# FISHERIES MANAGEMENT OUTDOOR LAB
# LESSON PLAN

**Subject Area:** Fisheries sampling concepts and techniques.
**Grade Level:** Middle School
**Seasonal timing:** Fall
**Instruction Time:** 45 minutes

**A. Learning Goal:** Learners will practice multiple types of fish sampling and data collection methods to determine the size, quantity, and diversity of nearshore fish populations.

**B. Objectives:**

- Understand the role of sampling fish populations in assessing and monitoring fish populations.
- Practice using various types of sampling gear - including minnow traps, seine nets, and measuring boards.
- Collect fish samples of nearshore populations and measure lengths.
- Discuss the benefits and limitations to various sampling techniques.

**C. State Standards:**

- SCI.SEP3.m – Planning and Conducting Investigations
- SCI.LS1.B.m – Animals engage in behaviors that increase the odds of reproduction. An organism's growth is affected by both genetic and environmental factors.
- SCI.LS2.A.m – Organisms and populations are dependent on their environmental interactions both with other living things and with nonliving factors, any of which can limit their growth. Competitive, predatory, and mutually beneficial interactions vary across ecosystems but the patterns are shared.
- SCI.LS2.C.m – Ecosystem characteristics vary over time. Disruptions to any part of an ecosystem can lead to shifts in all of its populations. The completeness or integrity of an ecosystem's biodiversity is often used as a measure of its health.
- SCI.LS2.D.m – Changes in biodiversity can influence humans' resources, such as food, energy, and medicines, as well as ecosystem services that humans rely on — for example, water purification and recycling.
- SCI.LS4.D.m – Changes in biodiversity can influence humans' resources and ecosystem services they rely on.

**D. Setting/Area:** Local lake.

**E. Materials/Resources:** Students divided into small groups of 2

- Fisheries management lab manual pages, clipboard, writing utensil.
- Waders and life jackets for all participants.
- Seine net(s).
- Minnow traps (set at least 1 for every 2 students).
- Several buckets to transfer and house fish (5+).
- Aquarium nets to transfer fish from buckets to measuring board.
- Measuring boards.
- Cameras.

**F. General Delivery:**

- Review basics about monitoring fish from the indoor session. Demonstrate safety and how to put on waders.
- Demonstrate how to seine on shore before going to the water.
- Have all students be involved in a seine pull, checking minnow traps, and getting lengths of fish.

**G. Assessment:**

Have an informal discussion regarding about the limitations of fish sampling, with students recognizing that there are passive and active ways to sample. Discuss the role that fish play in the food web and why it is important that we monitor populations through sampling and manage fishing regulations.