

Project WILD Standards-Based FCAT-Style Activities



Hooks and Ladders

Teacher Page

Students practice FCAT skills while learning about limiting factors and salmon.

GRADE LEVEL: 6th - 8th grades

ACADEMIC OUTCOMES/LESSON OBJECTIVES:

- Students will read a selection introducing them to the concept of limiting factors.
- Students will respond to FCAT-Style questions and prompts in Reading, Writing, Math, and Science.

SUNSHINE STATE STANDARDS ASSESSED:

- LA.6.2.2.2 Uses information from the text to answer questions related to the main idea or relevant details, maintaining chronological or logical order.
- LA.7.2.2.2 Uses information from the text to state the main idea and/or provide relevant details.
- LA.8.2.2.2 Synthesizes and uses information from the text to state the main idea or provide relevant details.
- LA.6.4.2.3 Writes informational/expository essays (e.g., process, description, explanation, comparison/contrast, problem/solution) that include a thesis statement, supporting details, and introductory, body, and concluding paragraphs.
- LA.7.4.2.3 Writes specialized informational/expository essays (e.g., process, description, explanation, comparison/contrast, problem/solution) that include a thesis statement, supporting details, an organizational structure particular to its type, and I
- LA.8.4.2.3 introductory, body, and concluding paragraphs.
- MA.A.3.3.3 Adds, subtracts, multiplies, and divides whole numbers, decimals, and fractions, including mixed numbers, to solve real-world problems, using appropriate methods of computing, such as mental mathematics, paper and pencil, and calculator.
- SC.G.2.3.2 Knows that all biotic and abiotic factors are interrelated and that if one factor is changed or removed, it impacts the availability of other resources within the system.

RESOURCES:

K-12/Project WILD website - <http://myfwc.com/educator/K12.html>
Florida Department of Education Website - <http://www.firn.edu/doe/>

AUTHOR: Jean Day McCarthy
Kelley Weitzel, Education Consultant

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ANSWER KEY:

1. LA.6.4.2.3; LA.7.4.2.3; LA.8.4.2.3 Use the 6-point writing rubric.
2. Use the 2-point math rubric for Short Response Questions.
MA.A.3.3.3 Example of a Top-Score Response:
 $7500 \text{ eggs} \times 13\% = 975 \div 2 = 487 \times 7500 \text{ eggs} = \mathbf{3,652,500 \text{ total eggs}}$
3. Use the 2-point science rubric for Short Response Questions.
SC.G.2.3.2, Example of a Top-Score Response:
If there's a drought, the level of the streams falls, so it's hard for the salmon to migrate from stream to ocean and back to stream. If they can't migrate during each part of their life cycle, they won't be able to return to the right stream to reproduce. The same thing happens when humans build a dam across a stream. If the salmon can't get over the dam, they can't get to the ocean or back to their spawning grounds to reproduce. That means the population will decrease.
4. Use the 4-point reading rubric for Extended Response Questions.
LA.6.2.2.2, LA.7.2.2.2, LA.8.2.2.2 Example of a Top-Score Response:
Based on the article, each of the following actions would help the salmon to reproduce and complete their life cycle. Humans could plant trees alongside salmon spawning streams to provide shade to the gravel beds. They could put up those cloth fences to prevent construction dirt from sliding into salmon spawning streams and filling in the gravel beds. They could also restrict salmon fishing to allow more adult salmon to return to the spawning grounds (instead of ending up on a dinner plate).



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Student Handout

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WRITING

1. As Pacific salmon migrate, they often encounter obstacles that prevent them from reaching their breeding ground. Think about obstacles you have encountered while working to achieve a personal goal. Write to explain how you overcame a challenging obstacle while striving to reach your goal.

NOTE: Write your response to question 1 on another sheet.

MATH

2. A mating pair of salmon can lay 7,500 eggs in one season (after which, they both die). Assume that 13% of their offspring survive to reproduce. If half of the surviving salmon are female, what is the total number of eggs they will produce when they return to spawn as mature adults? Be sure to show your work.

THINK
SOLVE
EXPLAIN

Name: _____ **Date:** _____



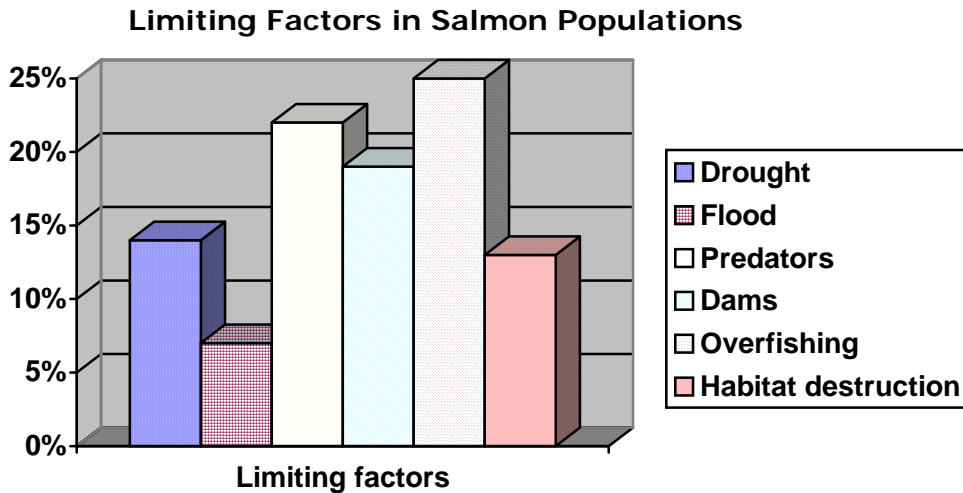
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SCIENCE

3. During the salmon's life cycle, the eggs hatch into young fish that live in a freshwater stream for 2 years and then migrate to the ocean where they spend 4 more years maturing. Once mature, these salmon return to the stream in which they were born to lay their eggs. Because salmon are valued as a food fish, researchers are studying why salmon populations have begun to decrease. The following chart, titled "Limiting Factors in Salmon Populations," describes the limiting factors that threaten US salmon populations. Choose two of these limiting factors and explain how they could cause a decrease in salmon population.



READ
INQUIRE
EXPLAIN

Name: _____ Date: _____



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READING

This article is adapted from the Background Information for the Project WILD activity "Hooks and Ladders":

Salmon Have It Tough

Salmon face a variety of limiting factors in the completion of their life cycle. A "limiting factor" is a reason or cause that reduces the population of an organism. Some limiting factors are natural, and some result from human interaction with natural systems.

Natural limiting factors include drought, floods, predators, and inadequate food supply. Throughout their lives salmon depend on a habitat that provides plants to shade streams and deep pools of water for spawning and resting. Man-made limiting factors include incorrect logging practices, grazing, mining, road-building, and development. These factors can destroy streamside vegetation, erode land, and fill streams with silt that covers the gravel beds needed for spawning.

Dams are another limiting factor that block or slow migration to and from the ocean because salmon get disoriented in the reservoirs formed by the dams. They are also exposed to unhealthy conditions like high water temperatures and predators. Fish ladders (water-filled staircases) can be installed to help migrating salmon swim around the dams.

Another threat to salmon is over-fishing. Over-fishing, combined with habitat destruction, is viewed by biologists as a major cause of the decline of salmon populations.

Name:

Date:

