FISH STATION - QUICK GUIDE

Inland Seas Education Association

PREPARE TO TEACH

SET UP STATION MATERIALS

- ☐ Place aquarium on a rubber mat, fill about 1/3 full with lake water, and insert and turn on an aerator. Cover with a light-colored towel.
- ☐ Make sure bin contains all of the materials you need. Alert lead instructor if materials are missing or broken. *The bin should be on deck, but the materials are not set up until just before the station begins.*
- ☐ **If an afternoon program:** Replace aquarium water so it is cold and fresh. If fish are already in the aquarium, record the species and counts so they are not included in the program trawl.
- ☐ **If a Next Gen program:** Gather additional thermometers and wind meters for your group.
- ☐ Setup datasheet with your name, date, time, and location. Review datasheet directions.
- ☐ Gather index card, pencils, and logbooks for students. Smile!

PURPOSE

At this station we will assess lake health by asking:

Does the fish community contain **many kinds of fish**, and **no invasive species**?

CONNECTION TO LAKE HEALTH

Forage fish link invertebrates and plankton to larger predatory fish like lake trout and bass, therefore changes in the forage fish community can have a powerful impact on all parts of the food web. The round goby is an invasive species that is changing food web dynamics throughout the lake; students will help Inland Seas continue the best record in Lake Michigan of round goby trends.

Otter Trawl

→ The lead instructor and crew will train students to collect the fish sample.

→ The lead instructor will put fish in the aquarium.

Your job:
Fill out the fish datasheet.

COLLECTING THE SSAMPLE

NEXT-GEN ONLY • NEXT-GEN ONLY • NEXT-GEN ONLY • NEXT-GEN ONLY

Pre-sampling discussion (2 min)

Goal:
→ Observe and report weather conditions

Why do we need to pay attention to the weather?

Sailors: need good weather to sail, and must prepare for bad weather.

Scientists: measurements & observations can change if the weather changes.

Introduce equipment and observe weather and sea conditions (12 min)

Temperature
Do not submerge
Wait for temp to stabilize
→ **Air temp**
→ **Water temp**

Wind
The boat must be stopped
Hold at eye level
→ **Speed** (range)
→ **Direction** (where the wind is coming from)

Complete the logbook

No Secchi

You'll do it after peer teaching!

Prep for peer teaching! (3 min)
Student should talk about:

- ☐ **Sampling info in logbook**
- ☐ **How to use equipment**
- ☐ **Sea and Weather conditions**
- ☐ **Weather for sailors and science**

TEACHING THE STATION

INTRODUCTION (1 min)

Where did we collect these fish?

The bottom of the lake.

Why look at forage fish?

Predator fish (the fish we eat) eat forage fish

Purpose:

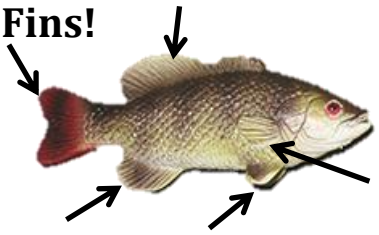
Assess the health of the fish community

A healthy fish community has:

- ☐ **A diversity of organisms**
- ☐ **Many common species**
- ☐ **No invasive species**

OBSERVE FISH (4 min)

Fins!



→ Mouth type

→ Eyes

→ Markings

Observe fish in the aquarium

How many species do you think are in there?

COUNT SPECIES (6 min)

→ **Use fish key to identify species (or other method)**

→ **Share cool facts!**

→ **Count everything**

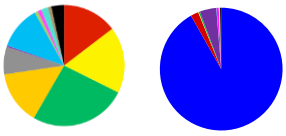
→ **Record numbers in logbook**

HISTORICAL CONTEXT (3 min)

Compare pre to post goby:

1998-2006 vs. 2008-now

Several common species



Goby >85% since 2008

What patterns do you notice?

Compare:

- → Number of species
- → Number of common species
- → Species composition – is it always the same?

Why is the Goby SOOOO successful?

- → <u>High reproductive rate:</u> *Gobies will reproduce 2-4 times each summer.*
- → <u>Very territorial:</u> *Gobies defend nesting grounds aggressively.*
- → <u>Very competitive:</u> *Gobies eat eggs of other fish, & compete with other fish for food*
- → <u>Unlimited food source:</u> *Adult gobies eat quagga mussels, which are very abundant*
- → <u>Ability to tolerate a wide-range of conditions:</u> *Yep. And tolerant of high population densities*
- → <u>Limited predation:</u> *When gobies were first introduced they were not eaten. Today, most predators feed on them regularly if not primarily.*

ANALYZE RESULTS (LAST 3 min)

Is the fish community healthy? Did we find a diversity of species?

Look for:

- ☐ Several species (3 or more)
- ☐ Two or more common species
- ☐ No invasive species

Goby Good?	→ Eats quagga mussels → High quality food for most predators
Goby Bad?	→ Eats eggs of predator fish → Outcompetes native fish → Low forage fish diversity now

Why care about a healthy fish community?	**Food** for people	**Fun** to go fishing and snorkel	**Financial** >$4billon comes from fishing	**Function** Important in the food web

CLEAN UP

- ☐ Verify identifications and count all fish.
- ☐ Return fish to the lake when back in shallow water
- ☐ Place everything neatly back into the Fish bin. Do <u>not</u> stack small aquariums when wet.
- ☐ Give your completed datasheet to the Lead instructor.

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[v. 30/2019 jev]

Next-Gen and Traditional Schoolship
Inland Seas Education Association