

Cryptic seaweed: Distribution, photobiology and lifecycle of *Pyropia nereocystis*

Pyropia nereocystis is a red alga (seaweed) found along the coast of Central California. It grows primarily on another type of algae called bull kelp (*Nereocystis luetkeana*) between the pneumatocyst (closer to the surface of the ocean) and six meters depth. Larger *P. nereocystis* are found higher up on bull kelp and their size decreases as depth increases. This project aims to determine the factors that control this vertical zonation, such as settlement processes associated with host-epiphyte interactions or abiotic photo-biological limitations.

Six different field sites will be sampled once every two months. During site visits, field surveys (algal community and environmental measurements) will be conducted and algae and invertebrate samples will be collected. Additionally, settlement plates will be deployed and monitored.

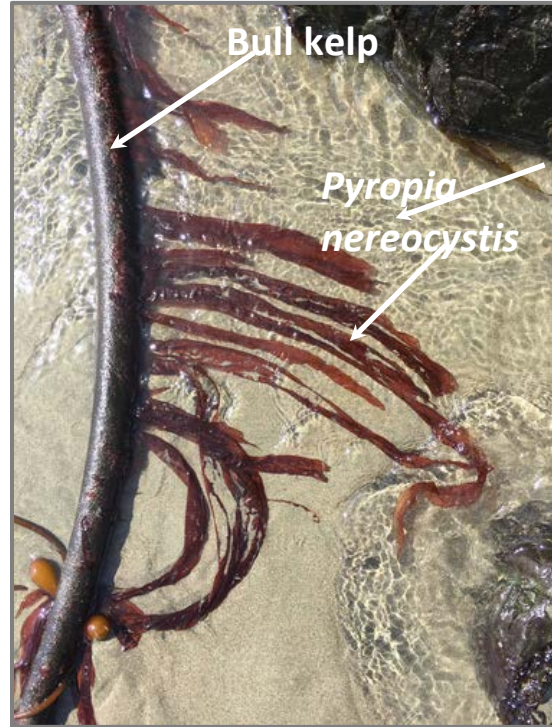


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Pyropia nereocystis will be cultured in the lab for experiments and measurements of oxygen evolution and photochemical efficiency. Settlement patterns will be tested using different types of algae and varying conditions. These tests will likely involve multiple syncopated incubations, each lasting three months, to trigger spore release, followed by transplantation of the spores to randomized treatments. To study photobiology, *P. nereocystis* oxygen evolution will be measured at different irradiances. The results will be compared with data from the field along with field and lab-based growth data.

As an undergraduate student assistant for this project, you will get to assist with:

- Field work
 - Algal and invertebrate collections from the field
 - Deployment and monitoring of transplants/settlement plates
 - In situ irradiance measurements
- Full-day Cruises at Point Lobos, including hauling gear
- Laboratory work
 - Algal culturing

- Mixing/replacing culturing media
- Maintaining distinct cultures
- Measuring growth rates
- Measuring oxygen evolution
- Identification of features via microscope
- Controlled settlement experiments and data analysis
- Examination and photography of algae with and without a microscope
- Morphometric analysis of bull kelp

Things you will learn/be exposed to:

- The scientific method
- Basic algal ecology
- Natural history of subtidal organisms
- Experimental design principles
- Statistical analysis methods
- Algal species identification and culturing methods
- Regular and Fluorescence Microscopy

You will need to be willing and able to:

- Be on a boat
- Get dirty and occasionally slimy
- Carry up to 30 lbs
- Work up to eight hours in a single day (infrequently, not required on a regular basis)
- Start early in the day at 7 am (infrequently, not required on a regular basis)
- Look through a microscope for up to one (1) hour at a time
- Reliably get yourself to Moss Landing Marine Laboratories
- **Be available on Mondays**

Looking for someone who is:

- Enthusiastic about ecology and/or algae
- Patient
- Observant
- Intuitive
- Willing to learn