



Areas referred to in "A Western Eskimo Ethnobotany"

A WESTERN ESKIMO ETHNOBOTANY

W. H. Oswalt

It is frequently noted that a fine adjustment exists between an Eskimo and his environment. By this is generally meant that animal products are utilized quite fully, but the fact that plant products can play a significant part in Eskimo subsistence patterns is ignored. At least some Eskimo groups utilize plants as foods, medicines, ceremonial equipment, or raw material for manufactures, and these groups may have a systematic body of botanical knowledge. This paper defines the botanical knowledge and general range of plant uses among the residents of Napaskiak, a Western Eskimo village; also included is a brief consideration of ethnobotanical knowledge among Alaskan Eskimos in general.

BACKGROUND INFORMATION

The field data for this study were collected at Napaskiak, a village on the south bank of the lower Kuskokwim River seven miles downstream from Bethel. The people of Napaskiak belong to the group of Eskimos known as the Kuskokwagmiut, who live along the Kuskokwim River from the inland village of Sleetmiut to the shores of Kuskokwim Bay. These people speak a dialect of the Yupik Eskimo language family, which is one of the many Yupik dialects spoken in western and southern Alaska by Eskimos living from Norton Sound to Prince William Sound (Swadesh, 1951, pp. 66-70).

Ecologically, the habitat of the Kuskokwagmiut is quite varied. The people along the middle course of the Kuskokwim River live in an area dominated by stands of white spruce; those along the lower river are in an environment in which there are scattered and stunted stands of spruce, willows and alders bordering the river, with open tundra country farther away from the river. The people along Kuskokwim Bay live in an area dominated by open tundra although there are stunted willows in sheltered depressions.

Contact with the Russians and Americans came late to the people of the Kuskokwim. The first Russian explorations along the river did not occur until 1829, when Vasilief ascended the Nushagak River, crossed the divide to the Holitna River, and descended it to the Kuskokwim River proper. In the early 1830's the Russian trading post of Kolmakof was established; it soon became the principal trading center on the river and remained important during the balance of the Russian occupation (Brooks, 1953, pp. 227-35). Shortly after the United States purchased Alaska, American traders established themselves on the lower Kuskokwim River at a small Russian trading center later to become known as Bethel (Kitchner, 1954, pp. 161-86). The first notable explorations along the lower Kuskokwim River were made by the great naturalist E. W. Nelson (1899, p. 19), who, in 1878 and 1879, traversed the tundra country between the mouths of the Yukon and Kuskokwim rivers and ascended the Kuskokwim as far as the vicinity of Ohogamiut before returning to the Yukon River and St. Michael.

Today, Napaskiak is a village of nearly 150 persons. The people subsist primarily upon salmon but trap mink and hunt muskrats in order to buy trade items. In the village there is an Alaska Native Service school, established in 1939, which at present has an enrollment of 35 children. Although there is no store in the village, the Oscarville Trading Post is just across the river, and only a short distance away is the trading center of Bethel. Virtually everyone in the village is an active member of the Russian Orthodox church, which won its first village converts in 1905. The village has an Orthodox church, built in 1931, but does not have a resident missionary.

Traditionally Napaskiak is a long established village, although there are stories that before moving to their present location the villagers lived at one of two abandoned villages a mile above and two miles below the present location. The people of Napaskiak consider their nearest blood ties to be with the people from Eek, Napakiak, and Kwethluk, as well as from the now-abandoned villages of Painuk, Akulurak, and Loamavik.

METHOD

During 1955 and 1956 I carried out an ethnographic community study at Napaskiak, and the ethnobotanical information presented here was collected during that time. In the spring of 1956 I gathered plant specimens from the vicinity of the village and after extensive inquiry learned that Mrs. Anisum Jacob was reputed to know a great deal about the flora. Mrs. Jacob was born nearly fifty years ago in the nearby down river village of Eek and has lived all her life in the Eek-Napaskiak region; she agreed to tell me all she could about the plants I had gathered. One by one the specimens were discussed, and the informant was encouraged to relate any information she thought pertinent. After the discussion of the collected specimens had been completed, Mrs. Jacob gathered and identified all the plants I had missed or could not locate. It is difficult to determine what percentage of the total local vegetation is represented in this collection, but I would estimate that 85% of the local vascular plants were gathered. In addition to the plant discussions with Mrs. Jacob, Mr. Willy Jones helped identify some of the plants. Mr. Jones, a man of seventy-two, was born near Eek and has lived most of his life in Napaskiak and, like Mrs. Anisum Jacob, is a keen observer. Mrs. Marie Jacob, a woman of nearly seventy, who was born in Napaskiak, supplied additional details concerning certain plants. Further information was obtained during the course of the community study either through direct observation or casual interviews with various village residents. After all the raw data had been organized, the Eskimo names and identifications were checked with Mrs. Mary McDougall, the Alaska Native Service teacher at Napaskiak. Mrs. McDougall was born at Napakiak, seven miles down stream from Napaskiak, and has lived in this general area most of her life. She is a college graduate who speaks Eskimo with as much ease as she does English. Her assistance was invaluable in making a

