

Warm Up

Student Worksheet (1 of 5)

Watch the following video and then answer the question below:

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

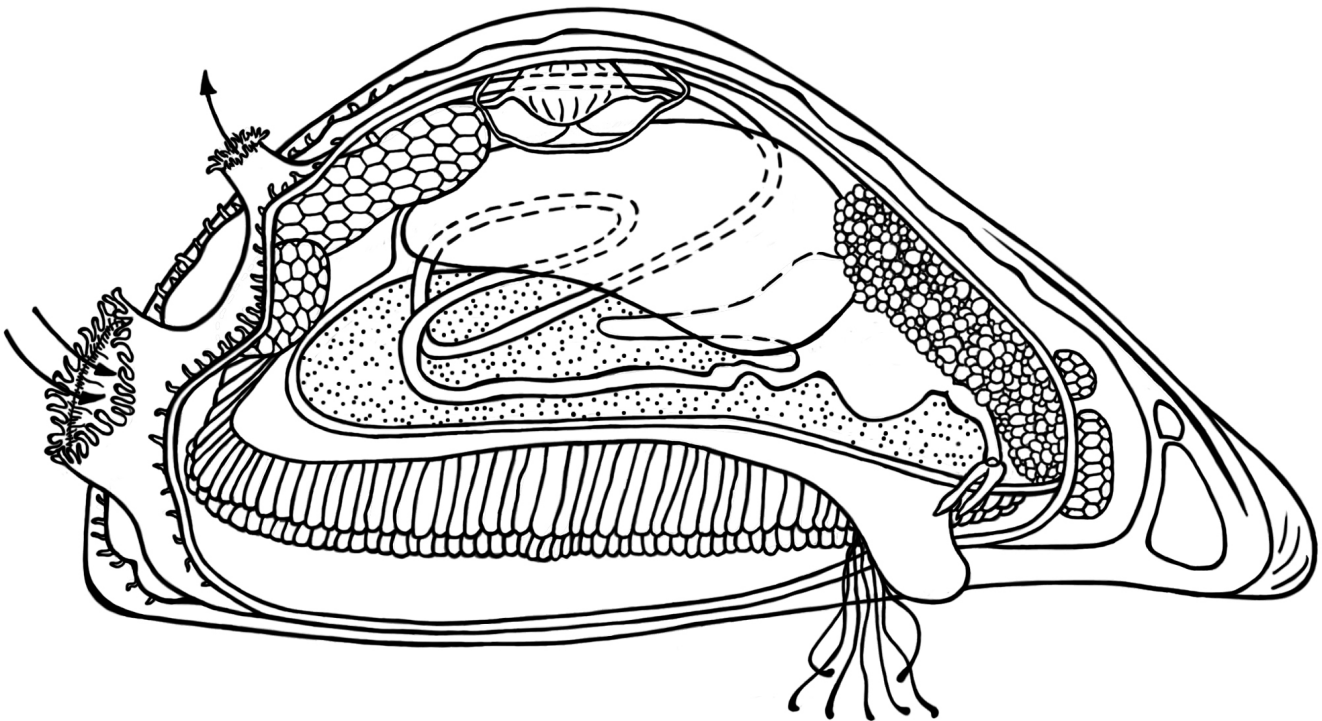
1. What are two adaptations the *Lampsilis* mussels have that help them successfully reproduce and distribute their larvae?

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Station A: Freshwater Mussel Anatomy and Physiology

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

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



Station A (continued)

3. Next, use the provided Mussel Anatomy Cards to match the structures to the correct functions.

Ask your instructor to check and make sure your cards are correctly matched before you move on!

Examine the zebra or quagga mussel shell size display.

4. At what size do zebra and quagga mussels become adults and begin to reproduce? _____ mm

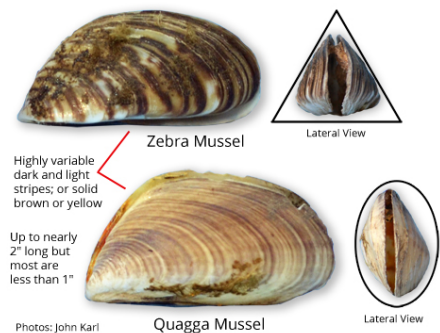
Examine the zebra vs. quagga vs. Asian clam display.

5. What do the three invasive mollusks have in common?

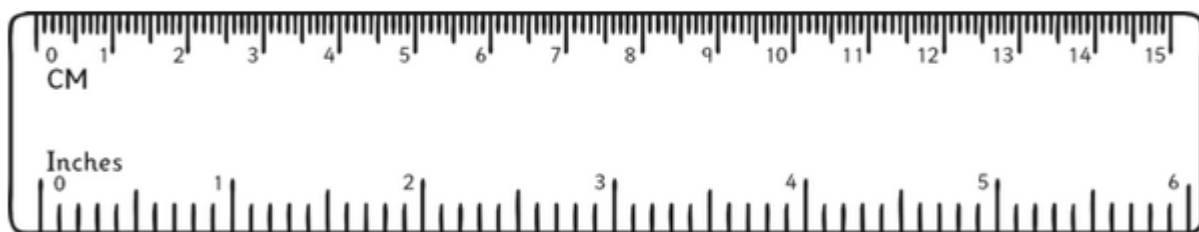
Learn how to recognize these invaders!

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

-
-



Use the ruler below to measure one of the 3-D quagga mussel shells. Shell length = _____ mm



twinkl.com

The picture to the left shows the actual size of an adult native Western pearlshell mussel.

How much bigger is the native shell?

