

COASTAL PEOPLES AND MARINE PLANTS ON THE NORTHWEST COAST

Nancy J. Turner

School of Environmental Studies
University of Victoria
Victoria, British Columbia V8W 2Y2
nturner@uvic.ca

ABSTRACT: Marine algae and seagrasses have been important resources for Northwest Coast First Peoples for millennia. They provide food, materials and medicines, and feature in peoples' narratives and traditions. Bull kelp (*Nereocystis*) and giant kelp (*Macrocystis*), red laver (*Porphyra* spp.), and eelgrass (*Zostera marina*) are some of the major species people have relied upon. This presentation will introduce people to these and other culturally significant species of marine plants.

KEYWORDS: ethnobotany; Northwest Coast; Aboriginal Peoples; Indigenous Peoples; marine plants; kelp; *Porphyra*; *Nereocystis*; *Macrocystis*; *Zostera*

INTRODUCTION

The First Peoples of the Northwest Coast of North America are characterized by a number of features in common, such as high dependence on salmon and reliance for much of their material economy on western red-cedar. One of the major features, in many cases subsuming and underlying all the others, is their maritime economy and lifestyle. These people spend a large portion of their lives on or near the ocean and, as well as salmon, they subsist in large measure on fish, sea mammals, shellfish and marine plants. The time required to procure and process these foods and to construct the canoes and implements required to obtain them was a major part of peoples' lifeways.

Today, marine resources are still important for Northwest Coast First Peoples and continue to define them as a culture (Suttles 1990). In this paper I focus on the cultural importance of marine plants to coastal First Peoples, including the use of these plants for food, material purposes, medicine and healing and in other cultural traditions.

Northwest Coast peoples comprise several different language families and subdivisions, and their cultures also differ from one people to another. In all, on the British Columbia Coast alone, there are at least 16 languages spoken by NW Coast peoples, in four different language families, one of which – Haida – is a linguistic isolate, with no known linguistic relatives anywhere in the world. Thus, the names and uses of these plants vary considerably from one people to another, and this paper represents only a general overview to demonstrate the broad spectrum of uses and relationships people have had, and continue to have, with plants in the marine environment.

It is interesting to note that, although there are many names for various marine plants there is, in many of the languages, no all-inclusive term for "seaweeds" or marine plants. Rather, such a category is inferred by context of conversation and inclusion of various species together in discussions and discourse. In Haida (Skidegate dialect), for example, there are names for bull kelp (*Nereocystis luetkeana* – *lhqyaama*), giant kelp (*Macrocystis integrifolia* – *ngaal*), rockweed (*Fucus* spp. – *t'al*), red laver (*Porphyra*

abbottae – *sGyuu*), sea lettuce (*Ulva lactuca* – *Gandll sGiinawaay*), and many other species, but no collective word for these algae (Turner 1995a).

IMPORTANT MARINE PLANTS FOR COASTAL FIRST PEOPLES

Edible Seaweeds and Marine Plants

In many parts of the world, such as Japan and Polynesia, marine algae are a predominant source of food (Abbott 1992; Abbott and Williamson 1974; Madlener 1977). In fact, there are hardly any macroscopic marine algae anywhere that could be considered poisonous, although some are difficult to digest (Turner and Szczawinski 1991). On the Northwest Coast, one major species was gathered and eaten in quantity: red laver (*Porphyra abbotiae*) (named after the famous algologist and ethnobotanist Dr. Isabella Abbott). Other species of *Porphyra* were also harvested to some extent (Turner 1995). This plant, simply called “edible seaweed”, is still harvested and eaten as a significant part of the diet by the Heiltsuk, Tsimshian and Haida people as well as the Tlingit of Alaska (Jacobs and Jacobs 1987; Turner 1995a; Compton 1993). In the past, it was also used as a famine food in times of shortage (Turner and Davis 1993).

At Hartley Bay, a Coast Tsimshian community, people go to the “seaweed camp” for the entire month of May to gather and dry their seaweed and harvest other marine resources like crabs and halibut. The seaweed is harvested when young and, ideally, dried on the sun-baked rocks along the shoreline. Formerly, this was women’s work, but today, everyone takes part in the seaweed harvest. The seaweed can be dried in large pieces, pressed into cakes, or pounded and stored in small flakes. A gift of dried seaweed is highly appreciated, especially by those who do not have direct access to this food.