final check on the identifications, in translating the Eskimo names into English, and in clearing up obscure or ambiguous points.

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THE BOTANICAL SYSTEM AT NAPASKIAK

The Napaskiak people often think of a plant in terms of some characteristic feature, and from this the name is derived. For example, the Eskimo name of the high bush cranberry (for botanical names see the text), means the berry that holds a lot of water; the name of the curled shield lichen, is translated, would like to be stretched; the arctic iris leaf looks like an iron knife blade, and the plant is so named in Eskimo. Seventeen plants have Eskimo names which cannot be translated into English. There are two or perhaps three that have two names for a single species, one name having an English translation and the other without a translation. Nine plants have no specific Eskimo names, although they are known to grow in the vicinity of the village. The plants are referred to simply as *nunau'sluk*, translated as a piece of earth. All informants were genuinely surprised that there were so many plants near the village for which they had no specific names and excused the fact by saying that they never use these plants. It should be noted also that some plants which we would class in different genera are lumped under one Eskimo name; for example, bluebells, valerian, and yarrow are all termed *puniyulinu'kite*, or bumblebee food.

In general, the stem of the plant is termed an *u'poa* or handle; thus, the wild rose plant as a whole is called *tutukoau'poa*, whereas the rose hip, from which the plant is named, is called *tutu'koak*. The general term for plant leaves is *chu'kut*, for branches, *a'vayat*, and roots *ach'kot*.

The people of Napaskiak have no concept of plant fertilization, but they often make their own distinction between male and female plants or parts of plants; however, the system is not consistent. In general, the flowering part of a plant is considered to be male, while the leaves are regarded as female; there are cases, however, in which one plant is considered male and another female. In the case of a plant like sour dock, the mature flowering or seeded plant is called

angu'kuk or male; the plant before it matures has a different name and is considered to be female. Again, the growth of tall cotton grass without flowers is consistently associated with the female sex. The lichens, horsetail, woodfern and mosses are not classified by sex.

The Alaska Native Service teachers have attempted to introduce gardening to the villagers, and the present teacher has a small plot of radishes, strawberries and lettuce; however, the only gardens maintained by villagers are two small turnip patches cultivated by two separate families. In some of the houses are a few potted plants, none of which has acquired Eskimo names.

THE COLLECTION

The descriptions which follow are of sixty-eight plant specimens from the vicinity of Napaskiak; comments are also made upon birch fungus and tobacco which are locally significant but are imported. In so far as possible the flora have been grouped by their primary use.

In the text each species is designated by its binomial botanical name, a common name, the Eskimo name or names, and a translation into English of the Eskimo term. Following this information are comments upon uses of the plant at Napaskiak. Throughout the text the past tense has been employed if the plant being described is no longer used; if the plant usage is current, the present tense is employed. If the usage is known to have resulted from historic contact, this fact is acknowledged.

Following the data on each plant are comparisons with reported uses of the same or similar plants among other Alaskan Eskimos. The comparative material is drawn largely from the Bering Sea Eskimo (Nelson, 1899; Lantis, 1946, 1947) and the reports of Anderson (1939), Heller (1953), and Birket-Smith (1953). No attempt has been made to include a comparison of all reported Alaskan Eskimo plant usages; comparisons that have been made are largely in terms of the Napaskiak collection.

FOODS

The plants used as food in Napaskiak are prepared for consumption in five different ways. The berries, rose hips, willow and fireweed leaves are eaten raw, and the two lichens are used as flavorings. Dried fireweed leaves were used to brew tea. Eight different plant leaves or stems are prepared by simmering or boiling the edible part in water. After being cooked, these plants are added to soups or stews of fish or meats. One species of sour dock is eaten with seal oil.

