

COMMON EDIBLE

SEAWEEDS

IN THE GULF OF ALASKA

DOLLY GARZA

Alaska Sea Grant
Marine Advisory Program

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The Author

Kurt Byers



Author Dolly Garza on a seaweed-photographing expedition near Sitka, Alaska.

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About This Book

While there are many seaweeds in Alaska's waters, it is the intent of this booklet to share with you helpful information about only a handful of common, abundant seaweeds (and one beach plant) that you may enjoy identifying, collecting, and eating. For more in-depth information on seaweed biology, and for longer lists of species, please see the reference section.

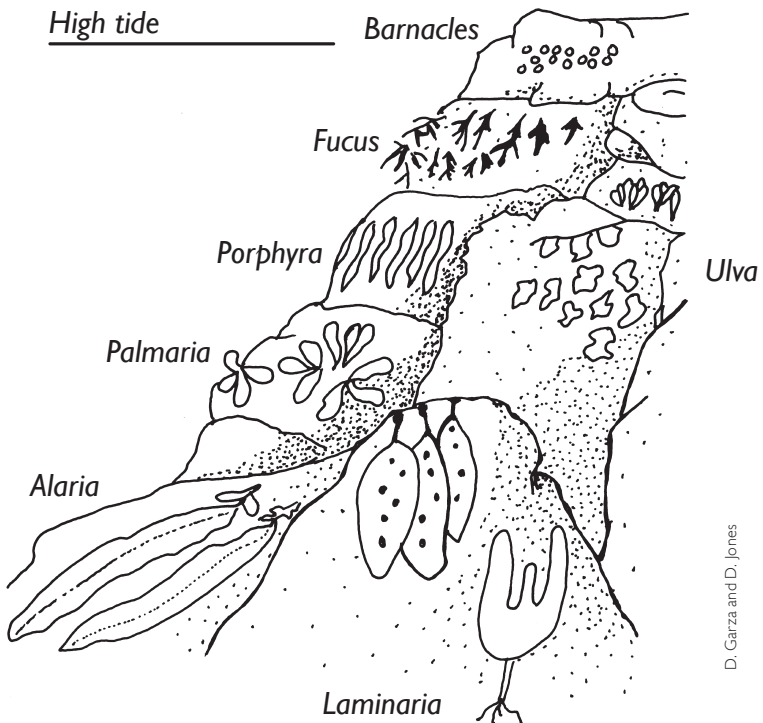
This book would be better titled "Common Edible Seaweeds in the Gulf of Alaska *and One Flowering Plant.*" As a bonus, the easily collected, and nutritious, beach asparagus is included for your eating pleasure.

Introduction to Seaweeds

Seaweeds are macroalgae in all oceans of the world. They are found in the nearshore subtidal and intertidal areas along varied coastlines from tropics to arctic areas. Seaweeds are important to nearshore ecosystems because they provide refuge for many invertebrates and fishes, and contribute important organics to the ecosystem.

Thousands of edible seaweeds of various shapes and sizes occupy a wide array of ecological niches. The distribution of seaweeds worldwide and within regions depends on sea temperature, light availability, suitable attachment surfaces, nutrients, and wave action.

You will often see visible bands or zones of seaweeds from high tide down through subtidal zones. A few seaweeds are found in several zones but are more abundant in one zone.



Seaweeds are not considered true plants. While they photosynthesize like plants, seaweeds lack structures like roots, stems, and leaves that provide nutrients and water in true plants.

A seaweed may have a holdfast that attaches the algae to a substrate like a rock, a pliant stipe that looks like a plant stem, a frond or bladelet (or sporophyll) that looks like a leaf, and possibly bulbs or gas-filled sacs which may help to keep the algae floating in the water column, or on the surface.

While seaweeds have complex reproductive strategies that are not immediately observable, you will notice that some seaweeds are found year-round, while others die back and reappear the next spring or early summer.

The three divisions of macroalgae are the Phaeophyta or brown algae, the Rhodophyta or red algae, and the Chlorophyta or green algae.

Phaeophyta: There are approximately 1,500 marine species of brown seaweeds (kelps) worldwide. Most of the brown seaweeds have complex structure with stipes, blades, and visible holdfasts. Some can renew blade tissue up to five times per year. They are found throughout the tidal zone, from *Fucus* in the upper levels to *Nereocystis* in much lower subtidal areas. The browns may contain alginic acid, iodine, and potassium. *Nereocystis* and *Alaria*, among others, form large beds or canopies.



Alaska Department of Fish & Game

Herring roe on giant kelp is a delicacy for Pacific Northwest Native tribes, including Alaska.

Many brown seaweeds in the Gulf of Alaska that are important to the ecosystem are also good food sources. Common brown seaweeds include *Laminaria*, *Alaria*, *Fucus*, and *Nereocystis*.

Rhodophyta: There are approximately 4,000 species of marine red algae worldwide. They can be found abundantly during a “minus” tide. Red seaweeds can have carrageenan, agar, bromine, and calcium. Two important red macroalgae in the Gulf of Alaska are *Porphyra* (black seaweed) and *Palmaria* (ribbon seaweed).

Chlorophyta: There are fewer than 1,000 marine species of green seaweeds worldwide. The greens are more abundant in warmer waters. One important food species in the Gulf of Alaska is *Ulva* (sea lettuce).

