

Warm Up

Student Worksheet (1 of 4)

Watch the following video and then answer the question below:

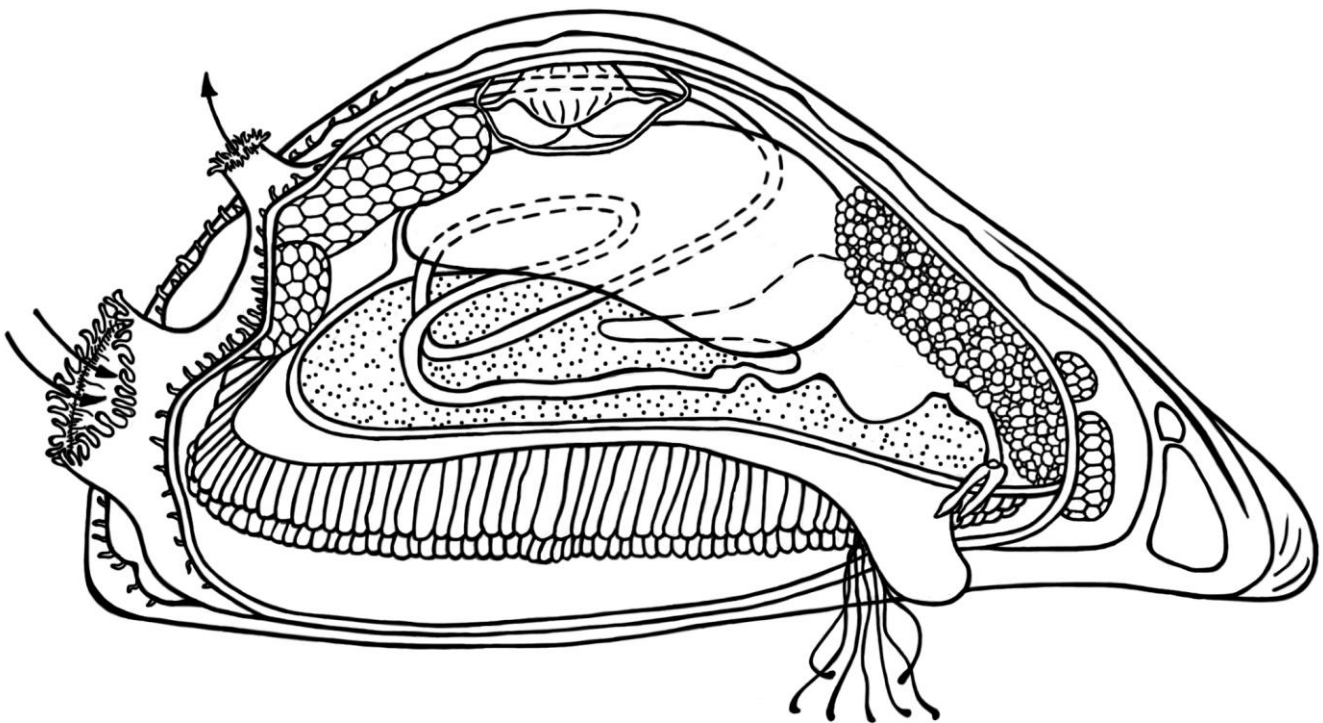
<http://www.viewpure.com/IOYTBj0WHkU?start=0&end=0>

1. What is one adaptation the *Lampsilis* mussels have that help them to successfully reproduce and distribute their larvae?
2. In comparison, the zebra and quagga mussels have planktonic larvae that drift with the water currents for up to one month. Why is this strategy an advantage over the native mussels?