The salmonberry is the most important plant food, and all other berry picking is incidental to the gathering of this species. The berries are occasionally eaten raw but usually serve as ingredients for *agu'tuk*, which is often called "Eskimo ice cream". *Agu'tuk* is usually made from seal oil and commercial lards mixed with berries, a little sugar, boiled fish and certain greens such as sour dock, horsetail, mare's tail,

or woodfern. The combination of ingredients varies with the season, but berries and oil are the basis of the dish. In the winter *agu'tuk* is stored in the cold so that the oils congeal, and it is served in a solid state. *Agu'tuk* is a favorite dessert at Napaskiak, and an adult usually will consume two to three measuring cups full at a sitting.

Arctostaphylos alpina (L.) Spreng., alpine bearberry; *Ka'vuluk*, hoarse voice.

The berries from this plant are picked when people are gathering salmonberries, but they are not specifically sought and have no special uses.

Anderson (1939, p. 715) reports that these berries are used only slightly by the people of the northern coasts, and Heller (1953, p. 77) states that bearberries are picked and mixed with blueberries in a poor berry year.

Cetraria crispa (Ach.) Nyl., shield lichen; *aouk'*, no known translation.

These gray green plants were chopped up and added to various types of soups for flavoring, but there was no other use known.

Cetraria cucullata (Bellard) Ach., curled shield lichen; *ningyu'yuk*, would like to be stretched.

This lichen was added for flavoring to soups of fresh fish or ducks. It was not often used alone as a food and is primarily recognized as a reindeer or caribou food.

Hawkes (1913, p. 14) records lichens as one of the foods consumed during the ceremonials he attended at St. Michael.

Cicuta mackenziana Raup, poison water hemlock; *tunuk'alok*, something that is rather hard.

The green leaves are cooked in water with fresh fish, but the plant is not used otherwise. The roots, described as bulbous, are never eaten since they are considered to be poisonous to people. However, it is said that small rodents eat the roots and suffer no ill effects.

Heller (1953, p. 153) classes this species among the poisonous Alaskan plants and notes that two deaths in the Bethel area in 1951 were reported to have been caused by eating this plant. Poisonous plants were not used in hunting or fishing in the lower Kuskokwim River region, nor were they on Nunivak Island (Lantis, 1946, p. 172).

Dryopteris austriaca (Jacq.) Woyнар, woodfern; *wingi'suk*, no known translation.

During the summer the roots of this fern were occasionally collected, boiled in water, and added to *agu'tuk*. In recent years the leaves of the woodfern have been used to decorate the inside of the church and the graves in the cemetery on certain church holidays. No sex distinction is recognized in this plant.

In an account of Davidov's, cited by Lantis (1947, p. 61), ferns were described as having adorned some of the ceremonial masks used by Kodiak Island Eskimos.

Empetrum nigrum L., crowberry; *tanu'kupuk*, blackberry.

These berries are sometimes picked and eaten, but they are not preserved. According to Napaskiak informants, the people living along the adjacent Bering Sea coast brewed tea from this plant, using the entire plant.

Crowberries have a limited use along the northern coast of Alaska (Anderson, 1939, p. 715), and Heller (1953, p. 79) notes that Eskimos mix them with other berries.

Epilobium angustifolium L., fireweed; *chis'kuk*, stiff or hard.

Fireweed leaves are sometimes gathered and eaten raw; more often they were gathered and dried to be used in tea in the fall and winter. While green, the leaves may also be used in a meat or fish stew. There is no sex distinction recognized in this plant. Along the northern coasts of Alaska fireweed leaves are collected and usually boiled with *Rumex* sp (Anderson, 1939, p. 715).

Equisetum arvense L., horsetail; *taiyauling'uk*, no known translation.

The small black nodules that grow on the roots of horsetail, as well as the roots themselves, are ground up while green and mixed into *agu'tuk*. They may also be mixed with fish eggs and made into a soup. There is no sex distinction recognized.

Hippuris vulgaris L., mare's tail; *taiya'ok*, no known translation.

In the early spring the upper stems of this plant are often gathered from the top of the ice areas where the plant had been growing in shallow water the previous year. The stems are mixed into soups of all sorts, as well as into *agu'tuk*. They are considered to be quite flavorful and are also gathered later in the summer when the plant is green and growing.

