

## ProjectASCO (Assessing Seaweed via Community Observations)

We greatly appreciate your time, interest and assistance in conducting this research—thank you!

### A little orientation...

**In brief:** At low tide you will place five quadrats (squares) in the rockweed zone within the intertidal zone. You will then collect and report *Ascophyllum nodosum* (rockweed) biomass (weight) data and other observations from each of the quadrats.

**A word about *Ascophyllum* and *Fucus*:** Both of these macroalgae (algae visible to the naked eye) are very common in the rocky intertidal zone of Maine. Both are attached to hard surfaces by means of a holdfast, have one or many fronds, and are buoyed by single (*rockweed*) or paired (*Fucus*) air bladders (also known as vesicles).

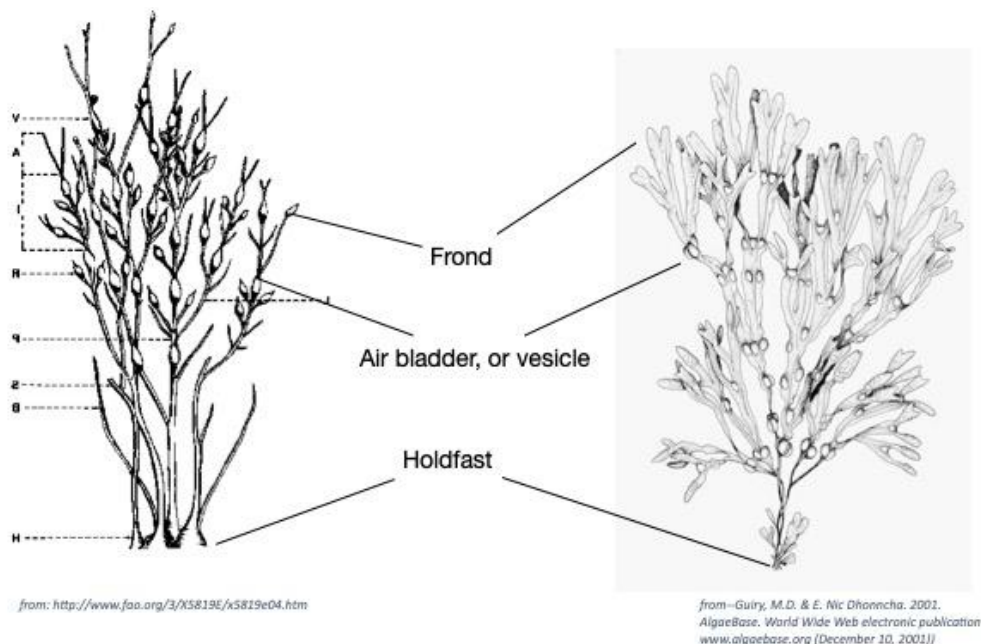


Figure 1: *Ascophyllum nodosum* (rockweed) and *Fucus vesiculosus* (bladderwrack)

### Before going into the field...

· Timing is everything. TIDES: This protocol can only be completed around the time of low tide. The work outlined in this protocol should be initiated 1.5 hours before a low tide to 1 hour after a low tide. The protocol should not be initiated after that (for example: if low tide is at 11:30 AM then initiate between 10:00 AM and 12:30 PM, do not initiate after 12:30 PM). Tide charts may be found for your region at

<https://www.ussharbons.com/harbor/Maine/>.

- Timing is everything. SEASONS: This citizen science field protocol is to be used between June and October. This period represents the time after rockweed has completed its annual reproductive release, but has not started to grow new reproductive structures for the next year.
- Make certain you are prepared for the weather conditions, and that it is safe. Check the weather forecast for the time you will be in the field and wear appropriately safe, sturdy shoes and clothing.
- Make sure you can access the site safely, including parking, and making sure you have landowner permission to go into the intertidal zone.
- **Bring your field supplies and equipment—**
  - o Tide chart
  - o 2 tape measures (at least 30 m, or 100 feet, length)
  - o Small tape measure (a sewing tape works perfectly, for measuring height of rockweed)—collect measurements on four in each quadrat
  - o One to five 50x50 cm quadrats
  - o Weighing bag
  - o Spring Scale
  - o Smartphone or tablet with Anecdata app loaded or clipboard with data sheets and pencil
  - o Field guide of intertidal organisms
  - o Bucket or bag for carrying field gear
  - o Additional comfort gear: knee pads or a garden kneeling pad, close-fitting gloves (such as like close fitting gardening gloves or Gorilla(brand) gloves)

### **In the field:**

**Safety first!** The intertidal zone is a slippery place. Your safety is our #1 concern. Please wear sturdy, closed-toed shoes, dress appropriately for the weather, and walk slowly on slick, uneven terrain. We highly recommend this work be conducted in pairs, or more, for safety. It's a good idea to work facing the ocean, keep one hand free while walking in the intertidal zone, and be careful with where you are putting your feet. If you are working by yourself let someone know where you'll be working, and when you leave the site.