Traditional Uses

Several seaweeds are important to the Haida, Tlingit, Tsimshian, Eyak, and Alutiiq people. *Porphyra* (black seaweed), *Palmaria* (ribbon seaweed), *Nereocystis* (bull kelp), and *Macrocystis* (giant kelp) continue to be used by Northwest tribes. Black seaweed and ribbon seaweed are important food and trade items. In the Bristol Bay region, *Fucus* laden with herring eggs is a treasured spring food. *Macrocystis* covered with herring eggs is a delicacy, and also an important trade item. While herring roe on *Macrocystis* is an important subsistence food, *Macrocystis* is limited in distribution and is not included in this book.

Bull kelp was important in pre-European technology, used by the West Coast Native peoples. Rope was made from the long slender portion of the stipe, which is found near the holdfast. This rope was used only in marine situations such as to anchor something out. In addition the hollow bulb portion was used to store foods in, such as oil from the eulachon, a small herring-like fish.

Nutrition

Seaweeds have various minerals, vitamins, carbohydrates, and sometimes protein. They are very low in fat and are approximately 80-90% water.

There is an abundance of information on the nutrition of seaweeds in books listed in the reference section. While most of the nutrition studies were conducted on non-Alaska samples, the information is still useful. Different seaweed species have different vitamin and mineral content, but most are nutritious.

Collecting Seaweed

Seaweeds usually are picked in the spring and into the summer when abundant light and an influx of nutrients provides for rapid new growth. In spring the early morning light coincides with good low tides, making picking easier. There are exceptions, as some of the larger seaweeds like *Nereocystis* and *Laminaria* can be picked into the fall and even into the winter.



Kurt Byers

For a seaweed collecting trip you will need wading boots, a light raincoat, warm clothes, and survival gear.

Planning

For a collecting expedition you will need wading boots, a light raincoat, warm clothes, and survival gear. The harvesting gear is simple: a small pair of scissors or a small paring knife (for bull kelp a large knife is needed) and several bags in which to place seaweed. The bags may be old pillowcases, mesh bags, or once-used grocery bags. Stay away from garbage bags as some are treated with chemicals and may contaminate your harvest. A backpack is ideal to hold your supplies and harvest, allowing your hands to be free for climbing around the rocks.

Store your emergency gear including signals, drinking water, etc., in your backpack so you will have easy access to them if you become stranded on a rock. You also want to think about what you will put your harvest into when you get back to the skiff or car. A large tote will protect your car from drippings and protect your seaweed from potential contamination from boat gas and oil.

Check out possible beaches before your planned harvest. Check the beach for ease of access by boat or hiking. Assess the quality of the water—are there any outfalls, old industrial sites, logging dumps, etc., in the immediate area that would contaminate the seaweed?

Some seaweeds grow better in areas where there is high wave action; *Macrocystis*, *Porphyra*, and *Nereocystis* are good examples. Other seaweeds such as *Ulva* and *Palmaria* seem to grow more abundantly in sheltered bays and inlets. There are exceptions to this, but it will give you an idea of what to expect from a beach as influenced by its exposure to the open ocean.

It is advisable to get to the beach at least an hour before low tide. This will give you time to settle in and scout the beach for seaweeds and access routes to the water's edge. Remember that the rocks will likely be slippery so it is best to move slowly and deliberately. Be sure your knife or scissors are packed so they won't inadvertently impale you if you take an unexpected fall.

Harvesting

When you head to the shore you may be interested in harvesting only one type of seaweed such as *Palmaria* (ribbon seaweed) or you may want to harvest a variety depending on what you find. If you plan on harvesting more than one seaweed, it is advisable to carry several bags so you can place seaweeds into separate containers.

When you are collecting, do not take all the seaweeds in one area. Selectively cut, or “thin” seaweeds. Rock should not be left bare of seaweeds, or covered with cut stipes, or you will be destroying important habitat. Few seaweeds will regenerate, or grow back, from the stipe. Usually the holdfast is encrusted with small-shelled animals and is often tough and unpalatable. Leave the lower portion of the frond and holdfast to provide continued habitat for small animals.

It is best if you rinse the larger fronds at the ocean. This will help to remove small-shelled animals or any scum that may have settled on the seaweed from falling tides. Some seaweeds, such as *Porphyra* (black seaweed), need not be rinsed at all. More fragile seaweeds like *Ulva* (sea lettuce) may be rinsed at home with salted water.



Kurt Byers

Low tide reveals seaweeds in the rocky intertidal zone, near Valdez.

Processing

Most seaweeds can be dried and used throughout the year. *Fucus* (popweed) is an exception in that it loses much of its taste value once dried. Other seaweeds, like the bladelets of *Nereocystis* (bull kelp) or *Laminaria*, when dried concentrate their sugar and taste rather sweet. They do not taste sweet when fresh, however.

The large brown seaweeds can be harvested in volume and dried for winter use. To dry them, hang the seaweeds from a clothesline. They can be dried outside in the sun and in a nice breeze or inside with a fan if you have a tolerance for the smell of the ocean in your house for the day.

As seaweeds dry you may see a powdery substance appear. The white powder is likely to be a salt or a sugar and is perfectly edible.

Once seaweeds are dried, they can be stored in airtight containers such as jars or sealable plastic bags and then stored in a cool, dark area. Dried seaweed should easily last one year.