_____ mm

Station B: Native vs. Invasive Mussel Life Cycles

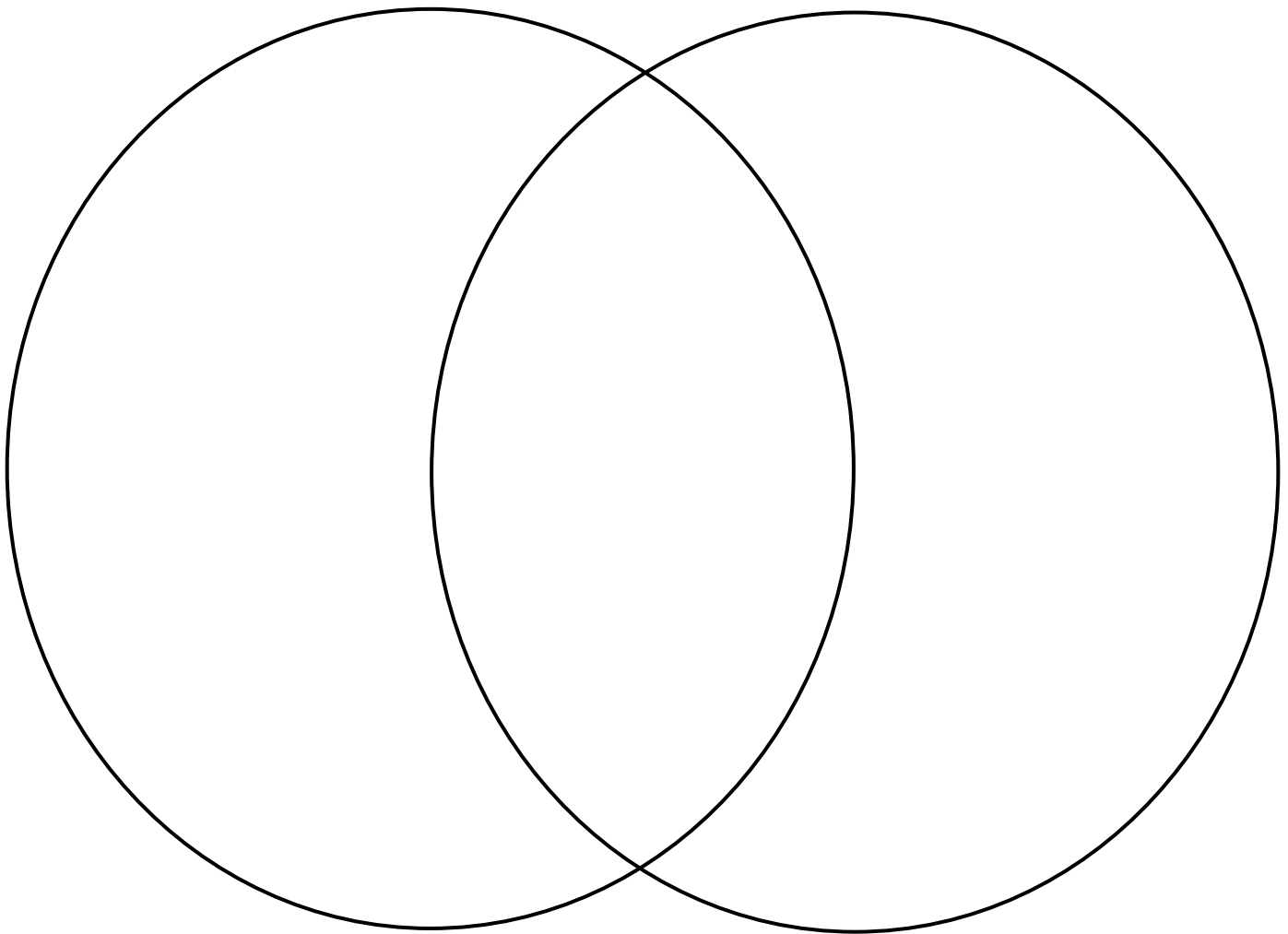
Student Worksheet (3 of 5)

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
- 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



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Mussel Mania

Station C: Native and Introduced Mussels of Montana

Student Worksheet (4 of 5)

8. Use the provided Mussels of Montana Poster to complete the following table:

Type of Mussel	Native or Introduced	Length (in.)	Primary Habitat	Host Fish native (n) Introduced (i)	Key Watersheds in Montana
Giant Floater			Prefer pool and side channel areas of small to larger warm prairie rivers with a mud, sand, or gravel substrate.		
			Prefer side current areas, runs, and pools of medium to large cool to warm rivers with pebble, gravel, sand or silt substrates.		Missouri, Milk, Yellowstone, and Little Missouri River drainages.
	Native Species of Concern			W. Cutthroat Trout (n) Steelhead Salmon (n) Chinook Salmon (n) Rainbow Trout (i) Brook Trout (i)	
Black Sandshell		5-6 in.	Medium to large warm prairie rivers in riffles or runs with pebble, gravel, or firm sand substrates.		
	Introduced	4-6 in.		Sauger (n) Carp (i) Green Sunfish (i) Largemouth Bass (i) Walleye (i)	Missouri Basin: from Lower Milk River upstream and Beaver Creek
Mapleleaf		3-5 in.		Channel Catfish (n) Yellow Bullhead (i) Black Bullhead (i)	

9. Which mussel would be found in Northwest Montana? _____
Why do you think these mussels would not be found in Eastern Montana?

10. Provide one reason why you think the Western Pearlshell populations are declining and at risk?

11. 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 ALL THREE ACTIVITY STATIONS...SHOW ME WHAT YOU KNOW! 😊

12. 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.



Mussel Mania

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