1. Start recording your data in Anecdata.org or on your paper datasheet: Before setting up your site there is information to add about this data collecting effort. Open the Project ASCO ( Assessing Seaweed via Community Science) project using the Anecdata.org app, fill out the information about the field visit. If you are using a paper data sheet fill out the information about the field visit.

2. Find the first seaweed bed width. Bed width is “How wide (in meters) is it from the shore-side of the Ascophyllum and the ocean-side of the Ascophyllum?”. Using a 30-meter tape place one end of the tape at the shore-side (or uppermost) limit of Ascophyllum, and walk, walking out the tape, to the ocean-side (or lowermost) limit of Ascophyllum—record the length (to the nearest cm, in meters and cm).

Helpful hint—How do I tell where the topmost and lowermost margins of a rockweed bed are? There may be a clear margin between the different types of algae, but it is more likely that this will not be the case. Instead it's likely that Ascophyllum will be mixed in with other algae. The goal is to start your measurement where the algae is mostly Ascophyllum, and to stop when the Ascophyllum have largely given way to a different algae.

Originating from the middle of the first transect laid place a 30m transect parallel to the waterline.. This becomes a fixture as the bed width is taken two more times. Reference figure 2 below. 30m transect in place, move the bed depth (perpendicular to water) to the 15 meter mark to re-measure the bed width. Repeat at the 30 meter mark and wind up the bed width transect leaving the middle marking tape in place. After all 3 bed widths are taken the middle transect stays put and the other transect can be put away.

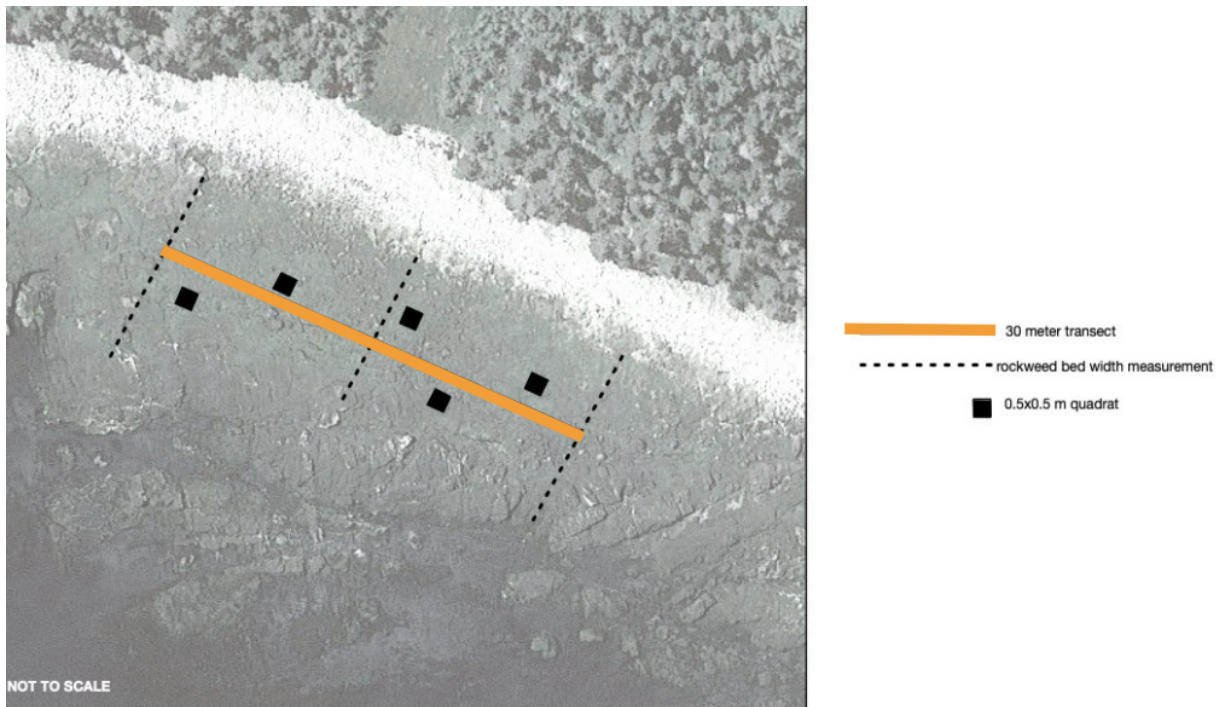


Figure 2: Rockweed biomass site setup

3. Quadrat set-up: Walk along the middle transect and haphazardly toss your five quadrats to either side of the transect line (do not toss them too far...the goal is to get data from the middle of the rockweed bed, and if the quadrats are thrown too far, they might end up in the upper (shore-side) or lower (ocean-side) portion of the bed). If you only have one quadrat then toss haphazardly close to one end of the transect, follow the procedure below and then toss four more times along the transect for a total of five quadrats. It is alright if your quadrat lands on an area that is not totally covered with rockweed. Bare patches, and patches not completely covered with rockweed, are considered a natural property of the rockweed bed and all zero values (quadrats without rockweed) should be recorded and counted. Record the quadrat number (1 through 5, the first quadrat you collect data from is #1, etc.).

