SCIENCE 3D

HELLBENDERS

In this packet, sample student answers are provided in red and notes to teachers are in blue.

During this **Mission Research**, students will reinforce their understanding of sexual and asexual reproduction and conduct an independent investigation into ancient amphibians and their environments.

ACTIVITY I: HELLBENDER HABITS

1. **Create** a poster or computer presentation to describe the hellbender life cycle and compare it with another species of your choice. Use your own knowledge or other resources to research the other species. Make sure to include some of the following information:

   - What kind of animals are hellbenders? What are their closest relatives? Provide evidence to support your claims.

   Hellbenders are salamanders, which are amphibians. Their closest relatives are frogs (some students may also list newts). Amphibians have moist thin skin and lay eggs that don't have shells. They have backbones.

   - How long do hellbenders live?

   Up to 50 years

   - What do hellbenders eat?

   Crayfish, fish, worms, eggs

   - Why are hellbenders in trouble?

   They are collected to be pets. Streams are polluted because forests are cut down and soil, fertilizers and chemicals run in. Streams are dug up.

   - What are the threats to hellbenders? Include natural and human threats.

   Predators include raccoons, otters, and turtles. Some fish eat hellbenders and eat hellbender eggs. Hellbenders will eat eggs of other hellbenders. Human threats include changing rivers, polluting rivers, and catching too many hellbenders. Diseases are also a threat.

   - What are some things about hellbenders that you think are interesting?

   Answers will vary and will point in the direction of where students are interested in learning more.

2. **Create** a poster comparing and contrasting sexual reproduction and asexual reproduction by bacteria.

If students are really interested, you can have them investigate "virgin birth" in sharks. Have them compare and contrast the patterns of cell division in "virgin birth" sharks to asexual reproduction in bacteria or asexual reproduction in salamanders.

3. Hellbenders may be huge for salamanders, but they are tiny compared to some of the largest amphibians that ever lived. Work in groups to create presentations or posters on extinct amphibians. Choose an extinct amphibian that is in the **Hellbender Reader** or online. Make sure your posters include:

   - when the amphibian lived
   - the habitat of the amphibian
   - how scientists determined what the habitats were like when the amphibian lived
   - similarities and differences between the habitat the fossils were found in and modern day habitats.

Extend the lesson: Have groups investigate what kinds of animals and environments are represented in the fossil record in a nearby area.