Errata to Activity: Incredible Shrinking Habitat

Under “Additional Resources”

Seventh bullet, correct URL is:
http://www.srh.noaa.gov/jan/?n=2005_08_29_hurricane_katrina_outbreak

Under “References”

Reference number 6, correct URL is:
http://www.nps.gov/piro/forteachers/wildlifemgtguide.htm

Incredible Shrinking Habitat

Region: Gulf Coast

Grade Level(s): 4-7

Time Required: 30-45 minutes

Focus Question:
- What is the impact of development and habitat loss on wildlife populations?

Learning Objectives:
- The students will be able to describe the impact of development on wildlife populations.
- The students will be able to recognize that habitat loss is a critical issue facing wildlife populations.

Materials:
This activity can be done indoors or out. Suggested minimum size to begin: about half a basketball court per 20-30 students.
- 5 hula hoops (one hula hoop will be designated as a "panther den;" make it a different color or mark it somehow)
- 2 pieces of rope long enough to divide the playing field in half (for a "road")
- 4 orange traffic cones for boundary markers
- Stopwatch or timer
- Poker chips for deer food (20-22 for every 10 students)
- Deer, panther and car pictures/symbols or jerseys to identify players (6-8 deer and 2-4 panthers for every 10 students. Optional: 2 cars for second round of play)

Background:

- The Florida panther has succumbed to numerous pressures, including loss of suitable habitat, to become a highly endangered species. A viable population needs large tracts of undeveloped land to sustain an adequate prey base and territory for young to disperse. Access into wilderness areas by road building for drainage canals, and increased development for ranching, logging, agriculture, mining, oil and gas drilling, housing and recreation all impact the panther habitat and the viability of the population.

Procedures/Instructional Strategies:
(Important Reminder: In this activity, students will be playing a version of "tag." For safety concerns, remind students to gently "tag" their prey, being careful not to push another player so that he/she may fall.)

1. Prior to the game, have students discuss what they know about limiting factors in a habitat. (Students could make large K-W-L charts in small groups, and then share with the larger group. An example of a K-W-L chart is provided at the end of this Activity.)

2. Define playing area with traffic cones and place hula-hoops randomly within it.

3. Divide students; for every 10 you should have 6 deer, 2 panthers, and 2 in reserve to become panther and deer young. Attach pictures/symbols to players to distinguish deer from panthers.

4. Scatter food chips at random throughout playing field.

5. Tell the students that:
   - Each deer must get 4 food per 90 seconds in order to survive.
   - Each panther must catch (tag) one deer that has at least 3 food chips per 3 minutes (two 90-second periods), in order to survive.
   - Four of the hula-hoops are "safety zones" for deer. If two deer are in a safety zone together, they can increase their population (reproduce) and two of the reserve deer can enter the safety zone with them. All must continue finding food chips to survive.
   - The remaining hula-hoop is a panther den. Two panthers in the den site together can increase their population (reproduce), so that the two panthers in reserve can join them in the den site. All must continue to tag deer for food to survive.
   - Whoever dies (deer or panthers) leaves the game to become part of the reserves.

6. Play for a few minutes or until all the prey (deer) have been eaten. After each 90 second interval, shout "freeze!" Any deer without 4 chips have "died" and are out of the game. Panthers have to 'eat' one deer (with 3 chips in hand) every two periods.

7. Ask students about the limiting factors on the panther population.
(Did the habitat provide enough food for the panthers? For the deer? What if there weren't enough food for the deer? How would that affect the panther?)

8. Play again, but shrink the boundaries (because of increased development). Also, lay two ropes about a foot apart and parallel to each other (a road) down the middle of the habitat. Spread a reduced number of food chips in the habitat on both sides of the "road" to show the loss of resources from road construction.

9. Choose two students to be cars on the road. The cars must stay within the ropes, but can tag any wildlife that comes close enough (roadkill).

10. Now play another round.

11. Have students discuss the limiting factors on the panther population again. How were these factors similar to the first game? How were they different from the first game?

Extensions:

- Have students research other animals and determine the limiting factors on their populations.

National Science Education Standards:

Life Science:

- A population consists of all individuals of a species that occur together at a given place and time. All populations living together and the physical factors with which they interact compose an ecosystem.

- The number of organisms an ecosystem can support depends on the resources available and abiotic factors, such as quantity of light and water, range of temperatures, and soil composition. Given adequate biotic and abiotic resources and no disease or predators, populations (including humans) increase at rapid rates. Lack of resources and other factors, such as predation and climate, limit the growth of populations in specific niches in the ecosystem.

