Activity 2: The Incredible Journey

Salmon swimming up a waterfall. Photo from U.S. Fish and Wildlife Service

Overview

In this activity, participants act out the salmon and steelhead journey from spawning ground, to the open ocean, and then back to spawning ground. In doing so, they begin to understand the unique characteristics of salmon and steelhead.

Background Information

This activity introduces participants to the interesting life cycle of salmon and steelhead by acting out a simplified version of it. Salmon face many challenges throughout their life cycle, including silt smothering the eggs, predators, pollution, disease, oxygen-poor water, high water temperatures, lack of food, and barriers such as dams and culverts. Only one or two salmon or steelhead from an egg nest (1/10 of 1%) make it back to their home streams to spawn.

For more information about the salmon and steelhead life cycle, see Background Information in the Unit Overview and Life Cycle and Migration under Resources: Information About Salmon and Steelhead.

Objectives

Participants will: (1) simulate the salmon and steelhead journey from spawning ground to the ocean and back, and (2) identify obstacles these fish face at different parts of the journey.

Time

One group session

Materials

- Large playing area (at least 50 feet x 100 feet)
- One long jump rope and two short ones
- Existing painted lines, rope, traffic cones or other boundary markers
- Two cardboard boxes
- 100 tokens (may be poker chips, index cards, or other tokens)
- Whistle (optional)
- KWLR chart (started in Activity 1: Getting to Know Salmon and Steelhead)

Advance Preparation

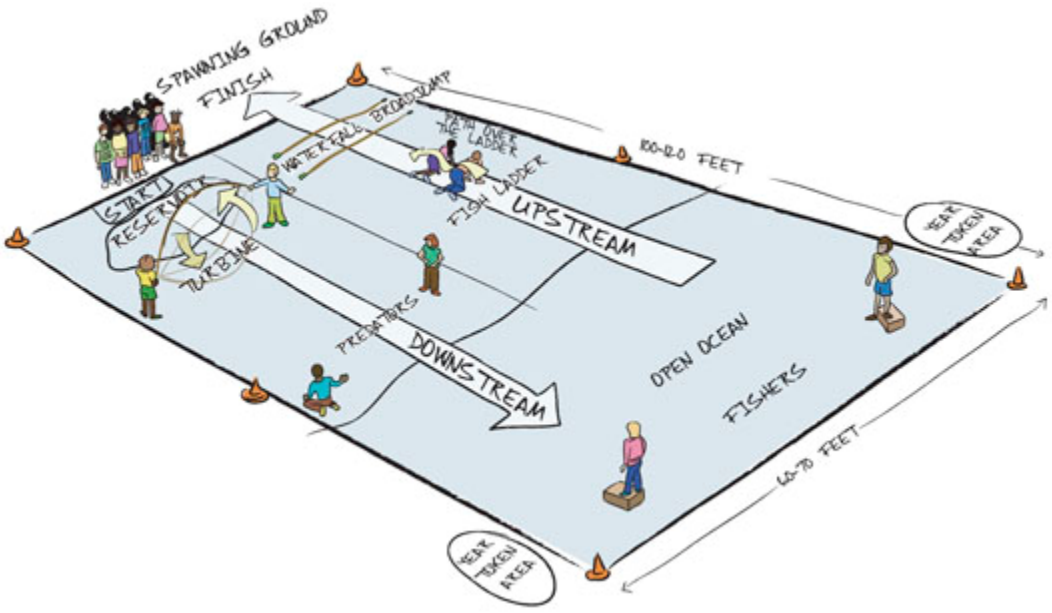
1. Set up the boundaries for the game as shown in the illustration below (this game and the illustration used below are based on an activity from *Project Aquatic WILD*, page 71 called "Hooks and Ladders").

    - About one-fourth of the playing area will be for the salmon's downstream journey to the ocean. It will include a dam turbine (long jump rope) and predators.
    - Half of the playing area will be for the open ocean, and will have two fishing boats (boxes) with fishers.
    - The remaining one-fourth of the playing area will be for the salmon's upstream journey back to the spawning ground. Here salmon will pass through a fish ladder (crouching participants) and jump over a waterfall (broad jump).

2. The procedures for this activity assume a group size of about 30 participants. As you plan for the activity, add or subtract one predator and one fishing boat to adjust for a larger or smaller group.

3. Place the materials for the activity as shown:

    - Put the long jump rope in the turbine area.
    - Place the two cardboard boxes in the open ocean area.
    - Scatter half the tokens on each side of the open ocean, just outside the boundary.
    - Position the two short jump ropes at the waterfall area. They should be far enough apart to provide a challenging, but realistic, broad jump.



Lifecycle Game Setup

Setting the Stage

1. Begin by asking participants, "Why have people celebrated salmon and steelhead throughout the ages and why do they continue to celebrate salmon and steelhead? What makes these fish so special?"

