

BOWFISHING INVASIVE SPECIES OF THE POTOMAC

6th-8th Grade Discussion Guide

Teacher - Joseph Kanke

GRADE LEVEL: MIDDLE 6-8

TIMEFRAME: 3 DAYS

MATERIALS: ELECTRONIC DEVICES FOR RESEARCH, POSTER MAKING MATERIALS, ACCESS TO BLOG (PRINT OR VIRTUAL)

KEY WORDS: COMMON CARP, LONGNOSE GAR, SNAKEHEAD, GOLDFISH, CATFISH, LAUNCH, SPAWN, INVASIVE

SCIENCE CATEGORIES: AQUATIC & ANGLING SCIENCE



LEARNING OBJECTIVES

Students will be able to:

- Understand how bowfishing is connected to the control of invasive species like the common carp.
- Write a persuasive advertisement text.

ACTIVITY SUMMARY

Students will follow bowfishers as they navigate bowfishing on the Potomac River. Students will begin by jig sawing a blog on questions that all beginning bowfishers ask. Students will synthesize their reading down to a couple of sentences to share with the whole class.

In groups students will be assigned one of the five fish mentioned in the video clip to investigate more deeply and design a poster including their findings. Individually students will write a persuasive advertisement piece convincing an audience that they should try bowfishing.

Finally, students will engage in the two-dollar summary activity to demonstrate their learning over the course of the unit.

BACKGROUND INFORMATION

This episode explores bowfishing on the Potomac River. To begin, a father and daughter are looking for what are referred to as the Big Five of the river: goldfish, catfish, carp, snakeheads and gar.

It's important to check with local regulations to determine what kind of license you need to bowfish, but typically if you are on freshwater, you only need a fishing license. Sometimes bodies of water are shared between two states so it is important to be aware of that as well. Usually, you will need a license from the state where you launch.

Bowfishing bows look similar to other bows. What makes them different is that they have a retrieval reel with a fishing line attached to the arrow. Each time you get on the water, it is important to check all of your equipment and make sure everything is in working order. You should also be aware of the weather and if the tide will affect water levels.

Most of the fish that are targeted for bowfishing are invasive species who don't have any natural predators so bowfishing is helpful to the ecosystem. One species we may not think of as being invasive are goldfish. If a pet goldfish is dumped in the river it can grow to a truly massive size.

Another consideration is that you need to properly identify the fish before you shoot. Not all fish are legal to be shot by a bow.

VOCABULARY

COMMON CARP: a deep-bodied freshwater fish, typically with barbels around the mouth.

LONGNOSE GAR: a fish with long, narrow snouts more than twice as long as the rest of the head and they have abundant, sharp teeth.

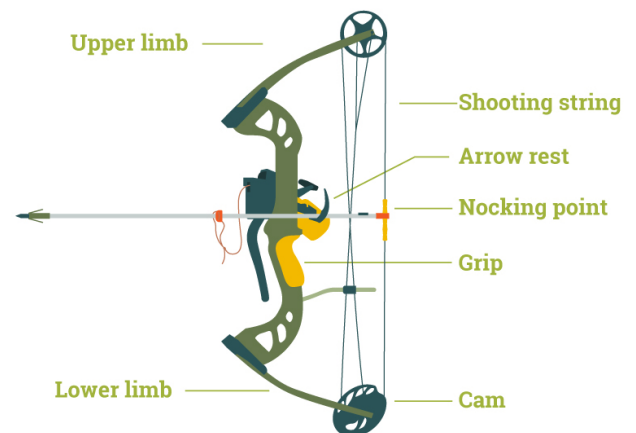
SNAKEHEADS: native to parts of Africa and Asia. These elongated, predatory fish are distinguished by their long dorsal fins, large mouths, and shiny teeth. They breathe air with gills, which allows them to migrate short distances over land.

GOLDFISH: goldfish belong to the carp family and were domesticated in China in the Tang Dynasty. They can reach up to 59 cm in size, and 3 kg in weight.