Science in Social and Personal Perspectives

- When an area becomes overpopulated, the environment will become degraded due to the increased use of resources.

- Internal and external processes of the earth system cause natural hazards, events that change or destroy human and wildlife habitats, damage property, and harm or kill humans.

- Human activities also can induce hazards through resource acquisition, urban growth, land-use decisions, and waste disposal. Such activities can accelerate many natural changes.

Additional Resources:

- Florida Everglades National Park Curriculum Materials: http://www.nps.gov/ever/forteachers/curriculummaterials.htm
- Mississippi National Parks curriculum Materials: http://www.nps.gov/miss/forteachers/brjresource.htm
- Louisiana's USGS Wetlands Research Center (includes teacher activities and many maps): http://www.nwrc.usgs.gov/
- Fragile Fringe Teaching Guide: http://www.nwrc.usgs.gov/fringe/ff_index.html
- Hurricane Katrina Wetlands Destruction: http://www.teachersdomain.org/resource/ess05.sci.ess.watcyc.katrinawet/
- NOVA: Stronger Hurricanes? http://www.pbs.org/wgbh/nova/sciencenow/3302/07.html
- Jackson, MS images of Katrina Damage: http://www.srh.noaa.gov/jan/katrina/
- NWS Mobile/Pensacola images of Katrina Damage: http://www.srh.noaa.gov/mob/0805Katrina/
- FEMA Photo Library: http://www.photolibrary.fema.gov/photolibrary/index.jsp
- NOAA aerial photos of Katrina damage: http://www.noaanews.noaa.gov/stories2005/s2500.htm
- NOAA hurricane hunter images of Katrina: http://www.noaanews.noaa.gov/stories2005/s2496.htm

- Popular Graphic Organizers. http://www.teachervision.fen.com/graphs-and-charts/graphic-organizers/54826.html?detoured=1
- K-W-L http://www.readingquest.org/strat/kwl.html
- Project Learning Tree: http://www.plt.org/
  PLT Conceptual Framework:
  http://65.109.144.97/curriculum/Conceptual%20Framework.pdf

Other activities from NPS Everglades

- Where Have Our Plants and Animals Gone?
  http://www.nps.gov/ever/forteachers/upload/Where%20Have%20Our%20Plants%20and%20Animals%20Gone.pdf
- And Then There Were None
  http://www.nps.gov/ever/forteachers/upload/And%20Then%20There%20Were%20None.pdf
- Project Wild: Riverventure, Population Study Game (Oh Deer!)
  http://www.riverventure.org/charleston/resources/pdf/population%20study%20game.pdf

References:

1. Barras, J.A., 2007, Satellite images and aerial photographs of the effects of Hurricanes Katrina and Rita on coastal Louisiana: U.S. Geological Survey Data Series 281, at http://pubs.usgs.gov/ds/2007/281

2. Hurricane Katrina: A Climatological Perspective. NOAA's NCDC Technical Report 2005-1. http://www.ncdc.noaa.gov/oa/reports/tech-report-200501z.pdf

3. USGS Reports Preliminary Wetland Loss Estimates for Southeastern Louisiana from Hurricane Katrina. US Department of Interior. USGS. Nov.1, 2005. http://www.nwrc.usgs.gov/releases/pr05_007.htm

4. University College London. "Increased Hurricane Activity Linked To Sea Surface Warming." ScienceDaily 31 January 2008. 1 May 2008. http://www.sciencedaily.com/releases/2008/01/080130130647.htm

5. Sheikh, Pervaze A., Congressional Research Service, The Impact of Hurricane Katrina on Biological Resources, Oct. 18, 2005. http://assets.opencrs.com/rpts/RL33117_20051018.pdf

6. National Park Service. Pictured Rocks Natural Lakeshore. Wildlife Management Activity Guide for Teachers. https://cms.mwr.nps.gov/piro/forteachers/wildlifemgtguide.htm

7. The GLOBE Project. Site Seeing: Beginner Level. http://www.globe.gov/tctg/land_la_sitebeg.pdf?sectionId=217

8. The GLOBE Project. Site Seeing: Intermediate Level. http://www.globe.gov/tctg/land_la_siteint.pdf?sectionId=218

9. Incredible Shrinking Habitat (specifically about Florida Panther) http://www.nps.gov/ever/forteachers/upload/Incredible%20Shrinking%20Habitat.pdf

10. Project Learning Tree: http://www.plt.org/
PLT Conceptual Framework:
http://65.109.144.97/curriculum/Conceptual%20Framework.pdf

K-W-L

K What we Know	W What we Want to know	L What we Learned