Heller (1953, p. 135) notes that along the lower Kuskokwim mare's tail is always cooked with seal oil and occasionally mixed into soups of fish eggs, tom-cod livers, and seal meat or seal blood. On Nunivak Island the people gather this plant and eat the shoots raw or mix them with seal oil and salmon eggs (Lantis, 1946, p. 178).

Matricaria suaveolens (Pursh) Buch., false-camomile; *atsu'koak*, like fruit.

When this small plant begins to bloom along the village paths, the people say it is time to go to the tundra and pick salmonberries, for the false-camomile blooms and salmonberries ripen at the same time. In the summer the children habitually eat the stems raw; adults do likewise but less frequently. The seed head was gathered in the

fall and dried for winter; if someone had a cold or indigestion, these seed heads, cooked in water were given for relief. In the summer the men often gather a handful of this plant, stems, flowers and all, to put in the hot water container in the steam bath house so that the odor of the plant will permeate the air during the bath, since it is an aroma that most of them enjoy.

Ranunculus lapponicus L., marsh marigold; *asl'koak*, no known translation or *asing'oat*, looks like a patch.

The leaves of this plant are female, and the blossom is male. The blossoms are called lights because of their bright color. The leaves and stems are collected before the plant blooms and are cooked in a stew with ducks or fresh fish. Formerly, persons who had been starving for a long while ate some of these plants which had been soaked in water before eating other food.

On Nunivak Island young *Ranunculus* roots and shoots were gathered and eaten raw (Lantis, 1946, p. 178).

Rorippa palustris (L.) Besser, marsh cress; *kakachoku'nuk*, looks like something that rattles.

Marsh cress is occasionally gathered, in June, and is cooked with fish in water. This species is considered to be male in sex, while the female plant with the same Eskimo name is *Taraxacum* sp.

Rosa acicularis Lindl., wild rose; *tutuk'oak*, no known translation (the name refers to the rose hip specifically).

The wild rose hips are eaten raw in the late fall and early spring, but the plant has no other use. The children are cautioned not to eat too many, for to do so is said to result in a severe stomach ache.

Rubus arcticus L., nagoonberry; *puma'kak*, looks smoky.

These berries are picked and mixed among salmonberries when the latter are stored in barrels for the winter. Nagoonberries grow all around the village, but they are not specifically sought or picked in any quantity. The old people say that eating too many will cause a severe stomach ache.

Rubus chamaemorus L., salmonberry; *at'sut*, berries or fruits.

The salmonberry is beyond any question the plant food most important to the people of Napaskiak. When these berries ripen in the early fall, virtually every family goes by boat to the open tundra country behind the village; here they pick berries for two or three days, or until they have at least two small wooden barrels filled with them. During the course of a winter one family, consisting of a man, his wife and two children, will consume from two to three barrels full (one barrel contains approximately fifteen liquid gallons) of berries in *agu'tuk*.

Fresh or fresh frozen salmonberries are a good source of vitamin C, but if the berries are allowed to ferment or mold, as is common at

Napaskiak, the vitamin C is destroyed. A sample of fresh frozen salmonberries kept in an ice cellar throughout the winter and then tested contained 178 milligrams of ascorbic acid per 100 grams or about $\frac{1}{2}$ cup, which is two and a half to three times the amount in an orange (Heller, 1953, p. 93).

Rumex sp., sour dock; *angu'kuk*, male plant, or *koak'chet*, no known translation.

In its mature condition sour dock is always considered to be male, since each plant has flowers. One species(?) is named "male" in Eskimo; however, immature plants, before they flower, are thought to be female. The leaves and stems of *angu'kuk* are gathered in the early spring; after the greens are finely chopped, they are simmered for more than an hour, cooled, and then added to *agu'tuk*. Some women say that there are too many worms on this plant and will not use it as food. The *Rumex* termed *koak'chet*, probably *R. acetosa alpestris* (Murb.) Murb., is cooked in water for half an hour; a little seal oil and/or sugar may be added then and the preparation eaten. It may also be cooked in water and added to *agu'tuk*. Occasionally the leaves are gathered in mid-summer and placed in a small barrel to be used later in *agu'tuk* or for curing during the winter. As a cure for severe cases of diarrhea, the leaves and stems were cooked in water and given to the sick person before any other food in the morning and again at night; this remedy was reported to cure diarrhea in a few days.

