

Sucker and Whitefish

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Summary

Students examine how species are adapted to their lifestyle.

Grade level

Second

Time required

Three 60-minute class periods, plus a fieldtrip

Materials

The Nez Perce story, “[Sucker and Whitefish](#)”

[Fish adaptations handout](#)

[Pictures of sucker and whitefish](#)

Colored construction paper

Coloring utensils

Stapler

String & paper clips

Newspaper or cotton balls for stuffing fish

Traditional fishing equipment such as gaffs and dip nets

[Historic pictures of Nez Perce people fishing](#)

[Satellite image of the Nez Perce Reservation](#) – see Resources

Map of the Nez Perce reservation

Student journals

Goals

By completing this lesson, students will

- 1) learn about fish that are culturally significant to the Nez Perce people,
- 2) become familiar with the concepts of biodiversity and adaptations and
- 3) learn about various types of aquatic habitats and
- 4) gain experience in using inquiry process skills.

Science standards addressed

National Science Standards

- Abilities necessary to do scientific inquiry
- Form and function
- Organisms and environments
- Characteristics of organisms

American Indian Science Standards

- Observations and understandings of nature and ecological relationships traditionally formed an essential base of knowledge among American Indian cultures
- Characteristics of various animals as exemplified in traditional American Indian stories, legends, songs and dances

Teacher tips

Pictures of whitefish and sucker should be shown to the students. They should learn facts about each species (see Background information below.) These fish can be compared to other local species of fish so that students can learn about the diversity of aquatic life present in their water systems.

The book *Salmon and His People: Fish & Fishing in Nez Perce Culture*, by Landeen and Pinkham, is an excellent resource for this lesson. It includes cultural stories, the biology of several species of fish, photos, and information and quotes from different Nez Perce tribal members.

The teacher should learn the Nez Perce words found at the end of this lesson, especially the Nez Perce names for the local rivers.

Background information

While salmon were plentiful and a large part of the traditional diet of Nez Perce people, salmon was not the only fish species harvested by the People. The Nez Perce were aware of the diversity of life, and that each organism played an important role in an ecosystem, therefore they harvested several varieties of fish, including sucker and whitefish. The Nez Perce had several different ways to harvest and preserve fish. Fish could be dried or smoked and then stored for later use.

The majority of fish species have a streamlined body; this is advantageous for swimming through water. Usually a head, trunk and tail can be distinguished. Many fishes have specialized body features such as the shape of the mouth or snout, or caudal and dorsal fins. The body form of a fish can be used to appraise its way of life. For example, a fast-swimming fish may have a very streamlined configuration that allows for quick bursts of speed. The halibut, however, is flat with specially placed eyes, suitable for its life spent largely laying camouflaged on the ocean floor. The story of “Sucker and Whitefish” describes why both fish are shaped the way they are.

Whitefish are from the family Salmonidae. Mountain Whitefish are found in freshwater rivers and streams. The scientific name is *Prosopium williamsoni*. Whitefish prefer pools and slow moving stretches of coldwater streams. They feed mainly on bottom organisms, including immature insects, such as dragonfly larvae, and mosquito larvae, as well as crustaceans. They will also eat insects from the surface of the water. They have a slender cylindrical body with a small head, silvery sides and coarse scales. Their mouth is underslung and their snout is below the level of their eye. They spawn in late fall or early winter. Whitefish do not build a redd like salmon, or attempt to guard their eggs.

The eggs incubate over winter and hatch in the spring. A whitefish grows slowly but may live up to 18 years. They normally weigh from 1 to 2 pounds.

Suckers are from the family Catostomidae. They are native bottom dwelling fish. They have ventral mouths with thick lips and toothless jaws. Suckers feed on algae and small insects. Suckers were once a highly prized fish in the Nez Perce diet. They were caught in weirs and by snagging early in the spring, two months before the salmon showed up. There are several different species of sucker found in Nez Perce reservation waters. They include Largescale sucker (*Catostomus macrocheilus*), Bridgelip sucker (*Catostomus colombianus*), Mountain sucker (*Catostomus platyrhynchus*), and Longnose sucker (*Catostomus catostomus*).

