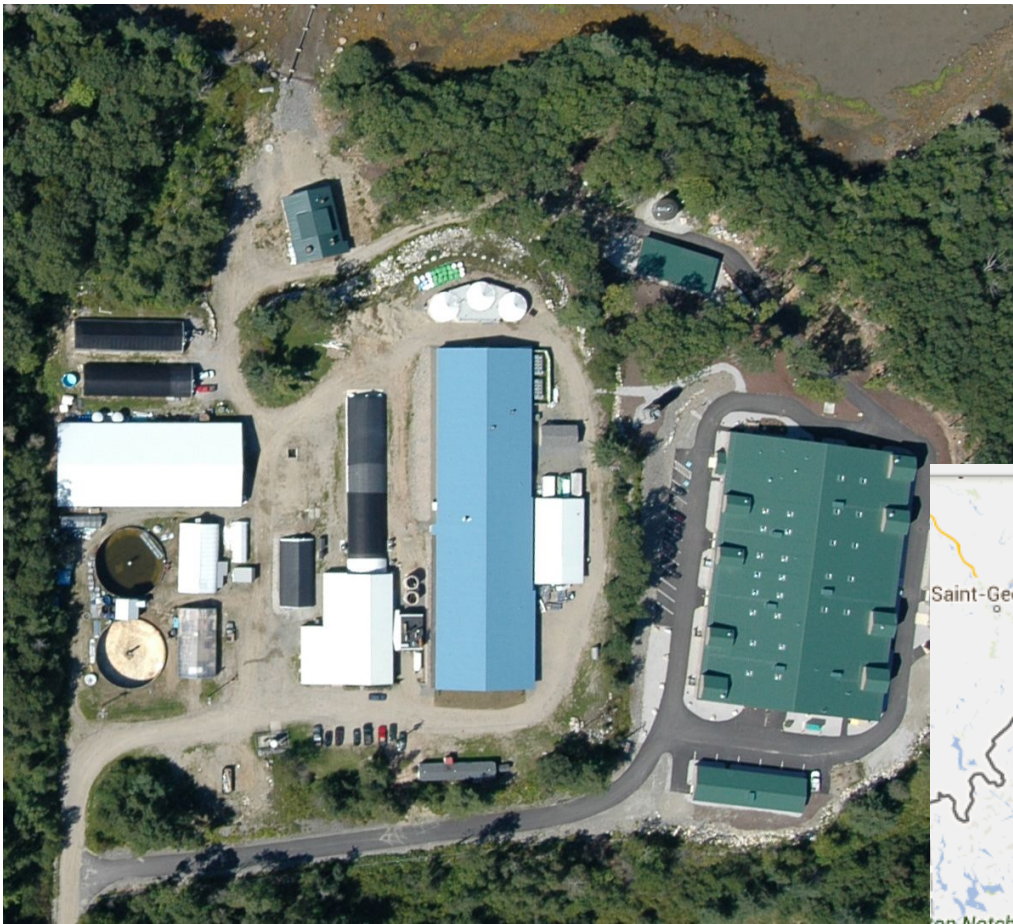


Research Support for Development of Maine's Sea Vegetable Industry

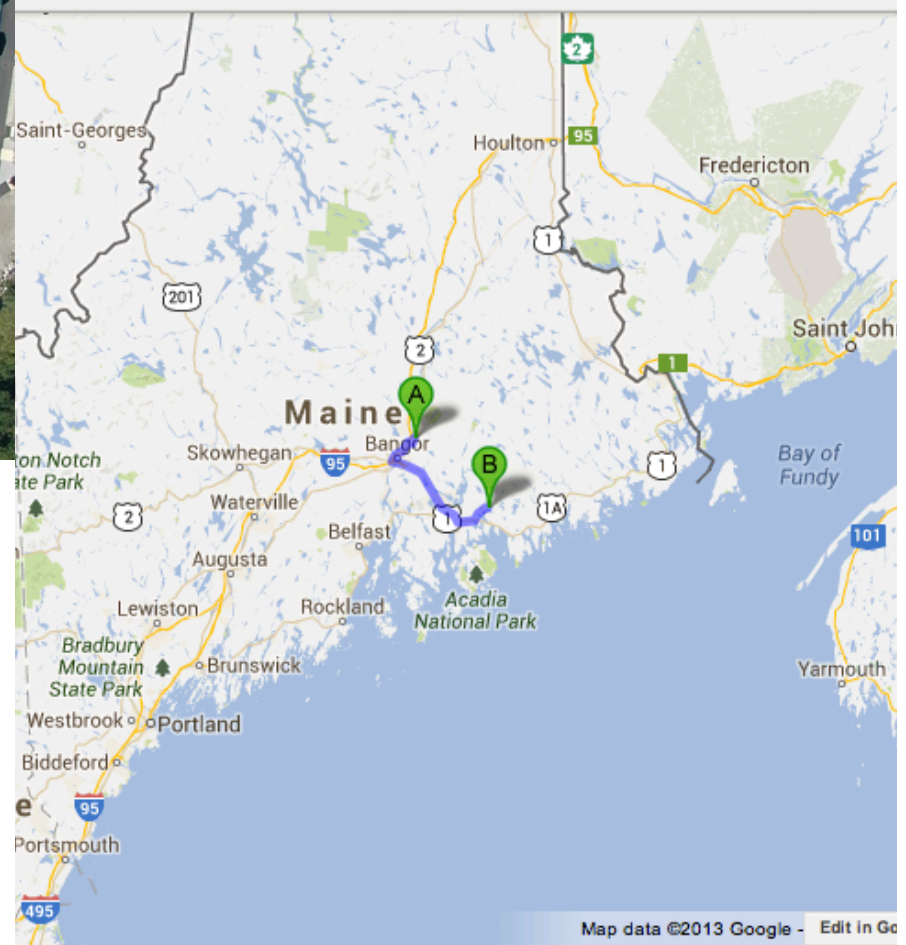
**Susan H. Brawley (UMaine), Sarah Redmond
(Maine Sea Grant), Charlotte C. Quigley (UMaine),
Geneva York (UMaine) & Nick Brown (UMaine)**

Goals/Work underway:

1. Develop CCAR nursery infrastructure and capacity to support sea vegetable farmers.
2. Develop a kelp (*Alaria esculenta*), a laver (*Porphyra umbilicalis*), and dulse (*Palmaria palmata*) for Maine sea vegetable farming.
3. Test spore-seeded lines and nets for grow-out (fall 2014- winter 2015) with collaborating farmers.



