How to Grow Fish 3-5th

Themes: Aquaculture, Washington History

Location:

Check to see if your local state hatchery is open and take your students on a field trip. This will help them see the process in person. We recommend going in the fall or the spring. The lesson can be taught in the classroom.

Remote learning modification: Hatcheries are currently closed due to COVID-19. The lesson can be taught over Zoom or Google Classrooms.

Standards:

NGSS

5-ESS3-1

Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

CCSS

CCSS.ELA-LITERACY.W.5.3

Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.

CCSS.ELA-LITERACY.RI.5.7

Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

WA OSPI

ESE Standard 1

Students develop knowledge of the interconnections and interdependency of ecological, social, and economic systems. They demonstrate understanding of how the health of these systems determines the sustainability of natural and human communities at local, regional, national, tribal, and global levels.

H4.4.1

Recognize and explain significant historical events in Washington state that have implications for current decisions.

H4.5.3

Summarize the central claim in a secondary work of history.

Modifications, Adaptations:

For COVID-19 distance learning, or other remote learning modification, look for **remote learning modifications** throughout the lesson plan.

Materials:

WDFW History of Hatcheries PowerPoint, History of Hatcheries reading sheet, Managing for Fish and Fisher PDF, Working in a Hatchery PDF. Other links to lesson materials are embedded in this lesson plan.

Vocabulary:

Aquaculture: The rearing of aquatic animals or the cultivation of aquatic plants for food.
Fertilize: Mix sperm and eggs. One sperm unites (fertilizes) one egg to create a complete set of genetic instructions (genes).
Genetic: A unit of inheritance which is transferred from a parent to offspring and determines some characteristic of the offspring.
Salmonid: A fish of the salmon family.
Spawning: To release or deposit eggs.
Stewardship: Then act of taking care of something, such as an organization or place.
Stock: A group of fish of the same species that live in the same geographic area and mix enough to breed with each other when mature.
Subsistence: The resources needed for survival.

Objectives:

Students will..

1. Recall how early European settlers impacted both the Native peoples of Washington, as well as the fish.
2. Explain why hatcheries began and the role they play in our state today.
3. Illustrate the history of Washington hatcheries by creating a short play with their classmates.
4. Develop a short story about the role hatcheries play in Washington's environment, economy and cultural systems in Washington.

Procedure:

Introduction to hatcheries in Washington

Open the WDFW Historical Hatcheries PowerPoint and accompanying text PDF. You will read through the history of hatcheries in Washington. The PDF signals you when to change slides. Vocabulary words are bolded in the PDF. You will want to introduce these vocabulary words as you come across them. You can have students try and guess their meaning using context clues if time allows. Encourage students to take notes as they will need to remember what they learned for their next activity.
Remote learning modification: You can read the story and share the slides over Google Classrooms or Zoom.

After you've read through the PowerPoint story, pair students into small groups. Tell them they are going to create a three to five-minute play that tells the story(ies) of hatcheries in Washington, and how hatcheries have played a role in supporting today's jobs, outdoor recreation and ecosystems.
Remote learning modification: Break students into groups using breakout rooms on Zoom or Google Classroom.

Their play must address:

- How European settlers impacted Native peoples in Washington.

- How European settlers approached Washington's fish stocks.
  - o Consider fish populations, environmental conservation, etc.
- Why there was a need for fish hatcheries in Washington.
- How do the decisions of early settlers impact the peoples of today?
  - o Less fish for people, degraded ecosystems, etc.
- According to the PowerPoint, why are hatcheries important in today's modern world?

You can give students the PowerPoint if they need to review slides. You can also give them historical resources from the "additional resources" section of the lesson plan.
Have students present their plays and provide feedback as necessary. **Remote learning modification:** check out this resource for doing skits over Zoom.

Today's hatcheries
On their own, have students explore the interactive tour of WDFW hatcheries. In this exhibit, students will learn how biologists and fish managers spawn and release salmon and trout. They will look at pictures and watch videos to supplement the learning. Encourage students to take notes as this interactive exhibit can be used as a source for the story they will create.

Also, have students read the short piece, "Managing for Fish and Fisher". This PDF gives insight to some of the complexities that hatchery managers consider when raising fish.

After reviewing these sources, have students complete the activity sheet, "Working in a Hatchery". This activity sheet addresses challenges and opportunities that hatcheries workers encounter on a regular basis.

Final review and creating a story
Play this Kahoot game with the students as a quick review to what they have learned. Share this link with them to begin. Using sources from the previous activities, students will write a short story about the role which hatcheries play: 1) in the environment 2) in the economy 3) in their culture.

Students may use outside sources, but they should cite them at the end of their story. The story should have a clear narrative. This resource may help students outline their story with a narrative (characters, setting, beginning, middle, end, etc.). Students may also draw illustrations which help visualize their story.

Their story can be based on real-life, history, facts or can be made up. It must, however, address the three elements listed above.

Idea: Show off your students' work! Share student projects from this lesson with WDFW.
Facebook:@WashingtonFishWildlife
Instagram:@TheWDFW
Twitter:@WDFW
#WildWashington #WildWa

Did you teach this lesson? Give us your feedback.

Additional Resources :

We encourage you to use the following resources as either a supplement to this lesson, or to share the resources with students for their project.

Supplemental activities:

- The salmon lifecycle activity-WDFW
- The salmonid lifecycle-WDFW/Issaquah Salmon Hatchery
- Glossary of hatchery definitions- WDFW
- Preparing for a hatchery visit information/activities-WDFW/Issaquah Salmon Hatchery
- After the hatchery visit activity book-WDFW
- Salmon education video series-Mountains to Sound Greenway
- Classroom Presentations-Issaquah Salmon Hatchery

Historical information:

- History of Leavenworth fisheries complex-United States Fish and Wildlife Service-USFWS
- A brief history of salmon fishing in the Pacific Northwest-Mid Sound Fisheries
- Hatcheries-Northwest Power and Conservation Council

Videos

- Tour of Puyallup Hatchery-WDFW
- Ringold-Meseberg Hatchery-WDFW
- Opening Day Fishing in Washington- The Hatchery Component- WDFW
- Naches Trout Hatchery-WDFW
- Salmon Hatcheries: Washington State- Washington RCO
- State of Salmon: Restoring a Washington Icon: Washington RCO
- Your national hatcheries, vital to the Pacific Northwest-USFWS
- Day-to-day life at the Quilcene National Fish Hatchery-USFWS

More information:

- School Cooperative Program (salmon)-WDFW
- Mass marking-WDFW
- Fish Hatcheries-WDFW