**1. Observe and record “What, besides rockweed is in the quadrat?”:**

At each quadrat, **before moving** any macroalgae, observe and record—

- a. EPIPHYTES—epiphytes are algae that grow on Ascophyllum. See the field guide for visual identification.
- b. OTHER ALGAL SPECIES—other algae exist in the same intertidal zone as the Ascophyllum. A common one is Fucus; note whether it is present or absent from the quadrat.
- c. INTERTIDAL ANIMALS—**while working in each quadrat** observe and record, only for animals you see IN the quadrat—Are there:  
(Record all observed animals last as you will expose some while working)
  - snails
  - crabs
  - limpets
  - mussels
  - oysters
  - sea stars

4. Collect the rockweed that has holdfasts inside the quadrat only. Move the rockweed to distinguish rockweed originating—has its holdfast—within the quadrat from rockweed originating outside the quadrat. We are only interested in rockweed with holdfasts inside the quadrat. This will require you to hold the quadrat in place while manually moving rockweed.

5. Count and record the number of individual rockweed in your quadrat. An individual is all the growth coming from one holdfast, and holdfasts are

considered individual if you can fit your finger, sideways between two holdfasts

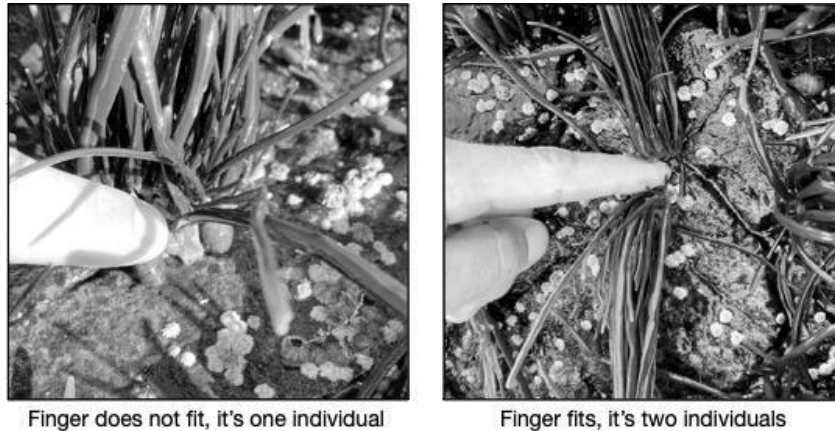


Figure 5: Try to slide your finger between growth from holdfast to determine whether it is one or more individuals.

Note: if the individuals are on loose cobbles make sure to keep them inside the quadrat. And keep those that are out...out.)

6. Measure length: In each corner of the quadrat separate the individual Ascophyllum closest to each corner from the other growth. Use the small measuring tape to measure—from the holdfast or substrate, to the top of the longest frond on each of the individuals, one at a time. Record the length of the longest frond (note: as you are finding the longest frond much of the growth of the rockweed will fall away). You will only record length for four individuals per quadrat.

7. Weigh—lay the mesh bag flat along one edge of the quadrat, placing end with cinching line along the quadrat. Lay all the Ascophyllum growth on the mesh bag. Close sides of mesh bag over the Ascophyllum and close, tightly, with the eye hooks. Clip the cinching end and tighten. Turn on spring scale, allow to come to zero (make sure it's on kg) and hook through the mesh bag. Hold mesh bag above the substrate, BUT do not pull up so much that the spring scale is recording the pull against the holdfasts—this may take some practice.

Note: If all growth cannot fit easily into one bag, then split the growth into two bagfuls, making sure to not weigh the biomass from any individual more than once, weigh and record two bagfuls (repeat process above for both parts of the quadrat)

Unhook and uncinch the bag and return the rockweed to the quadrat.

8. Once finished with Ascophyllum lengths and biomass remove the quadrat and 'smooth' the Ascophyllum to re-cover the substrate.

9. Repeat Steps 4-9 for subsequent quadrats.

10. Once 5 quadrats are completed roll up the transect tapes, gather all gear, and do a double check to ensure nothing gets left behind.

11. Anecdata users - upload completed data when you have service or wifi  
Paper datasheet users- fill in the information to an Anecdata form at your earliest convenience.

\*Your bag has been weighed and correction for the bag weight will be calculated when calculating biomass.