

# Seaweed Communities in Oregon Marine Research Reserves

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## Background

- Seaweeds form the base of many marine food webs, provide valuable habitat, and are the most productive marine macrophytes in our oceans.
- In Oregon there are more than 50 common low intertidal and subtidal seaweed species that are used as habitat or food.
- Relatively little is known about the abundance and distribution of subtidal seaweeds in Oregon and what effect, if any, marine reserves have on most of these species.
- Trophic biomarkers such as essential fatty acids (FA) can be used to describe food web relationships between seaweeds and consumers.

## Goals

- I will characterize the seaweed cover inside the Redfish Rocks Marine Reserve and in a nearby comparison area using diver visual surveys.
- I will determine the fatty acid (FA) composition of common seaweeds in and around the marine reserve for use in food web analyses.

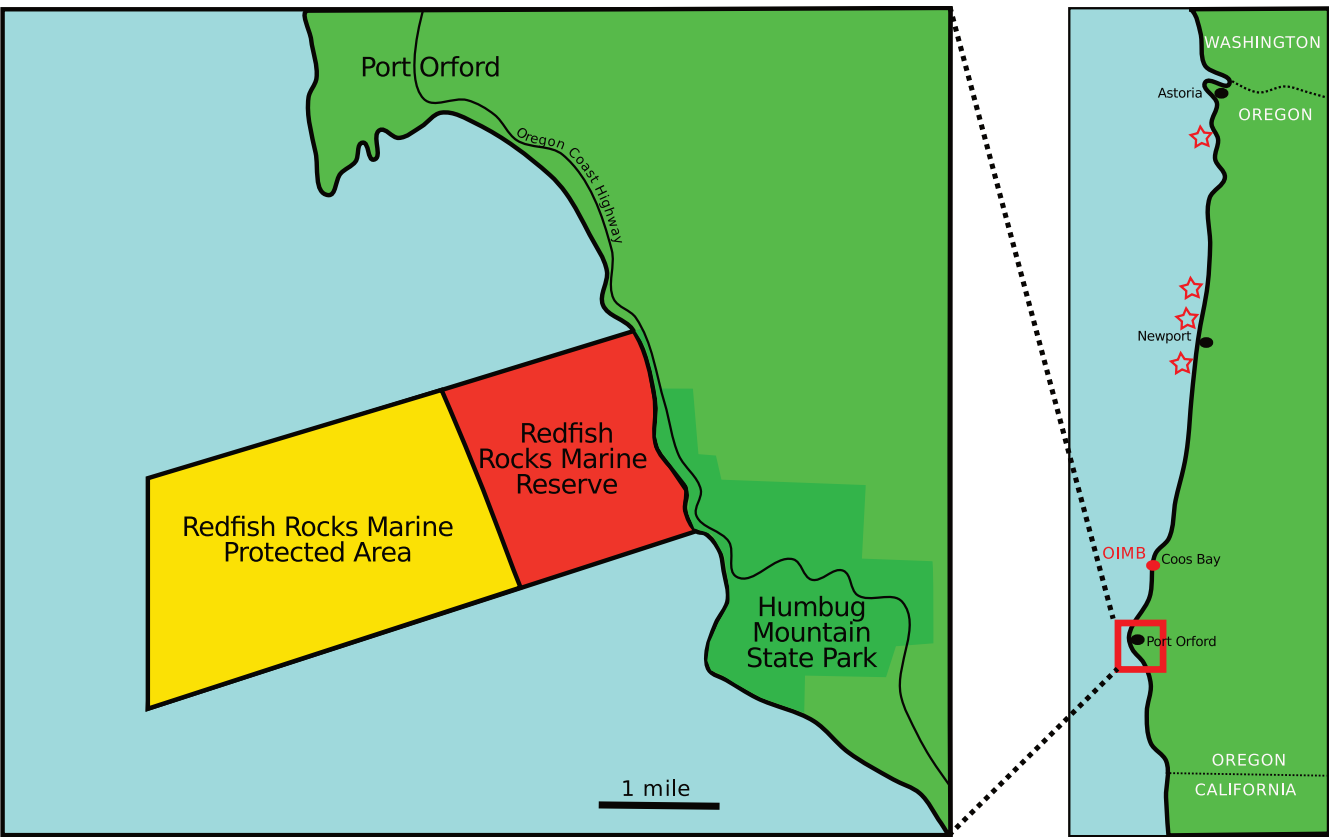
## Methods

- Establish four 30-meter long transects at 5- and 15-meter depths inside and outside Redfish Rocks Research Reserve.
- Conduct diver visual surveys targeting all seaweed within the swath and take photos.
- Sample representative replicates of each species for identification and FA analysis.

## Expected Results

- Seaweed distribution and diversity will differ between reserve and non-reserve sites and depths.
- FA composition will differ among seaweed species, but not between sites.