If the weather is rainy, drying the seaweed is difficult; there are many cultural sanctions and taboos associated with the weather. For example, for the Haida, there are certain flowers, the “rain flowers” which children are cautioned not to pick because to do so would bring rain and people would not be able to dry their seaweed. Red columbine (*Aquilegia formosa*) and blue harebell (*Campanula rotundifolia*) are two of these flowers, known as “red rain flowers” and “blue rain flowers” respectively (Turner 1995a). Nowadays, if the weather is rainy, people can freeze their seaweed, then take it out and dry it later when the weather improves.

Once dried, the seaweed is stored away to be eaten as snacks or cooked in soups and stews. A favourite dish is salmon egg and seaweed soup, often served at feasts and potlatches. Another is pieces of dried seaweed dipped in oulachon grease, fat rendered from a small, oily fish and used as a condiment. A more modern dish many people enjoy is seaweed cooked with creamed corn. The laver seaweed, a relative of Japanese *nori*, is highly nutritious, being especially rich in all the necessary essential vitamins and minerals (Kuhnlein 1980; Medical Services Branch 1985; Kuhnlein and Turner 1991). Dried seaweed is an important trade item, and peoples of the interior – the Dakelh or Carrier, and Gitksan for example – use it to treat goiter, a disease of iodine deficiency (Turner 1973; Turner 1995; Turner and Loewen 1998). Some people also cooked fresh bull kelp fronds and other kinds of kelp in their stews and soups, as is also done in Japanese cuisine.

The Straits Salish and Ditidaht peoples of southern Vancouver Island apparently did not use the edible seaweed traditionally, but in the early part of the 20th Century, these people used to collect and dry the seaweed and sell it by the gunnysackful to the Chinese and

other Asian people in the Victoria area (Williams 1979; Elsie Claxton, pers. comm. 1997; Turner et al. 1983). They called it "Sluckus" or *lheq'es*, a term derived from its Kwak'wala name, *lhaq'astan* or its variants.

Giant kelp (*Macrocystis integrifolia*) was another seaweed prominent in coastal peoples' diets, but in this case, the large, bumpy fronds served as a surface for depositing of herring eggs. Early in the year all along the coast, starting in the south, herring by the millions congregate in quiet bays and inlets to spawn. People are very careful of the herring populations and treat them with great respect, never yelling or banging when the herring are in the water nearby. Giant kelp and other types of kelp such as *Laminaria* and *Egregia*, eelgrass (*Zostera marina*) and seagrasses (*Phyllospadix* spp.), and bundles of western hemlock boughs (*Tsuga heterophylla*) or other conifer boughs anchored out in the water, are used to gather this precious food. Then the fronds or branches are hung up and dried and the eggs used all winter. The eggs on the seaweed are eaten together with the seaweed itself. For seagrasses, at least formerly, they were pulled off with the teeth, making a distinctive sound, *Hesh-hesh-hesh*, after which the West Coast people of Hesquiaht are named (Turner and Efrat 1982).

Eelgrass, mentioned previously, is also a vegetable in its own right, not only a repository for herring eggs. It is a flowering vascular plant (Angiosperm; Monocotyledon), not a marine alga. People used to relish the young leaf bases and rhizomes. The plants were harvested in quiet bays by canoe, using a long pole with crossed sticks fixed at the end. The pole was thrust down into a dense eelgrass meadow on the ocean floor, twisted to entangle the leaves and then pulled up, leaves, rhizomes and all. The eelgrass was bundled up in a specific way, and the bundles eaten raw after being dipped in oil or oulachen grease. The Seri Indians of Baja California gathered and ate the seeds of eelgrass (Felger and Moser 1985).

As well as being used for herring spawn collection seagrasses (*Phyllospadix* spp.), which are relatives of eelgrass only with longer, narrower, tougher leaves, were used for basketry and other types of weaving. Eelgrass leaves were also used. The leaves bleach almost white in the sun and make excellent decorative overlay in baskets (Turner 1998).

