

Salmon Survival Board Game



START

Salmon Survival

Can you survive the challenges salmon face every day?

EGG

Turbidity
start over

Rest Your Fins

Warming Water
start over

ALEVIN

Habitat Loss
-3

Habitat Restoration
+3

EGGS mature in fresh water

ALEVINS live in fresh water

SMOLT

Rest Your Fins

Invasive Fish
-5

Invasive Removal
+3

FRY live in fresh water

Disease
-3

FRY

Fish Ladder
+3

SMOLTS live in fresh & brackish water

Dam
-9

Predation
start over

Rest Your Fins

OCEAN

ADULT

Predation
start over

Rest Your Fins

Prey Availability
-4

OCEAN ADULTS live in saltwater

Ocean Acidification
-5

Water Conservation
+2

SPAWNER

Runoff
-7

Rain Garden
+2

Drought
-5

MIGRATING ADULTS live in fresh water

Rest Your Fins

MIGRATING ADULT

Rec Fishing
start over

Subsistence Fishing
start over

Rest Your Fins

Commercial Fishing
start over



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Audience

General public,
elementary school,
middle school

Required Materials

- Board game ([English](#), [español](#))
- 1 die (longer, harder version) or a pair of dice (shorter, easier version)
- A token for each player (e.g., small figurines, coins, etc.)
- A whiteboard or large piece of paper
- Whiteboard markers or pens

Optional Materials

- I'm Counting on You brochure ([English](#), [español](#))
- Salmon survival pyramid
- Good Salmon Habitat, Bad Salmon Habitat ([English](#), [español](#))
- An Incredible Journey children's book ([English](#), [español](#))

Salmon Survival Board Game

Overview

The goal of this dice game is for salmon eggs to hatch and make their way through the entire salmon life cycle. Along the way, participants will discover human-made challenges, (e.g., passage barriers, urban runoff, warming waters, etc.) natural challenges (e.g., predators, drought, disease), and salmon stewardship actions (e.g., rain gardens, water conservation, salmon ladders, etc.).

Learning objectives

Participants will learn that:

- Salmon face many human-made and natural challenges throughout their lives.
- Most salmon will die before they return to their natal (home) stream to spawn.
- There are many ways that people can help salmon.

Preparation

1. Recreate the following table on a whiteboard, piece of paper, or spreadsheet.

Life Cycle Stage	Number of Deaths
Egg	
Alevin	
Fry	
Smolt	
Ocean Adult	
Migrating Adult	
Spawner	





Vocabulary

Anadromous—Fishes that migrate as juveniles from freshwater to saltwater and then return as adults to spawn in freshwater.

Fry—Salmon become fry when they have absorbed their yolk sac and emerge from their gravel nest (redd).

Natal stream—A salmon’s home stream; where a salmon hatched.

Redd—A gravel nest made by a spawning female salmon.

Run—Seasonal migration undertaken by fish, usually as part of their life history.

Smolt—A young salmon that assumes the silvery color of the adult and is ready to migrate to the sea.

Spawner—A mature salmon that is migrating back to its home stream to reproduce.

Additional Resources

For additional marine science activities and lesson plans, please visit: <http://go.usa.gov/xv6ut>.

Questions or Comments?

For questions or comments about this activity, please email: wcr.education@noaa.gov.

Instructions

1. Tell participants that during the game they will experience the salmon life cycle, including some of the human-made and natural challenges that salmon might face. The goal of the game is to complete the salmon life cycle so that they can spawn the next generation of salmon.
2. Each player begins at the space labeled “egg.”
3. One player rolls the die or dice and moves the corresponding number of spaces. Each player should take a turn before the rotation starts again.
 - a. If a player lands on a space with a +, they move forward the corresponding number of spaces.
 - b. If a player lands on a space with a -, they move backward the corresponding number of spaces.
 - c. If a player lands on a space that says “start over,” they die and begin again from “egg.”
4. Players work their way around the board game until they die or reach the space labeled “spawner.”
 - a. Option: Give participants a set number of turns to become a spawner.
5. When participants “die,” record the corresponding life cycle stage on the table.
6. Share that the majority of salmon will not live to become spawners. A single female salmon can lay thousands of eggs, but only a handful survive to become spawners.

Discussion Questions

Lead a discussion using one or more of the following prompts:

1. How could low spawning numbers be problematic?
2. How could low salmon numbers affect the larger ecosystem?
3. How could low salmon numbers affect people?
4. How can endangered salmon populations recover with low spawning numbers?
5. What can individuals do to help salmon?

Extensions

1. Walk participants through the [salmon life cycle pyramid](#) and the data from the board game. Talk about the distribution of this data and compare it to real data.
2. Discuss how games and models can be used to help simulate or illustrate real data. In the field, scientists collect data about many different plants, animals, and environmental conditions. For example, they might count the number of salmon returning to their home stream; the temperature of the ocean in different locations and seasons; the amount of fish being caught by commercial fishers; etc.
 - a. How is the game data similar and different to what happens in real life?
 - b. How could the game data be made more accurate? Answers may include: complete more rounds and/or have a bigger sample sizes/more participants