



## Finding the Niche (Learning Experience #2) Student Procedures



**Essential Question for Move, Adapt or Die Scenario:** *How will climate change affect the organisms that live in the watershed of the Chesapeake Bay?*

**Essential Question for Finding the Niche (Learning Experience #2):** *How does loss of a species from an ecosystem affect the other species in that ecosystem?*

---

### Procedures

1. Remember that hellbenders are considered to be a *bioindicator* species by some scientists, and can be used to gauge the health of West Virginia's streams. In your science journal, write a prediction about the continued presence of hellbenders in these streams as climate change leads to warmer water. Will they move, adapt to living in warmer water, or die (become locally extinct) in the next 50 years? Add your vote to the class tally that your teacher has posted and be able to explain the reason behind your choice.
2. Copy the essential question for Learning Experience #2 into your journal and write a preliminary answer. You will revisit your answer at the end of this learning experience.
3. Working with your team, research the niche of the hellbender within its ecosystem. Remember to pay special attention to its place in the living community's food web. Summarize what you discover as you complete *Where Do Hellbenders Fit In* (Student Sheet #1). The middle space on the food web is reserved for the stream habitat's primary producer. Share your answers on a chart-size class food web that your teacher has posted. Have your team's recorder add any new information to your group's data sheet.
4. Think about what will happen to the food web in this habitat if the hellbender becomes extinct due to an increase in water temperature. On the class food web a student will draw a line through the hellbender (eggs and larvae as well as adults) and place X's along the lines that were drawn from the hellbenders to all of the other organisms that serve as their predators or prey. You may do the same thing on your team's copy of Student Sheet #1.



5. Scientists estimate that crayfish make up 80 – 90% of an adult hellbender’s diet. Answer the following questions in your science journal. Be prepared to share your ideas with the class, using research data to support your answer.
  - a. If a stream loses its hellbender population because of the effects of climate change, how will the crayfish population be affected?
  - b. How will that affect the overall balance in the ecosystem? *Hint: find out what crayfish eat and what other species eat them.*
6. Working with your team, create a conservation plan for the hellbender, or choose a different species from your home region that will be affected by climate change. Use *Help the Hellbender* (Student Sheet #2) to organize your project. This plan will be presented to a mock-meeting of government officials and biologists, role-played by your classmates. Each member of your team should contribute to the plan and be prepared to answer questions from the audience.
7. Return to your journal and revisit the essential questions for the entire scenario as well as for Learning Experience #2. Please answer the following questions for reflection in your journal.
  - a. *Is it important to preserve all of the species in an aquatic community? Explain.*
  - b. *What can individual citizens do to preserve threatened species in your local streams?*
  - c. *What do you and other citizens need to know about global climate change and its effects on living communities in order to make appropriate recommendations for local efforts?*
  - d. *What can individuals do to reduce the amount and rate of climate change?*
  - e. *What can local, state and national governments contribute to solving this problem?*