Heller (1953, p. 55) comments that the Eskimos gather *R. arcticus* Trautv. in quantity. It is cooked, chopped, mixed with other greens, and stored in barrels for winter use.

Salix (probably *glauca*), willow; *nuwi'longok*, has no bones.

According to my principal informant, this species does not have any sex, although she acknowledged that some persons consider the male and female forms to be distinguishable; no satisfactory account could be obtained, however, concerning the criteria for differentiation. The new leaves of this willow are often eaten raw in the spring; they may also be added to meat or fish stews and soups. The trunk and heavier branches are sometimes collected for firewood. The small willow branches are collected just before the spring smelt run; after the stems and leaves are stripped from the branches, they are tied together in about six foot lengths. The smelt are then strung through the gills on these skewers and hung to dry.

The Arctic Eskimos collect the inner bark of *S. alaxensis* Cov., and eat it raw with seal oil and sugar. *S. pulchra* Cham. shoots are collected in the early spring, and the inner portions are eaten raw; later in the season the young leaves are eaten raw with seal oil or stored in seal oil for winter consumption. Heller notes that Totter found 544 milligrams of ascorbic acid in about $\frac{1}{2}$ cup or 100 grams of leaves, which means that this species is seven to ten times more effective as a source of ascorbic acid than are oranges (Heller, 1953, p. 61).

Ingstad (1954) in his ethnographic study of the Nunamiut, an Eskimo group of inland caribou hunters living in the Anaktuvik Pass region of the Brooks Range, frequently notes the many uses to which willows are put. He records the utilization of willow in pipe stems, tent frames, caribou snare poles, and kayak ribs, as well as for firewood and palisades around the hamlet; he finds too that willow cotton was used as tinder in making fires.

Taraxacum sp., dandelion; *kakachoku'nuk*, looks like something that rattles.

Dandelion leaves are collected throughout the summer and are cooked in a kettle of water with fish. There is no other use for this plant, and it is not preserved for winter. Before flowering, the plant is considered to be female; after the blossom develops, it is mistakenly considered to be marsh cress, a male plant.

Dandelion leaves are scalded and eaten in north coastal Alaska (Anderson, 1939, p. 716).

Vaccinium oxycoccos L., bog cranberry; *uwing'e*, one that never marries.

One informant suggested that perhaps the Eskimo name is derived from the fact that the plant has insignificant leaves, which are considered by the people as female, but has large berries, which are considered to be male; thus the male berries always appear to be alone. The bog cranberry is only occasionally gathered with salmonberries and is not specifically sought.

Vaccinium uliginosum L., bog blueberry; *chowuk'*, no known translation.

Blueberries are abundant in sheltered marshy areas near Napaskiak, but they are not picked extensively. Some blueberries are gathered and mixed into *agu'tuk* during the fall when berries are ripe, but the fact that they do not keep well discourages the people from storing them for winter use. Sometimes blueberries will be mixed into a barrel of salmonberries, and in this way they will keep. At the present time some blueberries are picked and eaten fresh with milk and sugar.

The blueberry is very important to the arctic coast villagers who go inland to collect them (Anderson, 1939, p. 715). In general, the blueberry is used widely by the Eskimos of western Alaska, particularly in localities where salmonberries are not abundant.

Vaccinium vitis-idaea L., low-bush cranberry; *kawik'ulik*, red ones.

The berries are gathered either when they ripen in the fall or in the spring as soon as the snow leaves the ground and before the berries drop to the ground. Low-bush cranberries are mixed into *agu'tuk*, and since historic contact some women have begun to make jam of them by boiling the berries down with sugar.

Low-bush cranberries are reportedly used in northern Alaska;

their importance is not recorded, but it is probably negligible (Anderson, 1939, p. 715).

Viburnum edule (Michx.) Raf., high-bush cranberry; *mukchulu'slpit*, holds a lot of water.

High-bush cranberries grow among the alders near the villages and are picked either as they ripen in the fall or in very early spring while they are still on the plant. High-bush cranberries are not preserved for winter, for they are said to spoil quickly. They are eaten primarily by the children, who, while playing in the vicinity of the village, often pick and eat a few berries. Those that are picked by adults are mixed into *agu'tuk*; today some women also boil them with sugar to make jam.