The University of Maine's Center for Cooperative Aquaculture Research



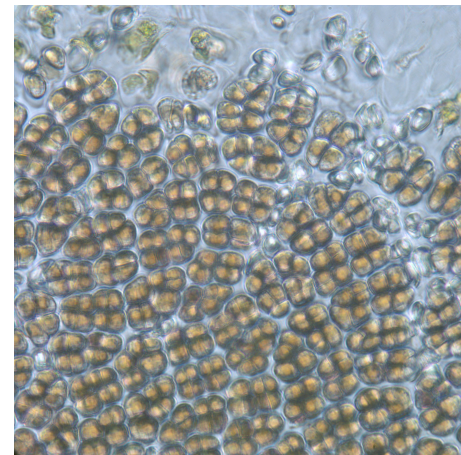


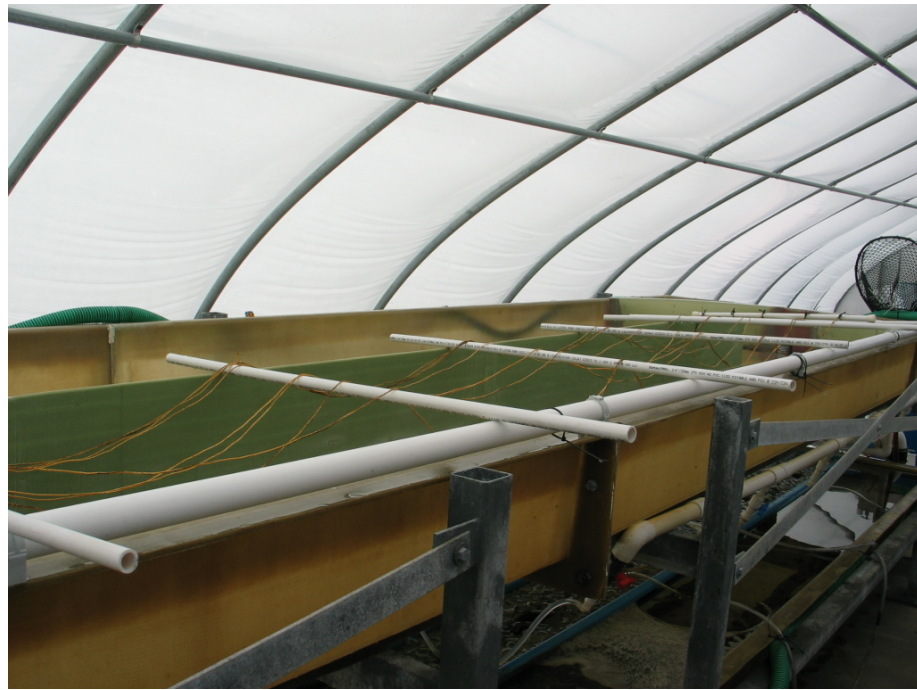
**Goal 1: Characterize Reproductive Phenology for Target Species
across the Maine coast
(Lubec, Schoodic, and Pemaquid, plus other areas of Maine coast via
GMRI's Vital Signs' Program for citizen scientists)**

Why?

----Informs us of when seeded lines/nets should be put out (and when NOT)

**----Accelerates CCAR nursery research on nursery stock holding conditions
and transition protocols**



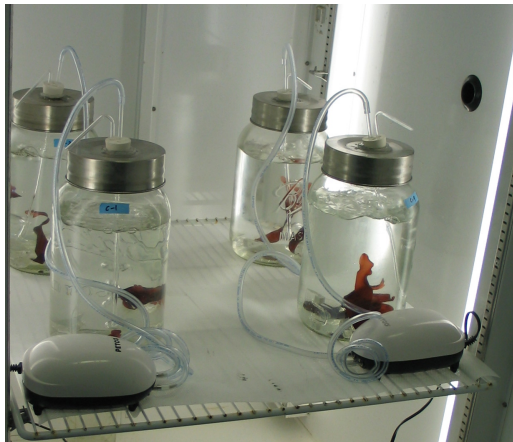


CCAR algal raceway with seeded lines for laver seedstock drying.



Brown designed seeding wheel.

Goal 2: Isolate region-specific strains of target species, and characterize strains resistant to warming climates; develop robust conditions for holding seed material throughout the year.



Test photoperiod, irradiance, temperature, and nutrient levels (nitrogen). Design efficient spore application procedures.





Isolations of zoospores from sporophylls of the kelp *Alaria esculenta* to select for seedstock and characterize temperature tolerance of gametophytes.

Growing laver isolates under different sets of experimental conditions to assess effect on quantity of neutral spore production.



**Field Trials of Seeded Lines/
Nets at Sorrento in winter
2014.**

**2014/2015, grow-out trials
planned for Sorrento farm (S.
Erhart et al.) and in
Damariscotta (S. Barker et al.,
Maine Fresh Sea Farms)**



Current Foci:

Eliminating ciliates at semi-dirty stages of nursery work.

Developing best practices for application of organic fertilizer to seedstock.



Acknowledgements:

MTI, MAIC, Maine Sea Grant, USDA.

Our CCAR colleagues (Steve Eddy, Luz Hurtado, Christian Cox) and macrophyte aquaculturists near and far.

a) Typical life history of *Porphyra* (+ *Pyropia*, *Boreophyllum*, *Wildemania*, *Miuraea*, *Fuscifolium*, *Clymene*, *Lysithea*)



Nicholas Blouin

b) Life history of *Porphyra umbilicalis* in northwestern Atlantic (Blouin et al. 2011, TPS).