Station A: Freshwater Mussel Anatomy and Physiology

3. Use the mussel anatomy diagram, colored pencils, and key (below) to **label and color** the following:

- | | | |
|--|--|---|
| ☐ Posterior adductor muscle (light green) | ☐ Kidney (white) | ☐ Mouth (sky blue) |
| ☐ Anterior adductor muscle (light green) | ☐ Foot (orange) | ☐ Stomach (sky blue) |
| ☐ Excurrent siphon (red orange) | ☐ Byssal threads (dark green) | ☐ Intestine (sky blue) |
| ☐ Incurrent siphon (violet) | ☐ Mantle (blue) | ☐ Anus (sky blue) |
| ☐ Digestive gland (grey) | ☐ Gonad (yellow) | ☐ Ligament (brown) |
| ☐ Gills (pink) | ☐ Labial palp (sky blue) | ☐ Heart (red) |



Station A (continued)

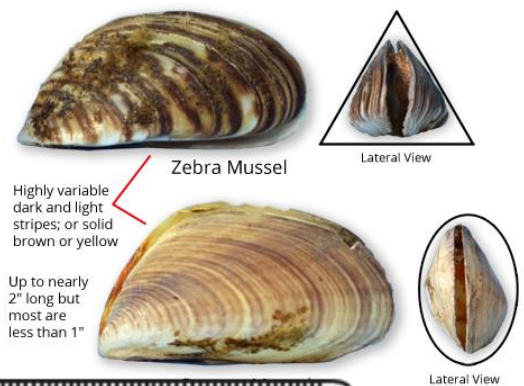
4. Match the structures to the correct functions.

- | | |
|------------------------|--|
| _____ bivalve | A. Microscopic hair-like projections that help mollusks to move on surfaces. |
| _____ foot | B. An aquatic mollusk enclosed within two valves or shells (ex. clam or mussel) |
| _____ mantle | C. The reproductive organ that produces gametes (ex. eggs or sperm). |
| _____ gills | D. The strong protein threads zebra/quagga mussels use to attach to surfaces. |
| _____ marsupium | E. The muscular organ mollusks use to move and stick to substrates. |
| _____ adductor muscle | F. The paired respiratory organs used to extract oxygen from passing water. |
| _____ byssal threads | G. A tubular organ used to move water, food, and gametes into mussels. |
| _____ cilia | H. A tubular organ used to move water, waste, and gametes out of mussels. |
| _____ incurrent siphon | I. A pair of structures that move food from the gills to the mussel's mouth. |
| _____ gonad | J. The strong muscles that hold a bivalve's two shells tightly together. |
| _____ labial palp | K. An outer fold of tissue that holds the organs & makes shell-building chemicals. |
| _____ excurrent siphon | L. A brood pouch near the native female mussels' gills that hold larval glochidia. |
| _____ ligament | M. The strong connective tissue that allows a bivalve's shells to open. |

Learn how to recognize these invaders!

5. What are two differences between the zebra and quagga mussel shells?

-
-



The picture to the left shows the actual size of an adult native Western pearlshell mussel. An adult zebra mussel can grow up to 50mm in length.