CATFISH: a fish that has one or more pairs of whisker-like feelers by its mouth. These feelers, known as barbels, help the fish to taste and to feel.

LAUNCH: to set (a boat or ship) afloat.

SPAWN: to produce or deposit (eggs) —an aquatic animal.



LEARNING PROCEDURE

Instructor states, "When getting into bowfishing, there are some important questions beginner bowfishers should ask, like what equipment and license you need. There are some other questions you might ask too. We're going to jigsaw a blog to get all our beginner questions answered."

Students will interact with the text, "Questions all Bowfishing Beginners Ask". Embedded within the article are nine questions. Depending on the number of students in the class, make copies of these slips of paper and drop them into a bucket. Walk around the room and instruct students to select one slip of paper. Once each student has a slip of paper, instruct them to find their question within the blog post and read the corresponding paragraph of information answering the question. Instruct them to pull out the key information they would like to share with the whole class in response to the question. It should only be a sentence or two. Students read and think individually.

If multiple students have selected the same question, provide a few minutes for them to convene and agree on what should be shared out whole class.

Instructor reads the first question and allows student(s) to share key details and then continues through the nine questions.

ACTIVITY 1:

For this activity students will work in triads to further explore one species of fish open to bowfishing from the Big Five of the Potomac River. List the five species of fish on paper and have each group choose a slip. Depending on class size, some fish may be represented more than once. Once students have selected their fish, they should be instructed to create a one pager. Each one pager will require additional research and should include the following.

- Its status as an invasive species, where it originated and how it is harmful to native species.
- Where in the United States you can find and bowfish the species.
- A visual representation of the fish, preferably a view looking down from above.
- Any other behaviors or visuals that would help identify the species.

Post the one pagers around the room and allow students to view the displays in gallery walk fashion. Instruct students to carry a notebook and come up with at least one question for one group. Choose students to ask questions and allow groups to respond.

ACTIVITY 2:

Inform students that they will be engaging in a type of persuasive writing, advertisement. While some advertisements are mostly visual in nature, this assignment may include images to complement the writing, but much of the persuasive elements should show up in the writing.

Assignment: Write an article for an outdoor recreation magazine persuading the audience to try the sport of bowfishing. Students may use any of the information they have learned in class so far, but should also include additional research.

The instructor should provide, or co-create, a grading rubric for the assignment. (There is an assumption in this activity that students have been exposed to previous lessons regarding advertisements and persuasive writing. It is not recommended to have students construct a persuasive piece before some core instruction). Some key components of persuasive advertisement include: body copy, image, slogan, call to action, headline and offer.

Following the first draft students could engage in a peer review. Aside from structural components, their peers could respond to the following:

How effective was this advertisement in persuading you to try bowfishing? What parts made it effective? Is there anything that could make it more effective?

Students complete a final draft following the peer review.

CONCLUSION:

As a concluding activity student should be given the opportunity to write a two-dollar summary.

Two-Dollar Summary: Students write a two-dollar (or more) summary of the lesson. Each word is worth 10 cents. For extra scaffolding, ask students to include specific words in their statement. For example, you may require any of the unit's vocabulary words listed above.

EXTENDING THE LESSON

- Design a poster of safety considerations for bowfishing.
- Students develop a game to practice identifying species of fish in the water.
- Research another invasive species in the United States and ways to combat their spread.
- Compare and contrast bowfishing during the day vs the night.
- Draw a diagram of bowfishing bow with labels and explanations of its parts.
- Interview someone who participates in the sport of bowfishing.



RELATED LINKS

[Visit U.S. Fish and Wildlife Service, Fish and Aquatic Conservation for more information on invasive species.](#)

[A complete guide to bowfishing](#)

[Wildlife Forever Invasive Species](#)

[History of Common Carp in the United States](#)

[Questions all Bowfishing Beginners Ask](#)

Educational Standards

ELA Standards

6th Grade

- CCSS.ELA-LITERACY.RI.6.1** Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
- CCSS.ELA-LITERACY.RI.6.2** Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.
- 6.3.** Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes).
- CCSS.ELA-LITERACY.RI.6.7** Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
- 6.1.** Write arguments to support claims with clear reasons and relevant evidence.
- a.** Introduce claim(s) and organize the reasons and evidence clearly.
 - b.** Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text.
 - c.** Use words, phrases, and clauses to clarify the relationships among claim(s) and reasons.
 - d.** Establish and maintain a formal style.
 - e.** Provide a concluding statement or section that follows from the argument presented.