2. Ask them, "What does the word 'migration' mean?" What are some reasons that people migrate? Why might salmon and steelhead migrate?"

3. Tell participants that to help them understand these questions, they will be acting out the amazing journey of the salmon and steelhead migration from the spawning ground to the ocean and back again, and including some of the obstacles that salmon and steelhead face along the way.

Conducting the Activity

1. Take participants to the playing area and explain that most of them will act as salmon for the activity. Describe the journey that these "salmon" must take:

    - Spawning Ground: All the salmon start in the spawning ground. When you blow a whistle (or give other signal), they will start their journey downstream.

    - Dam Turbine: After they begin their journey, the salmon face their first hazard - a dam turbine represented by two participants swinging the long jump rope. All salmon must go through the turbine. If a salmon is hit by the jump rope or a turbine operator's arm, it dies. Dead salmon become part of the fish ladder (see Fish Ladder). The turbine operators may change the speed of the turbine to try to catch salmon.

    - Predators: Once they pass the turbines, the salmon must face two wildlife predators (who may be larger fish, birds, or mammals). These predators must use both hands to catch the salmon. Upon catching a salmon, the predator must escort the dead salmon over to the fish ladder area (see Fish Ladder) before returning to catch more.

    - Open Ocean: All salmon that make it past the predators reach the open ocean. Here, salmon can be caught by fishers in fishing boats (boxes). The fishers must keep one foot in their box, but can slide the box around. As with the predators, they must catch salmon with both hands and must escort any dead salmon to the fish ladder area (see Fish Ladder) before returning to the ocean.

    - Year Tokens: salmon must swim back and forth across the ocean area and collect four tokens to represent four years of living in the ocean. They must cross the entire ocean before they collect a token, and they can only collect one token at a time.

- Heading Upstream: After safely collecting four tokens, salmon may start upstream. Here they encounter the fish ladder.

- Fish Ladder: The fish ladder is made up of all the participants who were caught by predators or fishers. To make the fish ladder structure, participants crouch on all fours in a row, with a yard-wide space between them. The salmon heading upstream must step over each person in the fish ladder. Predators may not harm the salmon in the fish ladder.

- Waterfall: After making it through the fish ladder, the salmon must now jump over a waterfall. A salmon must successfully broad jump the entire width of the waterfall to continue. If a salmon fails, it returns to the bottom of the fish ladder to try again.

- Predators: At the top of the falls, the salmon must once again get past some predators (bears or eagles). Predators must catch the salmon with both hands. If a predator catches a salmon, it must escort the dead salmon to become part of the fish ladder.

- Spawning Ground: A salmon surviving the entire course reaches the spawning ground and finishes the game.

2. Assign roles to participants:

    - Choose two participants to be turbine operators. After all the salmon have gone through the turbine, these participants move over to the waterfall to monitor the broad jump there.

    - Choose two participants to be predators. They patrol below the turbines to catch salmon heading downstream. When all the salmon reach the ocean, these participants move to the top of the waterfall to catch salmon before they enter the spawning ground. Predators must catch the salmon by touching them with both hands. When they catch a salmon, they must escort the dead salmon to the fish ladder before they can catch more.

    - Choose two participants to be fishers in fishing boats. The fishers must keep one foot in their boat (cardboard box). When they catch a salmon, they must take the dead salmon to the fish ladder.

    - All other participants are salmon.

3. Have participants go to their starting places. Blow the whistle (or give another signal) and help the group as it does the activity. The activity ends when all surviving salmon reach the spawning ground.

Wrap-Up

1. After doing the activity, lead participants in a discussion about it:

    - How many salmon did we have at the beginning of the activity? How many did we have at the end? Do you think this survival rate is realistic? Why or why not?
    - Which obstacles were the most difficult for the salmon in our activity? Which caused the most losses? Which obstacles do you think are the most treacherous for real salmon?
    - What are some of the organisms that depend on salmon or steelhead? (You may want to bring up the food web, which is one way organisms depend on each other for the transfer of matter.)
    - Steelhead don't necessarily die after they spawn as salmon do. They often return to the ocean and then come back to the spawning ground to spawn again. How would we need to adjust this activity to represent steelhead? What do you think the results would be then?
    - In what ways was this simulation realistic? In what ways was it unrealistic?
    - What threats and obstacles do salmon and steelhead face in their life cycle that are not represented here?

2. Have participants look at the KWLR chart to revisit the question of how salmon and steelhead and people affect each other in the community. They may want to adjust any of their ideas and make additions to the "K" (What We Know), "W" (What We Wonder), "L" (What We Have Learned), and R (Our Resources) sheets.

Enrichment

- Ask for participant suggestions for how to modify the game to add other obstacles or elements. Play the activity again with the modifications.

- Research ways that dams can be designed or modified to be more fish-friendly, allowing migrating fish to go downstream and upstream safely.