6. In comparison, how big is the native pearlshell?

_____ mm

Mussel Mania

Station B: Native vs. Invasive Mussel Life Cycles

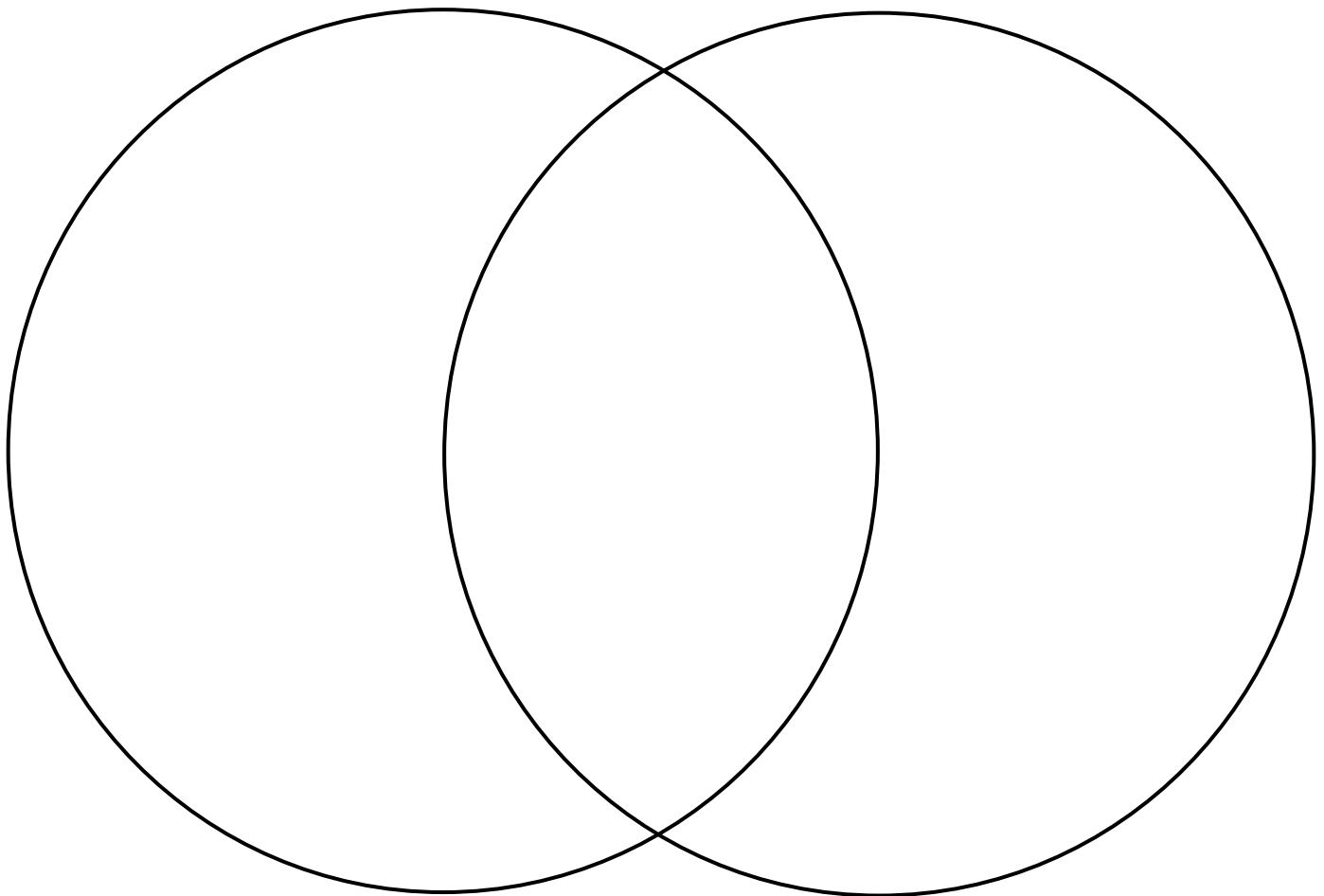
Student Worksheet (3 of 4)

7. Use the Native and Invasive Mussel Life Cycle posters to enter the items below into the Venn diagram.

- Need a fish host
- Produce planktonic veliger larvae
- Produce parasitic glochidia larvae
- Use a foot to stick to & move on a substrate
- Use byssal threads
- Typically live 3-9 years
- Typically live 20-40 years
- Juveniles are benthic
- Live in the sediment
- Live on surfaces
- External fertilization occurs in the water
- Fertilization occurs inside of the female
- Filter feeder
- Bivalve
- Undergo metamorphosis (larvae → adult)
- Eat plankton and organic detritus
- Use a marsupium or brood pouch
- Produce 40,000-1,000,000 eggs per year

Native Freshwater Mussels

Invasive Zebra & Quagga Mussels



8. Since the zebra and quagga mussels can attach to surfaces in both freshwater lakes and rivers, how could the native mussels be impacted by an infestation?



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Wrap Up

AFTER YOU HAVE FINISHED THE TWO ACTIVITY STATIONS...SHOW ME WHAT YOU KNOW! 😊

9. Use **SPECIFIC EVIDENCE** to create an argument supporting the following statement:

Zebra and quagga mussels would be more successful at survival, reproduction, and dispersal than native freshwater mussels in Montana.

You may write/draw/describe your response in the box below.



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