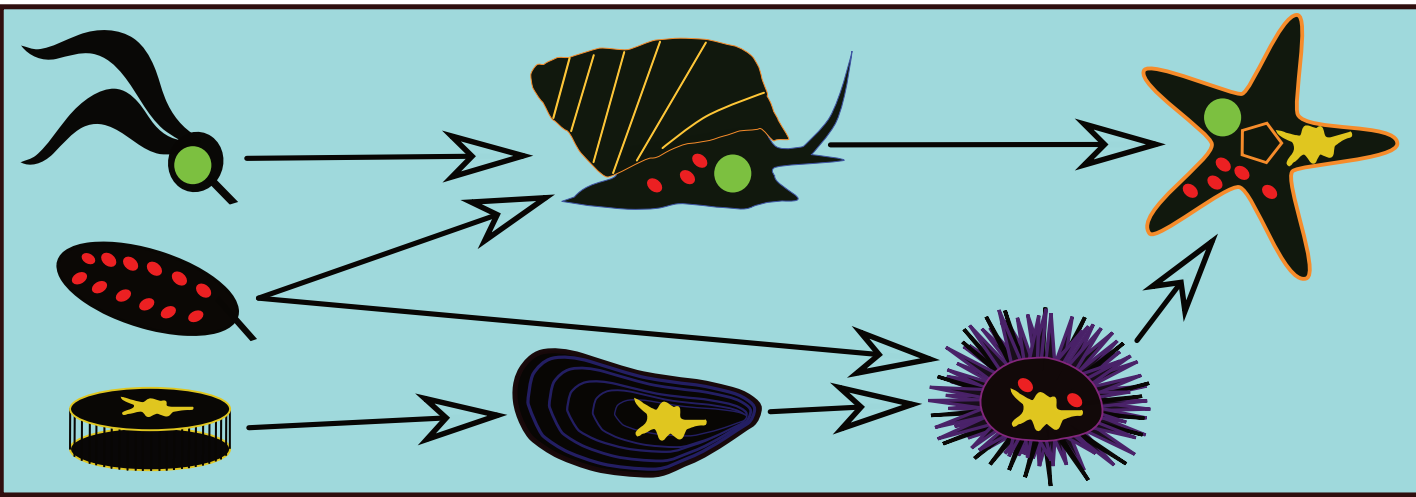
What is the diversity and distribution of seaweeds inside and outside of Oregon Research Reserves, and how do they contribute to coastal food webs?



Map of the Redfish Rocks Marine Reserve and Marine Protected Area. Other Oregon Marine Reserves are marked with stars.<sup>1</sup>

Species Name	Zone	Species Name	Zone
<i>Ahnfeltia fastigata</i>	Low	<i>Acrosiphonia coalita</i>	Low
<i>Callithamnion</i> spp	Low	<i>Bryopsis</i> sp.	Low
<i>Chondracanthus canaliculatus</i>	Low	<i>Cladophora columbiana</i>	Low
<i>Chondracanthus exasperatus</i>	Low, Sub	<i>Codium fragile</i>	Low, Sub
<i>Constantinea simplex</i>	Low, Sub	<i>Codium setchellii</i>	Low, Sub
<i>Cryptopleura farlowiana</i>	Low, Sub	<i>Derbesia/Halicystis</i>	Low, Sub
<i>Cryptopleura lobulifera</i>	Low	<i>Ulva fenestrata</i>	Low, Sub
<i>Cryptosiphonia woodii</i>	Low	<i>Ulva taeniata</i>	Low
<i>Delesseria decipiens</i>	Low, Sub	<i>Alaria marginata</i>	Low, Sub
<i>Dilsea californica</i>	Low, Sub	<i>Costaria costata</i>	Low, Sub
<i>Erythrophyllum delesserioides</i>	Low	<i>Cystoseira osmundacea</i>	Low, Sub
<i>Grateloupia americana</i>	Low, Sub	<i>Desmarestia ligulata</i>	Low, Sub
<i>Gymnogongrus griffithsiae</i>	Low	<i>Egregia menziesii</i>	Low, Sub
<i>Mazzaella flaccida</i>	Low	<i>Eisenia arborea</i>	Low, Sub
<i>Mazzaella linearis</i>	Low	<i>Laminaria longipes</i>	Low, Sub
<i>Mazzaella splendens</i>	Low, Sub	<i>Laminaria setchellii</i>	Low, Sub
<i>Microcladia borealis</i>	Low	<i>Laminaria sinclairii</i>	Low
<i>Microcladia coulteri</i>	Low, Sub	<i>Lessoniopsis littoralis</i>	Low
<i>Nienburgia andersoniana</i>	Low, Sub	<i>Macrocystis integrifolia</i>	Low, Sub
<i>Odonthalia</i> spp	Low	<i>Nereocystis leutkeana</i>	Low, Sub
<i>Opuntella californica</i>	Low, Sub	<i>Phaeostrophion irregulare</i>	Low
<i>Osmundea spectabilis</i>	Low	<i>Pleurophycus gardneri</i>	Low, Sub
<i>Plocamium</i> sp.	Low, Sub	<i>Postelsia palmaeformis</i>	Low, Sub
<i>Polysiphonia</i> spp	Low	<i>Pterygophora californica</i>	Low, Sub
<i>Ptilota filicina</i>	Low	<i>Saccharina sessile</i>	Low
<i>Schizymenia pacifica</i>	Low, Sub	<i>Sargassum muticum</i>	Low, Sub
		<i>Scytosiphon lomentaria</i>	Low
		<i>Soranthera ulvoidea</i>	Low

List of low intertidal and subtidal seaweed species found in Oregon. Species are grouped as Rhodophyta (red), Chlorophyta (green), and Phaeophyta (brown). Seaweeds targeted by Oregon Marine Reserve surveys are marked with a red box.<sup>2</sup>



Conceptual diagram of how fatty acids are synthesized and passed through the food web to higher trophic levels.



1: Map modified from <https://oregonmarinereserves.com/content/uploads/2016/02/RedfishRocks.pdf>  
2: Table modified from Krieg, K., Menge, B. & Lubchenco, J. Field Guide to Oregon's Rocky Intertidal. (2019).