Plants which have been listed under other headings but which are also used as foods include tall cotton grass, wild celery, and Labrador tea.

MANUFACTURES AND FUELS

This category includes fuels as well as artifacts made from plant products. The wooden artifacts are formed with metal bladed adzes and crooked knives as well as with commercial wood working axes, chisels, saws, and wood planes. For most wood manufactures spruce is preferred, but occasionally cottonwood may be utilized. Woven artifacts such as mats, socks, and coarse sacks are usually made from a sedge, but grasses may be used for such items as boot insole and menses and diaper pads.

The woods consumed as fuels are most often alders or spruce. At the present time most persons use alders. One man estimated that he consumed nearly a sled load of alders daily in heating his eight by sixteen foot frame house during the day in -20° F. weather. It requires nearly two hours to chop the trees, haul the load to the village, and re chop the wood into stove lengths. A few men collect enough driftwood spruce logs to heat their houses; the individual who relies most heavily upon spruce as fuel estimated that about ten logs, thirty-five feet in length, with a basal diameter of about two feet and very little taper, are adequate to heat a twenty by twenty foot house throughout an entire winter when the house is heated only during the day.

Alnus crispa (Ait.) Pursh., alder; *chukfu'koak*, no translation recorded.

Alders are very plentiful in the vicinity of the village and serve as the primary source of winter fuel. The small straight trees are preferred and are cut while green into nine foot lengths to be hauled to the village in a boat or sled.

The bark of *Alnus frutica* Rupr. is used for dyeing reindeer skins, and most authors comment upon this use of alder bark among the western Eskimos (Anderson, 1939, p. 715; Nelson, 1899, p. 117; Lantis, 1946, p. 170).

Betula nana exilis (Suhatch.) Hult., dwarf birch; *chupuaiya'hak*, something you can blow away.

The people may use this plant for fuel if nothing else is available at their spring or fall tundra camp, but otherwise it has no use. No sex distinction is recognized.

Betula sp., birch (no specimen collected); *u'linguk*, no translation recorded.

There is one stand of birch growing a few miles from the village; but these trees are not used. However, birch snowshoes and birch bark containers were said to have been obtained formerly from Eskimos living farther up the Kuskokwim River. Birchbark canoes were important locally, and at the time of historic contact the people of the Napaskiak region obtained them from the Yowhalingoot, an Athabaskan Indian group occupying a few villages in the vicinity of Georgetown.

Eriophorum angustifolium Roth., tall cotton grass; *etuk*, no known translation (name for those plants with flowers), *kalukaiya'hak*, little thread (those plants without flowers).

The stems of the non-flowering tall cotton grass are considered to be female and may be eaten from early spring until the ducks leave in the fall. The lower stems are gathered while green and eaten raw, especially by the children. Adults occasionally eat the lower stems raw and often gather the tops into loose bundles for future use. However, more commonly, the flowerless stems are collected in bundles in the late fall after they have completed their growth and have turned gray white. They are thoroughly dried on the top of a house or storage shed and split lengthwise to be used as the warp and weft in weaving mats. This plant fiber makes particularly good mats, socks, coarse sacks, and formerly shrouds since the fiber can endure repeated moistening and drying without breaking. A strip of the dried stem is also placed between the waterproof seams of a skin boot in order to inhibit leakage. When a girl is secluded during her first menses, she is permitted to eat the stems of the female plant. These may be given to her raw or after being cooked in hot water. When tall cotton grass is cooked, the old people say that it tastes just like fresh fish. Tall cotton grass stems, when eaten raw, are considered to be a good medicine for persons in poor general health. By eating the lower stems of female plants, one soon may expect to regain good health.

Heller (1953, p. 131) describes tall cotton grass as being used along the lower Kuskokwim River and notes that mice collect the roots for their winter food; just before freeze-up the people search for these mouse caches and remove the roots. The black outside layer of the root is removed by pouring boiling water over it, and the roots are then eaten with seal oil. The same collecting technique is recorded for *Carex* sp.: a fish is sometimes substituted for the roots that are removed in order that the mouse may survive the winter (Anderson, 1939, p. 715).

