

Name _____

Rivers Gallery

Evolution typically takes place over millions of years. Evolution is the process by which different kinds of living organisms have developed and diversified from earlier forms throughout the history of the Earth. Natural selection is the process by which organisms better adapted to their environment tend to survive and produce more offspring. This process was first fully expounded by Charles Darwin and is the main driver of evolution. We are going to study natural selection and how it pertains to river ecosystems.

1 Fill in the adaptations below with information from the gallery, then make an inference to answer, “How does this adaptation of the fish make it well suited for a river ecosystem?”

Characteristic of rivers	Fishes and their river adaptations	How does this adaptation of the fish make it well suited for a river ecosystem?
<p>Possibility of lower dissolved oxygen (less oxygen in the water, making it harder for fish to breathe).</p>	 <p>Giant gouramis can...</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>Bottoms can be rocky but are covered in plants.</p>	 <p>Australian lungfish use the plant-covered bottoms for...</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>Water flows downhill by the force of gravity.</p>	<p><i>Make a prediction: Find a fish that you think has a specific adaptation for this river characteristic. Draw a sketch of the fish and fill in the information.</i></p> <p>Fish name _____</p>	<p>Adaptation:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>

If the characteristics of a river are altered, how could that impact the fishes that have spent millions of years evolving to call it home?



River Ecosystems as Resources for Humans

Dams provide a range of economic, environmental and social benefits, including recreation, flood control, water supply, hydroelectric power, waste management, river navigation and wildlife habitat.

2 A town is near a river that is home to many native paddlefish, but it also has a problem with flooding. The townspeople are having a meeting to vote on if they should build a dam. Citizens on each side of the debate have submitted their arguments.

Using the paddlefish exhibit, research how a dam specifically would affect paddlefish. Then you must construct a scientific argument to justify your vote.

Dam benefits for humans	Dam impacts on river ecosystems, fishes and humans
<p>Flood control In addition to helping farmers, dams help prevent the loss of life and property caused by flooding. Flood-control dams impound floodwaters and then either release them under control to the river below the dam or store or divert the water for other uses. For centuries, people have built dams to help control devastating floods.</p> <p>Irrigation Ten percent of American cropland is irrigated using water stored behind dams. Thousands of jobs are tied to producing crops grown with irrigation.</p> <p>Electrical generation The United States is one of the largest producers of hydropower in the world, second only to Canada. Dams produce more than 103,800 megawatts of renewable electricity and meet 8 percent to 12 percent of the nation's power needs. Hydropower is considered clean because it does not contribute to global warming, air pollution, acid rain, or ozone depletion.</p> <p>Plus many more</p>	<p>Reduction of biodiversity/decreased fish populations Many fishes have to travel up and down rivers to spawn (reproduce). Dams not only impede fish migrations, but they also alter the chemistry of the water. Environmental alterations to river ecosystems can threaten the survival of many fish species.</p> <p>Decrease of sediment transport River water flows downstream and carries with it important sediment. When a river does not have the right amount of sediment, its banks (sides) will begin to erode. This can destroy the habitat of aquatic and riverbank plants and animals.</p> <p>Humans need rivers Humans need rivers for transportation, as an important source of food and fresh water, and for recreation.</p> <p>How do dams specifically affect paddlefish?</p> <hr/> <hr/>

Claim: *I will be voting (for/against) building a dam.*

Evidence: Provide data that supports your claim from above.

Reasoning: Write a statement that connects your evidence to your claim.
