



Seine Surveys, by Liz Duff

What species can you find by using a seine net? Learn to identify plants and animals according to physical characteristics as you sample the near-shore environment. This must be done in warm months!

1-2 hours

Tide: Any

Objectives:

Concepts: Coastal species have physical and behavioral adaptations that allow them to meet their needs in a coastal ecosystem.

Skills: Science: Classify plants and animals according to the physical characteristics that they share.

Optional: Math: *Measurement*

Identify and use appropriate metric and English units and tools (e.g. Ruler, angle ruler, graduated cylinder, thermometer) to estimate, measure, and solve problems involving length, area, volume, weight, time, angle size, and temperature).

Attitudes: Respect for all living things, curiosity

Engaging Experience: Students will use a seine net to sample coastal species.

Materials: 2 Seine nets, rubber boots or wading shoes, plastic bins for sorting, tubs and containers for sorting, Beachcombers guides and other field guides for identifying, first aid kits, plastic buckets for carrying stuff, small dip nets, data sheets, clip boards, Peterson guide to fish, Small aquariums, graduated cylinders for measuring volume.

Optional: Hand lenses

Facilitation Guidelines (Procedure)

1. Discuss adaptations that organisms need to live in the ocean. Compare to an estuary ecosystem: Do they expect more or less biodiversity and abundance here?
2. Do a scientific comparison: Sort, identify, count and measure volume of organisms caught in the seine net. Have 3 groups do 1-2 samples. Compare and average their results. Back in the classroom compare these with estuary results found at www.massaudubon.org/saltmarsh.

Concerns: You may get nothing in your seine net. Be prepared for this, with back-up activities. (Rocky shore scavenger hunt, duplication, etc.)

Student Assessment:

Example: Participants share their findings with the rest of the group in an oral presentation.

Refinements/Extensions: (Optional Activities)

- Students conduct investigations during different seasons.
- Students research additional questions using interview, reading books and searching the internet.

Assessment of Activity:

Example: Observation of participants during the activity, journal entries, survey

Pre or Post Activity Suggestions: Compare results with another location such as Forest River in Salem. Go to <http://www.massaudubon.org/saltmarsh/fish.php> for graphs and data.

Safety Checklist: (Add to if needed)

Before your trip:

- ___ Make sure you have permission to use the site.
- ___ Bring a charged cell phone and check to see who else has cell phones.
- ___ Ask if anyone has allergies. Let people know if you have one. Carry your epipen if you have allergies. Let another adult know to call 911 if you get stung.
- ___ Familiarize self with first aid kit. Replenish if need be.

At beginning of trip:

- ___ Give spotters first aid kits.
- ___ Engage chaperones (spotters) to help watch students.

Review Rules/concerns with group.

- ___ Model with students respectful observation of organisms.
- ___ Model minimizing impact to the site.
- ___ Remind group leaders and students: **STUDENTS and Teachers are NOT ALLOWED TO GO BAREFOOT AT ANY TIME!!**
- ___ Set clear boundaries when exploring.
- ___ Explain safety concerns (Wet rocks are slippery, one can get stuck in mud, Point out poison ivy etc.)
- ___ Remind participants about poison ivy, ticks, sunscreen, and water rules (No wading above knees, no getting others wet). Review your signal for gathering the group.

PROCEDURE:

Note: You may want to review rules and procedures prior to arriving at the site, to maintain the groups focus.

1. Explain that you will be setting boundaries at the site within which they can explore. Let them know what the signal is for calling them in.
2. Explain how to collect and go over the collecting rules and let students know they will not be able to collect unless they can comply.

COLLECTING RULES

1. Don't collect a creature if you have to hurt it to capture it.
2. Be careful with collecting equipment - it's not for picking up rocks! Students are responsible for safely returning equipment.
3. You can not swim, just wade.
4. You may get wet if you like, but you won't be able to change so you don't complain about wet clothes and sneakers.
5. You can not get other people wet.
6. Don't go in water above your waist.
7. If you walk in the water too much, you will muddy it up so much that you won't be able to see anything, and you will be messing up the animal's habitat.

3. Review the Procedure:

They will be working as a team. After seining, each group will sort out organisms by species. Work to identify the ones you know. Draw and/or photograph the ones you don't know. Record on data sheets the number of each organism, and measure the volume, and calculate the average volume. See map to indicate which site you are.

4. SET BOUNDARIES! There will be three groups seining on the beach. Make sure you are not on top of each other. If we notice that we catch more organisms in one area of the beach over the other, we may want to rotate the groups to different locations. Remember, that groups distract each other. Keeping them separate will help keep students focused. Let students know the time frame they have to work.

5. Fill the bins with water and set it in a central location for your groups. Tell students they will be putting their organisms in the bin. Model seining (demo on the beach) with your group and enroll volunteers. Collect one seine-full of organisms. As a group make sure all organisms are safely removed from the seine net, and placed in the bin. Make sure spotters are keeping an eye on students, so you can be involved in collecting. We suggest you give one warning (for going out of boundaries, splashing etc.), then students can sit out for 5 minutes if they break a rule again.

10. As a group fill out the site habitat description sheet. Discuss what is challenging about the habitat that you are visiting, (water temperature, wind, waves, what's the bottom like?). What makes this a good place to live if you are a sea creature? Compare it to an estuary. Example: Look at graphs of species from Forest River, Salem, found at <http://www.massaudubon.org/saltmarsh/fish.php>.

11. GENTLY return creatures to their homes.

OPTIONAL Sandy beach or TIDEPOOL/ROCKY SHORE ACTIVITY: How many different kinds of seaweed can we find?

Duplication: In advance, collect 5-10 items from the beach. Place them between two handkerchiefs. Gather your group and explain that you have these items that they will seek to find duplicates of on the beach. You will lift off the top handkerchief and let them look and memorize for 10 seconds, and then go look.

Suggested items: Rock, Shell, Sea Weeds (different kinds) Eel Grass, feather, litter

After a while call the group back and discuss what they found. What was easy to find? What was hard? Did they find everything? Can you tell them any natural history about the items?

HABITAT DESCRIPTION

SITE _____

NAME OF HABITAT _____ GROUP LEADERS NAME _____

1. What words would you use to describe this habitat?
2. What is the bottom like?
3. Is this habitat calm and flat, or does it have waves?
4. What would this place be like in a big storm?
5. If you lived in this habitat, which things would you like to be able to do: dig in sand, hide in cracks, swim well or hold on tightly to rocks?
6. How does this habitat change during each day?
7. What plants are growing in the water?
8. Optional: What is the temperature of the water?

9. List all the creatures you found at this habitat:

Seine Tow #1

Name of organism	Number collected	Total Volume	Average Volume

10. List any other animals, (birds, mammals) you saw while you were collecting here.

Seining Field Trip

Organisms name _____

ORGANISM'S ADAPTATIONS

1. How does the organism look? (Sketch it here) Describe the size, color, shape.
2. How does the organism eat and breathe?
3. How does the organism move?
4. How does this organism protect itself?
5. How does the organism protect itself?

Sample Map