On Nunivak Island (Lantis, 1946, pp. 178-81) the grass most used

for mats and baskets is rye grass, *Elymus mollis* Trin., and according to informants at Napaskiak, the type of basket grass used by the Nunivak Island people and those on the adjacent area of the Bering Sea coast is better than what they have. While it is not positive that they are referring to this variety of rye grass, it is suggestively so. Nelson (1899, pp. 39, 43, 202-5, 217) described grass as being used in western Alaska for socks, mittens, insoles, mats, sails, coiled baskets and twined mats.

From Nunivak Island there are descriptions of grass bundles being tied about the body for certain ceremonies, grass being burned to purify objects, and grass braids being used to bind the limbs on certain occasions. The people of St. Michael placed a pseudo snare of grass outside the entrance to a house in which a person had recently died so that the ghost would not return. Thus it seems that certain types of grasses have limited ceremonial importance in the Bering Sea region (Lantis, 1946, pp. 182, 215; 1947, pp. 55-57).

Eriophorum scheuchzeri Hoppe, cotton grass; *king'slkit*, no known translation.

The stems of this plant were sometimes gathered during the summer, dried, and used for boot insoles, but their importance as insoles was negligible and they had no other use.

Picea glauca (Moench.) Voss, white spruce; *mingkot'moak*, like a needle wood.

White spruce is the most useful tree growing along the Kuskokwim River, and while none grows in the immediate vicinity of the village, there are small stunted stands a few miles distant. In the winter the men sometimes cut dead trees from these stands for firewood. More often the spruce logs utilized are those that have grown along the banks of the upper Kuskokwim River, or its tributaries, and have fallen into the river with a shift in the river channel. Such logs frequently drift ashore in the vicinity of the village, particularly after the spring ice break-up or following a period of high water. Whenever possible, the men locate large straight-grained logs and tow them to the village behind their boats. The logs are often used for firewood, but straight-grained trees may be split with wedges and long narrow splints removed for the construction of funnel-shaped fish traps and for canoe or kayak stringers and ribs. The large roots are preferred for the manufacture of net floats, trays, spoons, and dippers and were formerly used for masks, bowls, visors, hunting hats, and buckets. Items made from roots have the distinct advantage of rarely cracking after they dry. Spruce logs are also used in the construction of caches, houses, drying racks, and other structures.

The inner bark of the roots is split into quarter-inch wide sections the length of the root, and these are used as lines; small rootlets are used intact as lines. These are said never to stretch and rarely to break if they are used when still moist; they are particularly useful in binding blades to handles and in repairing tools.

Green spruce needles are boiled in water and used as a cough medicine; in the early spring these needles may be chewed raw for the same purpose. The gum of spruce is chewed for pleasure by many people, although pregnant women do not chew it (or commercial chewing gum). It is thought that the neonate will stick to its mother's womb during delivery if the mother has chewed gum. Spruce gum was also used for caulking birch bark canoe seams.

Each year, a few days before Russian Christmas, a group of young men go out and cut a small spruce tree for each household. These trees are decorated with commercial bulbs and remain in the house until Russian New Year's Eve, at which time they are collected by the young men and burned in front of the village at midnight.

Along Norton Sound and to the interior the people are reported to use needles of white spruce for medicine, while the gum is chewed for pleasure or applied to wounds (Anderson, 1939, p. 716). In the treeless coastal and river habitats of the Alaskan Eskimo, driftwood is extremely important for building various structures, making utensils, and for firewood (Nelson, 1899). In areas where it is scarce, as on Nunivak Island, wood may be bartered for within the village (Lantis, 1946, p. 169), and in the tundra country adjacent to Baird Inlet families moving to a new location on the tundra often take with them every scrap of wood which can be used in building their new houses (Oswalt, field notes).

Coiled baskets of spruce roots are reported for the Bering Sea Eskimo (Nelson, 1899, p. 205) but were probably traded from the Ingalik Indians since such baskets are very rarely found in the Eskimo area but are commonly made by the Ingalik.

Poa sp., bluegrass; *puka yu'kak*, something you wipe with (the same word as is used for a modern face towel).

The seeded stem is the male part of the plant, and the leaves are the female part. The green leaves are gathered and used to dry one's hands. The leaves are sometimes collected, dried, and then split lengthwise with a small needle so that the threads may be used as the weft to bind mats. Dried leaves are also used for boot insoles or as winter bedding for dogs.

