Splash into the Willamette

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Adapted from: Project Wild Aquatic and Willamette River Recreation Guide.

Time: Approximately 45 min.

Overview
This activity introduces participants to recreational uses of the Willamette River, including a history of recreational fishing and boating on the Willamette River, using simulator activities. This activity also works to incorporate information on fish populations by including lessons about which organisms fish prey on. By relating natural and human events, students will learn how their actions are affecting fish populations.

Benchmarks Addressed
Life Science (5th Grade)

CS.05.LS.06.03 Describe and analyze the effect of species, including humans, on an ecosystem. *Through discussion of materials, students will evaluate what effect human and natural events have on fish species.*

CS.05.LS.06.01 Describe changes to the environment that has caused the population of some species to change. *Students will be able to discuss how changes in the environment affect fish species in the Willamette River.*

Life Science (8th Grade)

CS.08.lS.04 Identify and describe the factors that influence or change the balance of populations in their environment. *Students will learn about the many factors influencing fluctuations in fish populations in the Willamette River.*

SC.08.LS.04.03 Differentiate between relationships between organisms, including predator-prey, producer-consumer, and parasite-host. *Students will learn more about how fish species prey upon each other and what the food sources are for different fish species.*

Life Science (CIM)

CS.CM.LS.03 Describe and analyze the effect of species, including human, on an ecosystem. *Students will discuss the effects of humans on fish species in the Willamette River.*

Social Science (5th grade)

SS.05.CG.02.01 Identify public safety, transportation, education and recreation as responsibilities of local governments. *Students will discuss the policies made by the Oregon Department of Fish and Wildlife to protect fish species.*

Learning Objectives

By the end of this activity, participants will be able to:

1. Name various ways that fish were historically caught on the Willamette River.
2. Recall natural and human events that affected fish populations.
3. Discuss food sources for each of the fish.

Materials Needed

- ❑ Stream Simulator
- ❑ Straws cut into 2-inch pieces

Background Material

Throughout history fishing has occurred either for fun, for sport, or as a method to provide food for meals or to sell. History tells us that fishing took place since prehistoric times, when humans waded into wetlands at the edge of lakes using bare hands or clubs to catch their prey. Native people built rock weirs or dams on streams and rivers in order to trap fish in holding ponds, making them easier to spear. Later, baskets were woven to allow fish to swim downstream into baffles that prevented them from escaping.

During the Stone Age, a line was tied to gorges, a primitive hook made of bone, flint, thorns, or turtle shells. Hooks were first made seven thousand years ago from copper. Chinese writings tell of fishing poles and lines four thousand years ago. Today fishhooks are made from steel and fishing poles are made from fiberglass.

Boats and rafts for fishing evolved during the Stone Age. The first boats were dugouts; narrow boats were made from hollow trees, and would often be propelled by paddles. Boats have evolved into many types and are now made of fiberglass, rubber, and aluminum depending on its uses. (Project Wild Aquatic. 2004. Pp. 85-87.)

Chinook salmon need to have plenty of food resources, including plankton, diatoms, copepods, kelps, seaweed, jellyfish, and starfish. Chinook feed on insects, amphipods, and other crustaceans while young, and primarily on other fish when older. Young salmon feed in streambeds for a short period of time until they are strong enough to journey out into the ocean, there acquire more food. Alternatively, most Coho young stay in the stream for over a year feeding on aquatic insects, zooplankton and small fish. The Bull Trout (Chub) prefers the deep pools of the larger, cold lakes and rivers, where it feeds on zooplankton. As they grow larger, they begin to feed on other fish. In recent history the Chub was once killed out of fear that they threatened populations of other native species more valued by anglers.

Activity Description

Step 1. Getting Started: Introductions (2 minutes)
Begin with introductions and a review of the learning objectives.

Step 2. (15 minutes)

1. Ask the students questions, such as, Do any of you fish? Can anyone tell me what river or creek is nearby? Do any of you use a boat? What is your boat

made of? Can someone tell me some characteristics of a healthy stream for fish habitat?

    2. Go over background information on the history of fishing and boating.

Step 3. (15 minutes)

1. Use simulator to show how weirs in the river with baffles were used to catch fish. (This can be done by creating small holding ponds where the water can flow in thus allowing the fish to be trapped in the pond.) Use small cut pieces of straw to symbolize different kinds of fish.
2. Have the students create a stream, which would be healthy for salmon and other fish species.

Step 4.   Discussion (10 minutes)

1. Ask if students can think of some natural and human events, which could affect salmon populations.
2. Ask if anyone knows what the various food sources are for the different species of fish on the Willamette River.
3. Ask if someone can name the state agency that monitors and maintains the population of fish species.
4. Ask what the effect of the introduction of a certain fish species has on the other fish species.
5. Ask what natural and human events could cause all fish species to die in a certain year.

Step 5.   Gauging Understanding (5 minutes)

1. Discuss what was learned about fishing on the Willamette:

Q: Who can tell me how native people caught fish?
A: They built rock weirs and dams on streams and rivers to trap and spear fish, later they used baskets to allow fish into baffles, preventing them from escaping.

Q: Who can tell me what kinds of boats the Native Americans used?
A: They used dugout made from trees.

2. Discuss what human and natural events have affected fish populations.

Q: What things have humans done that affected fish populations?
A: They have built dams and have polluted the water.

Q: What natural events have occurred affecting the fish populations?
A: There have been floods and droughts affecting the fish populations.

3. Discuss food sources of each fish species.

Q: Who can tell me what a Chinook eats?
A: Chinook salmon needs to have plenty of food resources, such as: plankton, diatoms, copepods, kelps, seaweed, jellyfish, and starfish. Chinook feed on insects, amphipods, and other crustaceans while young, and mostly on other fish when older.

Q: Who knows what the Bull Trout eats? What about the Coho?
A: The Bull Trout (Chub) feed upon zooplankton and other fish. The Coho feed on insects, zooplankton and small fish.

Step 5. Wrap Up (5 minutes)

Q: Can someone tell me some things that humans have done affecting the fish populations on the Willamette River?
A: Humans have dammed the river, killed off the Bull Trout (Chub) polluted the water and spilled sewage into the water.

Q: What kind of boats did the Native Americans use on the Willamette?
A: Dugouts

Q: Who can tell me what government agency is responsible for fish populations?
A: Oregon Department of Fish and Wildlife.

<u>**Additional Reading/Resources**</u>

Project Wild Aquatic, 2004.

Willamette River Recreation Guide.
http://www.boatoregon.com/library/willamette Guide

NOAA's National Marine Fisheries Service. http://www.nwr.noaa.gov/ESA-Salmon-Listings/Salmon-Populations/Chinook/CKUWR.cfm

Oregon Basin Explorer. http://willametteexplorer.info/issues/dams/

Kalapuyan. http://logos.uoregon.edu/explore/oregon/kalapuyan.html

The Kalapuya of the Upper Willamette Valley.
http://www.southeastneighbors.org/notes/1347.html

The First People of Clackamas County, Oregon.
http://www.usgennet.org/alhnorus/ahorclak/indians.html

American Heritage Rivers. http://www.epa.gov/rivers/98rivers/fswillam.html

Development on the Willamette River.
http://www.portlandonline.com/bes/index.cfm?c=dbijf

Adult Salmon Passage at Willamette Falls Dam.
http://www.fpc.org/adultsalmon/adulthistory/YTD-WFA.html