Eelgrass, seagrasses, and various types of marine algae were also utilized in the storage and preparation of food. They were laid over salmon and other fish to keep them cool. They were also used in pit-cooking, being layered over red hot rocks at the bottom of the pit, and over the food in the pit, both protecting the food being cooked from contamination with sand and providing flavour and steam-generating moisture in the pit. Clams are said to be delicious cooked in a steaming pit surrounded by seaweed.

Today, some people make pickled bull kelp, cutting the stipes in thin rings and using a similar method of boiling and steeping in vinegar and the same spices used to make other kinds of sweet pickles. The Northwest Coast laver also lends itself to making sushi and other types of dishes that have been made popular through Japanese cuisine. At least one company, in Barkley Sound Kelp on Vancouver Island's West Coast, is producing top-quality dried kelp of various types that can be purchased at health food and other specialty stores and used in various dishes. There are several cookbooks that focus on edible marine plants (Madlener 1977; McConnaughey 1985).

Marine Plants in Technology

Without doubt, the most valued marine plant material in traditional Northwest Coast technology is bull kelp (*Nereocystis luetkeana*). This long-stiped alga was, and is used

for many purposes, such as anchor lines, and especially fishing lines. To make the very best line, the stipes were cut by specially trained divers from places where they grow very long and strong. The stipes were then specially cured, by alternately soaking in fresh and salt water, drying and rubbing them along the entire length with dogfish oil until the tissue was completely saturated with oil. This process could take up to a year, according to Ditidaht cultural specialist John Thomas (Turner et al. 1983). Then, before it was actually used, it was soaked in water again. Sections of the line were joined together using fisherman's knots, so that lines long enough for deepsea fish like halibut could be made (Stewart 1977). Hooks of split and bent tree knot sections, or dense yew wood (*Taxus brevifolia*), were attached to the line. Kelp fishing line can be dried and stored for several years. Sometimes it was used as a trade item; apparently it was taken through trade to be used in some interior lakes inland from the central coast. Bull kelp was also used to make fishing nets, ropes, anchor lines and harpoon lines (U'mista Cultural Centre et al. 1998)

Another role for bull kelp is the use of the hollow bulbs and adjoining stalks in the process of steaming wood for bending and shaping. Kelp fronds and other seaweeds like rockweed were used by the Kwakwaka'wakw as a source of steam in making bentwood cedar boxes (U'mista Cultural Society et al. 1998). In the manufacture of fishhooks for halibut and other large fish, the dense knotwood of trees extracted from rotten logs in the forest was cut into lengths and shaped, then two or three inserted into a hollow kelp bulb with a little water and sealed in with a plug of wood or moss. The entire bulb was then buried in the hot sand beside a fire on the beach and left overnight. The knot lengths, heated and steamed by this treatment, became flexible. They were bent into the correct shape using a mold, then allowed to cool and dry. Fixed with a barb and bait and tied onto a leader of stinging nettle (*Urtica dioica*), this contrivance became a perfect blending of the forest and the sea to be used for the benefit of the saltwater people. Yew-wood (*Taxus brevifolia*) bowstaves were treated in the same way, being placed inside a hollow length of bull kelp then steamed to make them soft and flexible so they could be formed to the right shape. Kelp bulbs and hollow stipes were also cured and used to store seal oil, oulachen grease and even molasses (Turner 1998; U'mista Cultural Centre 1998).

Children up and down the coast played many different games with seaweeds. Dried stipes of the short, tough-stemmed kelps like *Lessoniopsis littoralis* became sticks in a favourite beach-hockey game played along the fine white-sand beaches of the west coast by Nuuchah-Nulth children. The "puck" was a ball carved from the dense holdfast of the kelp. Children also like to play with the small inflated bladders of giant kelp and rockweed, or sea wrack (*Fucus* spp.), which will pop if stepped on or thrown into a fire. The water-filled sacs of *Halosaccion* become squirt-guns for children (the Haida name means "nipple"), and kelp bulbs are also used for a variety of games and toys, including as set targets in spear-throwing contests (Turner and Efrat 1982; Turner et al. 1983; Turner 1998).

