leo		Asia, Africa	
Bolson's tortoise		Bolson's tortoise		Critically endangered

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Student Handout 2: Conservation Impact Assessment

Choose a species suggested for rewilding from Handout 1 and complete this worksheet.

1. Species:

2. Dietary Requirements:

3. Territory Requirements:

4. Herd, small family group, or solitary lifestyle?

5. Life Span:

6. Reproductive rate:

7. Does this species depend on any other organisms for survival?

8. Describe the natural habitat environment (mountains, plains, forested, grasslands, wet, dry, temperature range, etc):

9. How does this species interact with the environment:

Impact Level	Low	Med	High
Does this species impact other animal populations?			
Does this species impact the plant population?			
Does this species impact the landscape?			
Does this species impact human lifestyles?			
Does this species impact the economy?			

10. Describe any major interactions with the environment.

11. Describe any human and/or economic impacts.

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Student Handout 3: Analysis and Report

Using the same species you chose for the Handout 2 worksheet, complete this worksheet to help you arrive at a recommendation for rewilding.

Species: _____

1. Briefly describe its current habitat.

2. Is the organism a keystone species? If so, how?

Suggested relocation area in North America

1. What general area?

2. Predicted impact on habitat?

3. Predicted effect on biodiversity in that habitat?

Predicted impact on humans

1. Reduced human access to area?

2. Impact on local lifestyles/livelihoods?

3. Danger to humans? Danger to livestock?

4. Other potential problems?

Conclusion

Do you recommend rewilding North America with this species? Why or why not? Write a report elaborating your conclusion.