



SEAS

STUDENTS EXPLORE
AQUATIC SCIENCES

General lesson information

- All lessons are around 45 minutes to 1 hour long
- 2-4 SEAS volunteers will teach the lesson
- Other lessons can be developed by our volunteers
 - For example:
 - Marine food webs
 - Introduction to ecology
 - Using math to understand animal populations
 - Proteins and enzymes in ecology

Monitoring Rockfish using Remotely Operated Vehicles (ROVs)

Scientific surveys of rockfishes using remotely operated vehicles



Key question: How are remotely operated vehicles (ROVs) used to assess the population status of rockfishes in Puget Sound?

Short summary: Introduce students to Puget Sound rockfishes and new technologies used to assess the health of fish populations. Students get a hands on experience with ROVs and learn how they are used to count rockfishes in Puget Sound.

Grade levels: 6-8, 9-12

Learning objectives:

- Students will understand why it is important to know the size of fish populations.
- Students will learn how remotely operated vehicles are used to observe rockfishes.
- Students will identify rockfishes based on visible traits.
- Students will analyze rockfish counts and habitat characteristics from ROV videos to estimate Puget Sound rockfish population.
- Students will apply knowledge of habitat use by rockfishes to plan an ROV survey.

Genetics in Fisheries Research

Show what genetics can teach us about fish populations and management

Key question: How can scientists use genetics to learn about fish populations and inform management?

Short summary: Students will get an overview of fundamental genetic principles, as well as a chance to see some of the laboratory techniques used to study genetics. Through interactive activities, they will then discover current issues facing fisheries managers, and how genetics research is an important part of the solution to those issues and the preservation of biodiversity.

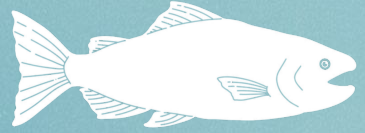
Grade levels: 9–12

Learning objectives:

- Review the role of DNA in the inheritance of traits from parents to offspring
- Introduce the techniques and technology used to study DNA in the laboratory
- Communicate the relationship between DNA and biodiversity
- Have students discover how genetics is used to sustainably manage fisheries in the United States



Mysterious Mortalities



Become a scientist and uncover the mystery behind what is killing coho salmon

Key question: Using scientific methods, what is killing coho salmon and what can be done to mitigate this problem?

Short summary: Students will step into the role of a scientist to uncover the mystery behind salmon deaths. By forming and testing hypotheses, students will collect water samples and then run through a simulation to uncover what is causing the deaths of salmon. After, they will learn about promising local solutions and the role that scientists play in such matters.

Grade levels: 6–8

Learning objectives:

- Develop and test hypotheses
- Communicate scientific findings
- Understand how human populations impact Pacific salmon
- Teach students about the roles of scientists in ecosystem management



Ecological detectives

Learn about two different salmon species and brainstorm why salmon populations are declining

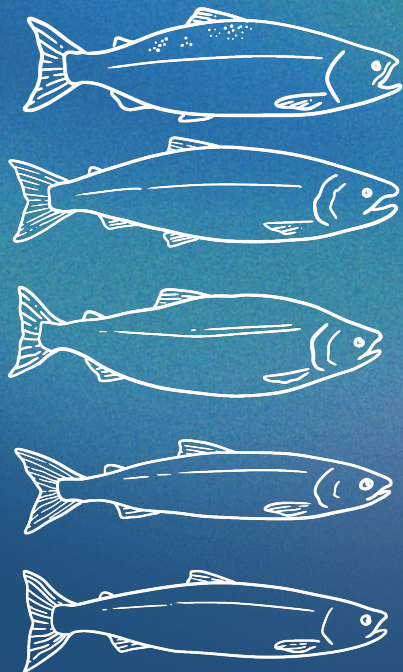
Key question: Why are salmon species declining differently?

Short summary: students will learn about what distinguishes two different species of salmon in Puget Sound using dichotomous keys. Then, the group will take an observed pattern – salmon decline – brainstorm possible explanations, and divide into teams to test their hypotheses using hands on activities involving habitat, water quality, and food supply. Students will record their findings and report back to the group to try to solve the mystery and to decide on next steps.

Grade levels: 3-5, 6-8, 9-12

Learning objectives:

- Distinguish two species of Pacific salmon based on their life cycles
- Identify two Pacific salmon species using a dichotomous key
- Develop hypotheses for observed salmon decline
- Draw conclusions about salmon populations using environmental data



Who is a scientist?

Learn about scientists and the paths to become a scientist

Key question: Who is a scientist and how do you become a scientist?

Short summary: Students will identify common skills among different scientists and determine that there is not only one path to becoming a scientist. Students will learn that scientists are lifelong learners and work with community members and other scientists to complete interdisciplinary projects.

Grade levels: 3-5, 6-8, 9-12

Learning objectives:

- Students will be able to identify the life and career skills they currently have.
- They will be able to identify challenging events they have overcome and the set of skills they have developed.
- Students will be able to determine aspects of their lives they can control and others that are out of their control.
- They will be able to apply and transfer their skills and knowledge to solve challenges and scientific questions.



GO FISH!

Learn about fisheries management, its regulations and sustainability.

Key question: What is a fishery and its ecological and economic importance?

Short summary: Students will work through several activities to teach them about fisheries and learn about the people and the fish involved in this industry.

Grade levels: 6-8, 9-12

Learning objectives:

- Learn what a fishery is and its economic importance
- Learn the relationship between fish size and fish price in the supermarket
- Learn about ways that fisheries can be sustainably managed