The hollow stipes of kelp could also be used as hoses, for adding water into steaming pits, for example. In fact, the Nuxalk name for bull kelp is also, today, applied to garden hose (Turner 1973). One rather unusual application of kelp was by the Koskimo (Gusgimukw) from Quatsino, to bind the heads of their infants, giving their heads an elongated shape, which was said to be a sign of importance (U'mista Cultural Centre et al. 1998).

Medicine and Tradition

Marine algae were also used in healing and health care. For example, the gelatinous material at the centre of fresh rockweed receptacles was used as a burn medicine, like aloe vera, and was applied to sores and swellings (Elsie Claxton, pers. comm. 1996). It was also applied to the eyes to remove foreign objects and soothe stinging or burning eyes. It was rubbed on the limbs for strengthening them or to alleviate muscle aches and pains or even paralysis of the legs (U'mista Cultural Society et al. 1998).

Red laver itself is rightfully considered a health food, and is taken, with oulachen grease, as a strengthener and energy booster. Giant kelp and bull kelp were used in steambathing. A patient, with aching muscles or some undefined illness, would lie on a bed of seaweed lain over red hot rocks, then a blanket or mat was placed overtop, and the patient would rest in a sort of medicated sauna. Bull Kelp was used as a container not only for edible products, but also in the making of a skin salve by Nuu-Chah-Nulth people, in which the main ingredients were cottonwood buds (*Populus balsamifera* ssp. *trichocarpa*) and the hard fat from around the stomach of a deer. The cottonwood buds were heated with the fat until the sweet aromatic resins had dissolved into the fat; this warm solution was then poured into a kelp bulb to solidify. After it had hardened, the kelp could be peeled off, leaving a bulb-shaped block of salve, which was used for skin sores, burns, sunburn and other purposes (Turner 1998).

Sea Palm (*Postelsia palmaeformis*) is a good example of a marine plant valued for its strength and resilience. Among some Nuu-Chah-Nulth peoples of the past, a newborn baby destined by birth and inheritance to be a whale hunter, would have his spine rubbed with the charcoal made from burning this alga; this was said to make the child strong and as tough as the sea palm, which has to withstand pounding surf hour after hour, day after day.

In Northwest Coast traditions and narratives, marine plants feature prominently. In the Haida tradition, a double-headed kelp indicated the entrance to house of a supernatural chief under the ocean, and anyone who could follow it down to the ocean bottom and meet the supernatural people there was destined to gain power, prestige and good luck when they returned to their own village.

Kelp was used in a very interesting way in the dramas that were enacted in the big houses of the Kwakwaka'wakw and other coastal peoples as part of the Winter Ceremonials. A long, hollow kelp stipe was buried under the dirt in the floor of the big house, from the outside of the wall leading right to the hearth in the centre. A person standing outside the house could chant or yell into the kelp tube, and it would sound uncannily like someone, or someone's spirit, was calling from the middle of the burning fire. This was just one of many theatrical effects people used to bring their ceremonies and dances to life, and to give them dramatic impact.

DISCUSSION AND CONCLUSIONS

Marine plants were, and still are, integral to the healthy lifestyle of Coastal First peoples, even though technologies and food habits have changed considerably. It is important to stress, as well, that marine plants are part of, and have helped to create, the coastal habitat that is so productive for all life. Bull kelp, giant kelp and eelgrass, for example, have been identified as "keystone" marine species, which, by their very existence and dominance in the coast environment, have tremendous influence over the biodiversity, structure and function of the "kelp forest" and "eelgrass meadow" ecosystems along the

coastline. Many of the other resources that people rely on, from sea urchins, or "sea eggs", to crabs, rockfish, herring, and even salmon, are sought from the vicinity of these ecosystems. It's no wonder that they are so significant in peoples' lives.

For fishing in the ocean, a common practice was to actually cut a swathe through an offshore kelp bed to create a channel through which the sockeye and other salmon could swim more easily. This was the point at which people would stand in their canoes to spear the fish (Stewart 1977). Direction of tides and predictions of weather were also provided by "reading" the seaweed beds. Seaweeds washed up on shore were sometimes browsed by deer, which must be attracted to the salty flavour. Coastal hunters would watch for deer and bear wandering amongst the seaweeds along the beach. Brant and other types of waterfowl seek eelgrass rhizomes as a food source, and are sought after by hunters along the shoreline. Algae are also used as ecological indicators, their presence or condition reflecting the passing of the seasons or other events important to coastal peoples. For example, in one Nuu-Chah-Nulth community, it is said that *Enteromorpha* at the mouth of salmon creeks has to be washed out of the creek by late-summer rains before the salmon will start coming up to spawn.

