FISHERIES MANAGEMENT OUTDOOR LAB
TEACHER'S GUIDE

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.

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

NOTE: Prior to this field experience, set out enough minnow traps for each group of 2 to pull at least one up (e.g., if there are 20 students, place 10 traps out). Traps should be set overnight and baited with dog food, or other scraps, to entice small minnows to swim in the trap. Check your state and local regulations to ensure you have proper licensing and ensure there are no restrictions for the lake you are visiting. To increase the number of fish that are available for students to practice measuring lengths, you can also purchase minnows from a local bait shop as a supplement. Setup a table near the seining zone with measuring boards and space to set clipboards while sampling.

1. Introduce the instructors and ask students if they remember what fisheries managers do. Review the importance of monitoring fish populations and explain that in this session, they are going to practice two sampling methods and collect data on fish length.

2. Next, show students the pile of waders and have them find a pair close to their shoe size. Many students will have no experience with waders, so make sure you model how to put them on. Take off shoes, sit on ground for stability, stand back up when feet are in the boots, and then clip the waders around the shoulders. Have students put on their life jackets over the waders.

3. First, show the seine net on the shore before going out into the water. Ask students what they notice about the net.
    - Key things: there are floats on one side and weights on the other side, there are two poles, note the mesh size and what it means for the type of fish that can be captured, etc.

4. Ask for two volunteers to demonstrate the process. Hand each volunteer one end of the seine. Explain that one student can stay in one spot near the shore while the second stretches the seine out into the deeper water (without filling their waders). The student

who goes out to the deep end will walk the seine in a large circle loop until finally coming back to the nearshore and meeting the first student.

- Important: Make sure students understand the lead weights need to stay on the lake bottom for the duration of the seine pull or the fish will swim out.

5. Continue the demonstration, emphasizing the key things to be successful in keeping the fish in the net. When the students meet, the two ends need to stay together. Additional students can join and assist in this process. The poles can be set down, with the focus being on pulling the net in to shore. While holding the lead weights on the bottom of the lake, pull in the net until it is completely onshore.

6. Now, monitor students as they practice doing this in the nearshore water of the lake. Have students that are not seining fill buckets partway with water so that when you pull in fish, the buckets are ready. Guide the seiners through as they go out into the deep end and make a circle, reminding them how high their waders go. Expect the seining practice to take a while as students are not experienced in having waders on and some time is spent adjusting to moving through the water.

7. Help students pull in the seine net and have them move any fish caught into the buckets. Go to the tables with the sample and record the lengths of at least 10 fish in the lab manual. Students should take turns handling fish and pulling the seine until everyone has tried.

8. Next, assign students to go pull up the minnow traps (at least 1 per small group). They may or may not have fish in them, pointing this out so that students recognize that some sampling techniques are more successful than others. If there are fish in the minnow traps, have students record what they saw in their lab manuals.

9. At the end, have students return all fish collected from the lake to the water. Ask students why it is important that fisheries managers monitor fish populations. Key points are: to document the abundance and diversity of fish species, to track migration and movement of fish, determine which habitats are being used, and to document where and when fish are breeding. Importantly, fish play crucial roles in lake food webs. Discuss the advantages and disadvantages of each sampling technique.