Procedure

Engagement

- 1) Show students pictures of sucker and whitefish and discuss how the two species are important to the Nez Perce.
- 2) Ask students to work in pairs to note differences between the two fish. Ask them to develop a hypothesis about how the differences are important to the fishes' lifestyles. Ask them to write the differences in a chart and also to record their hypothesis in their journal.
- 3) Invite an elder to tell the story "Sucker and Whitefish", and to talk about fishing in the Nez Perce culture. Show historical pictures of Nez Perce people fishing and items used to catch fish, such as a gaff and dip net. Discuss.
- 4) Show the class the satellite image and map of the reservation. Ask students to locate bodies of water on the map and image. Give them the Nez Perce names for the rivers. Ask them to find places on the map and image where they have been fishing. Ask the elder to locate traditional fishing sites on the map and image. Label the sites with a fish icon and the Nez Perce name.
- 5) As a class, make a chart of the habitat, food, feeding techniques and morphology of the whitefish and sucker.

Exploration

- 1) Distribute the handout that shows the physical characteristics of different fish to each student. Introduce the word *adaptations*. Talk about the different adaptations that fish have and ask students to predict the value of specific adaptations to a species. For example, salmon have sharp teeth while suckers have thick lips and no teeth.
- 2) Ask students to randomly pick out one physical characteristic from each category and create their own species of fish from construction paper. The fish will need two sides and appropriate coloration.
- 3) Once the fish has been cut out and decorated appropriately, the fish should be stapled around the edges, leaving a 5-inch gap. Stuff the fish with paper or cotton balls, and then staple it closed.
- 4) Ask students to create a species name for their fish that reflects its physical characteristics or lifestyle.

Explanation

- 1) Post each of the fish in a central spot so that all students can see them. Have individual students share with the class the species name of their fish and describe what type of habitat their fish requires. Ask them to name the body of water where the fish would live and locate it on the reservation image and map. Then have the class guess which fish the student has described.
- 2) Introduce the term *biodiversity*, using sucker and whitefish as examples. Discuss why a diversity of species is important in an ecosystem.
- 3) Have students groups create ecosystems that include each of their original fish species, and share them with the class. Emphasize that they should include the *niche* of each species within the ecosystem. Have them write a description of the niche for their fish and attach it on a label along with the name of the fish.
- 4) Tie a string to the fish and hang them from the ceiling as an ecosystem group.

Elaboration

- 1) Remind students that the Nez Perce people utilized several different species of fish, and not just salmon. Ask students to predict what would happen to an ecosystem if a species of fish was overharvested. Have them write their predictions in their journals, then share them with the class.
- 2) Coordinate a field trip with the tribal fish biologists, to the tribal hatchery or a local body of water where students can engage in fieldwork with the biologists. Ask the biologists to discuss the concepts the class has been studying and to describe the tribe's fish management activities.

Evaluation

- 1) Evaluate students' understanding of the concepts of habitat specificity and adaptations through their explanations of their original fish design in relation to its habitat.
- 2) Evaluate students' understanding of biodiversity, niche and interdependence in nature by reviewing their journal entries, discussing their created ecosystems and assessing their oral presentations of their predictions of the effects of overharvest.

Follow up activities

- 1) Students can further understand the different physical characteristics of a fish by learning more about their basic anatomy, such as the names of the different fins. Students can label the anatomy of a fish on a bulletin board.
- 2) Have students write their own story in which they create an original scenario or reason for the shape of Sucker and Whitefish's mouths.
- 3) Scientific classification could be introduced. Students can learn the family, genus and species name for each fish. Ask students to create a classification system for common objects such as buttons or candy as a beginning activity. Then encourage them to use their original fish species to develop an original classification system.
- 4) Ask elders or other tribal community members to arrange for students to smoke fish.
- 5) Provide a variety of literature and storybooks on fish for oral or silent reading.

Vocabulary

adaptations	dorsal fin	spawn	trunk
biodiversity	redd	weir	niche
caudal fin	snout	streamline	

Nez Perce names

Middle fork of the Clearwater River: Himeqisnime

Fish, general name: cuyem

Largescale or Mountain Sucker: qi'yex

Mountain Whitefish: cimex

Sucker fish or River sucker: muquc

Snake River: Pik'unen

Resources

Books

Landeon, D. & Pinkham, A.V. 1999. Salmon and his people: Fish & fishing in Nez Perce culture. Lewiston, ID. Confluence Press. ISBN# 1-881090-33-7

Sternberg, D. 1987. Freshwater gamefish of North America. Minnesota. The Hunting & Fishing Library: Cowles Creative Publishing, Inc.

Web sites

Satellite image of the Nez Perce Reservation

http://yoda.cec.umt.edu/sid/bin/show_newjava.plx?image=nezperce.sid&client=Native_Lands§ion=Nez%20Perce%20Reservation&title=Native%20Lands