Many Aboriginal elders have expressed concern that the marine environment has deteriorated considerably over the past few decades, that eelgrass beds are being damaged by log booms and dredging, and that marine waters are increasingly polluted (Scientific Panel for Sustainable Forest Practices in Clayoquot Sound 1995; Wyllie-Echeverria et al. 1995; Daisy Sewid-Smith and Chief Adam Dick, pers. comm. 1998). These losses are related to general environmental deterioration, from forestry activities, over-fishing, and urbanization, and their impact on First Nations' lifeways are profound. Introduced eelgrasses and various types of crabs and shellfish also endanger the integrity of native populations. Elders talk about this situation with sadness and deep regret; they feel the loss very personally, as well as for the lands and waters and other lifeforms who share and are part of the environment and its resources. Certainly, they feel, if these marine plants and their environments disappear, so will an entire way of life and culture, and all of us will be poorer for it. In fact, our well-being and very survival will be at risk. Although many of the uses and cultural associations with marine plants are from the past, many still continue, and it is a vision of First Peoples up and down the coast that the traditional knowledge and practices will become even stronger in the future, that their children and grandchildren will be trained in traditional ways as well as modern technology, and, therefore, that marine plants will be even more important, culturally and environmentally, in the future than they are at present.

ACKNOWLEDGEMENTS

I am grateful to the International Association of Aquatic and Marine Science Libraries and Information Centers for inviting me to present this paper. I would like to thank the following people in particular, for their contributions over many years: Elsie Claxton (Saanich), John Thomas, Ida Jones, Chief Charlie Jones (Ditidaht), Florence Davidson and Barbara Wilson (Haida), Stanley Sam, Dr. Richard Atleo (Chief Umeek), Chief Earl Maquinna George, Alice Paul, Larry Paul (Nuu-Chah-Nulth), Dr. Daisy Sewid-Smith (Mayanilth), Kim Recalma-Clutesi, and Chief Adam Dick (Kwaxsistala) (Kwakwaka'wakw). I would also like to thank Jim Markham, Editor of IAMLSLIC 2000 proceedings. The research was funded in part by a SSHRC grant (# 349147) and a Major Collaborative Research Initiative grant (R. Ommer, PI).

REFERENCES

- Abbott, I.A. 1992 *La`au Hawai`i: Traditional Hawaiian Uses Of Plants*. Honolulu, HI: Bishop Museum Press.
- Abbott, I.A. and Williamson, E.H. 1974. *LIMU. An Ethnobotanical Study of Some Edible Hawaiian Seaweeds*. Lawaii, Kauai, HI: Pacific Tropical Botanical Garden.
- Boas, F. 1921. *Ethnology of the Kwakiutl*. Bureau of American Ethnology, 35th Ann. Rpt., Pt. 1, 1913-14. Washington, D. C.: Smithsonian Institution.
- Compton, Brian D. 1993. *Upper North Wakashan and Southern Tsimshian Ethnobotany: The Knowledge and Usage of Plants and Fungi Among the Oweekeno, Hanaksiala (Kitlope and Kemano), Haisla (Kitamaat) and Kitasoo Peoples of the Central and North Coasts of British Columbia*. Unpublished Ph.D. dissertation, Vancouver: Department of Botany, University of British Columbia.
- Felger, R.S. and Moser, M.B. 1985. *People of the Desert and Sea. Ethnobotany of the Seri Indians*. Tucson, AZ: University of Arizona Press.
- Gunther, E. 1945 (rev. 1973). *Ethnobotany of Western Washington*. University of Washington Publications in Anthropology, 10 (1). Seattle: University of Washington Press.
- Jacobs, M., and Jacobs, M. 1982. Southeast Alaska Native Foods. In: *Raven's Bones* (A. Hope, editor), Sitka, AK.
- Kuhnlein, H. V. 1980. The trace element content of indigenous salts compared with commercially refined substitutes. *Ecology of Food and Nutrition* 10: 113-121.
- Kuhnlein, Harriet V. and Turner, Nancy J. 1991. *Traditional Plant Foods of Canadian Indigenous Peoples. Nutrition, Botany and Use*. Volume 8. In: *Food and Nutrition in History and Anthropology*, edited by Solomon Katz. Philadelphia, PA: Gordon & Breach Science Publishers.
- McConnaughey, E. 1985. *Sea Vegetables. Harvesting Guide & Cookbook*. Happy Camp, CA: Naturegraph Publishers, Inc.
- Madlener, J.C. 1977. *The Seavegetable Book. Foraging and Cooking Seaweed*. New York: Clarkson N. Potter, Inc.
- Medical Services Branch. 1985. *Native Foods and Nutrition. An Illustrated Reference Resource*. Ottawa: Health and Welfare Canada.
- Scientific Panel for Sustainable Forest Practices in Clayoquot Sound. 1995a. *First Nations' Perspectives on Forest Practices in Clayoquot Sound*, Report 3, Victoria, B.C. (with Appendices V and VI)
- Stewart, H. 1977. *Indian Fishing. Early Methods on the Northwest Coast*. Seattle: University of Washington Press, Seattle.