CCSS.ELA-LITERACY.W.6.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

6.5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach

CCSS.ELA-LITERACY.SL.6.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.

CCSS.ELA-LITERACY.SL.6.1.A Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.

CCSS.ELA-LITERACY.SL.6.1.B Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.

CCSS.ELA-LITERACY.SL.6.1.C Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.

CCSS.ELA-LITERACY.SL.6.1.D Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.

CCSS.ELA-LITERACY.SL.6.2 Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.

7th Grade

CCSS.ELA-LITERACY.RI.7.1 Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

CCSS.ELA-LITERACY.RI.7.2 Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.

7.3. Analyze the interactions between individuals, events, and ideas in a text (e.g., how ideas influence individuals or events, or how individuals influence ideas or events).

- 1.** Write arguments to support claims with clear reasons and relevant evidence.
 - a.** Introduce claim(s), acknowledge alternate or opposing claims, and organize the reasons and evidence logically.
 - b.** Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text.
 - c.** Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), reasons, and evidence.
 - d.** Establish and maintain a formal style.

e. Provide a concluding statement or section that follows from and supports the argument presented.

CCSS.ELA-LITERACY.W.7.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

7.5 With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.

CCSS.ELA-LITERACY.SL.7.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 7 topics, texts, and issues, building on others' ideas and expressing their own clearly.

CCSS.ELA-LITERACY.SL.7.1.A Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.

CCSS.ELA-LITERACY.SL.7.1.B Follow rules for collegial discussions, track progress toward specific goals and deadlines, and define individual roles as needed.

CCSS.ELA-LITERACY.SL.7.1.C Pose questions that elicit elaboration and respond to others' questions and comments with relevant observations and ideas that bring the discussion back on topic as needed.

CCSS.ELA-LITERACY.SL.7.1.D Acknowledge new information expressed by others and, when warranted, modify their own views.

CCSS.ELA-LITERACY.SL.7.2 Analyze the main ideas and supporting details presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how the ideas clarify a topic, text, or issue under study.

8th Grade

CCSS.ELA-LITERACY.RI.8.1 Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.

CCSS.ELA-LITERACY.RI.8.2 Determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas; provide an objective summary of the text.

8.1. Write arguments to support claims with clear reasons and relevant evidence.

a. Introduce claim(s), acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.

b. Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text.

c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.

d. Establish and maintain a formal style.

e. Provide a concluding statement or section that follows from and supports the argument presented.

- CCSS.ELA-LITERACY.W.8.4** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- 8.5.** With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.
- CCSS.ELA-LITERACY.SL.8.1** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.
- CCSS.ELA-LITERACY.SL.8.1.A** Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.
- CCSS.ELA-LITERACY.SL.8.1.B** Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed.
- CCSS.ELA-LITERACY.SL.8.1.C** Pose questions that connect the ideas of several speakers and respond to others' questions and comments with relevant evidence, observations, and ideas.
- CCSS.ELA-LITERACY.SL.8.1.D** Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.
- CCSS.ELA-LITERACY.SL.8.2** Analyze the purpose of information presented in diverse media and formats (e.g., visually, quantitatively, orally) and evaluate the motives (e.g., social, commercial, political) behind its presentation.

SCIENCE STANDARDS

Middle School

MS-LS2-4 Ecosystems: Interactions, Energy, and Dynamics

Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

Performance Expectation

Grade: Middle School (6-8)

MS-LS2-5 Ecosystems: Interactions, Energy, and Dynamics

Evaluate competing design solutions for maintaining biodiversity and ecosystem services.*

Performance Expectation

Grade: Middle School (6-8)