- Suttles, W. (editor). 1990. *Northwest Coast*. Handbook No. 7, Handbook of North American Indians, Washington, DC: Smithsonian Institution.
- Turner, Nancy J. 1973. The ethnobotany of the Bella Coola Indians of British Columbia. *Syesis* 6:193-220.
- Turner, Nancy J. 1995. *Food Plants of Coastal First Peoples*. Victoria, B.C.: Royal British Columbia Museum and Vancouver: University of British Columbia Press.
- Turner, Nancy J. 1995a. *Some Common Plants of Haida Gwaii. xàadlaa gwaayee guud gina q'aws*. A Handbook for the Haida Gwaii Watchman Program for Gwaii Haanas National Park Reserve & Haida Heritage Site, Haida Gwaii.
- Turner, Nancy J. 1998. *Plant Technology of British Columbia First Peoples*. Victoria, B.C.: Royal British Columbia Museum and Vancouver: University of British Columbia Press.
- Turner, Nancy J. and Davis, Alison 1993. "When everything was scarce": The role of plants as famine foods in northwestern North America. *Journal of Ethnobiology* 13(2): 1-28.
- Turner, Nancy J. and Efrat, Barbara S. 1982. *Ethnobotany of the Hesquiat Indians of Vancouver Island*. Victoria: British Columbia Provincial Museum.
- Turner, Nancy J. and Loewen, Dawn C. 1998. The Original "Free Trade": Exchange of Botanical Products and Associated Plant Knowledge in Northwestern North America. *Anthropologica* XL (1998): 49-70.
- Turner, Nancy J., Thomas, John, Carlson, Barry F. and Ogilvie, Robert T. 1983. *Ethnobotany of the Nitinaht Indians of Vancouver Island*. Victoria: British Columbia Provincial Museum Occasional Paper No. 24.
- Turner, Nancy J. and Szczawinski, Adam F. 1991. *Common Poisonous Plants and Mushrooms of North America*. Portland, Oregon: Timber Press.
- U'mista Cultural Society, Pasco, Juanita and Compton, Brian D. 1998. *The Living World. Plants and Animals of the Kwakwaka 'wakw*. Alert Bay, B.C.: U'Mista Cultural Society.
- Williams, M. D. 1979. The harvesting of "sluckus" (*Porphyra perforata*) by the Straits Salish Indians of Vancouver Island. *Syesis* 12: 63-68.
- Wyllie-Echeverria, S., Phillips, R. C., Hunn, E.S., Turner, N. J. and Miller, M. L. 1995. "Eelgrass as a natural resource: Implications for Formal Policy." *Puget Sound Research '95*, Conference Proceedings, University of Washington, Seattle and Meydenbauer Center, Bellevue, Washington; published Olympia, WA: Puget Sound Water Quality Authority.