Informants at Napaskiak said that the fine matted roots of certain grasses (it was never ascertained precisely which grasses) were gathered from exposed river banks. These roots were washed, rubbed, and then used as diaper pads for infants and menstrual pads for women. On Nunivak Island old dry basket grass was used for menstrual pads (Lantis, 1946, p. 223).

It is generally believed by the people of Napaskiak that the height of the grass growing around the village in the summer indicates the depth of the snow the succeeding winter. The severity of the coming winter is predicted in this manner.

Populus sp., cottonwood (no specimen collected); *kohoni'lingot*, no translation recorded.

The wood of the cottonwood tree is sometimes used as fuel, but it is not gathered if spruce is available. There are also some utensils carved from cottonwood, such as dippers, spoons, and pestles, but again spruce is often preferred.

Sphagnum sp., sphagnum moss; *ohot'*, something to protect something.

Sphagnum is used for chinking log houses but has no other use.

On Nunivak Island sphagnum is used for diaper pads, and moss was also stuffed into the body openings of the dead (Lantis, 1946, pp. 223, 227); the latter is likewise reported for Little Diomed Island (Weyer, 1932, p. 258).

Urtica lyalli Wats., nettle; *katsli'nuk*, it burns.

Formerly large quantities of nettle stems were collected in the fall following the first frost. The stems were dried and their tough stringy inner stem was spit lengthwise. The fibers were twisted into two strand lines for the manufacture of ptarmigan snares and gill nets. No sex distinction is recognized in this plant.

Moss; *kuma'hotit*, something that makes it light.

This type of moss was formerly used as the wick for seal oil lamps. After it was collected, it was dried in the sun and then stored for future use.

The willow listed under another heading is also used in manufactures.

MEDICINES

The medicinal plants are prepared for use by cooking them in water after which the infusion is drunk or else a raw preparation is used as a poultice.

Nephroma arcticum (L.) Tross., arctic kidney lichen; *kus'koak*, no known translation.

These lichens are recognized as growing on or near decayed trees and are uncommon in the area. They were sometimes stored until winter and then boiled with crushed fish eggs as a food. The plant cooked alone in water was fed to a person in a weak condition to make him strong and is reputed to have been a very effective medicine.

Salix arbusculoides Ands., willow; *kono'holik*, sour tree.

The inner bark of this willow is considered to be a good poultice for sores. The shredded inner bark is placed on any type of sore overnight, and one application is expected to be an effective cure.

On Nunivak Island *Salix* leaves are chewed for a "sore mouth" and are placed in the corners of the eyes for watery eyes (Lantis, 1946, p. 202).

Recorded under the various headings are certain plants which also have medicinal uses. Such plants are tall cotton grass, wormwood, white spruce, false-camomile and sour dock. Sour dock, *Rumex* sp., is widely recognized as an effective astringent. Tobacco is used as a dog medicine.

CEREMONIAL USES

The umbel or umbel-like plants discussed below are the only plants at Napaskiak that were established as having had ceremonial significance.

Angelica lucida L., wild celery; *iki'tuk*, not pleasant to look at.

The young green stems of wild celery are collected in the spring. The strings are peeled away, and the stalk is eaten raw alone or after being dipped into a container of seal oil. The leaves were also collected while green and simmered in water for about an hour, after which they were mixed into a type of *agu'tuk* that contained greens, seal oil, mashed fish eggs, and a little sugar. The stalks are not eaten after July, when they begin to flower. Formerly the dried stems with the top of the plant intact were gathered both in the early winter and upon certain ceremonial occasions, the details of which were not recalled; the tops were set afire inside the houses and the burning stems shaken around inside and outside the house in order to purify the dwelling.

The Kodiak Island and Bristol Bay peoples gather the young wild celery stalks, and after peeling away the stringy outer layer, they eat the stems; they also cook the leaves with fish as a vegetable (Heller, 1953, p. 11). Lantis (1946, p. 178) records that the stalks were eaten raw on Nun'vak Island.

Wild celery, apart from being a food, is one of the most important ceremonial plants used by the Kuskokwim River Eskimos. It was important in the purifying ritual described above for Napaskiak and was the focus of attention in an early winter ceremony described for Ohogamiut (Oswalt, field notes) on the middle Kuskokwim River. The essence of this previously unreported ritual is that two men are sent out to bring in bundles of wild celery. The plants reportedly call to the men and indicate that they want to be gathered. After large bundles are collected, the men return with them to the *kash'gee* (ceremonial structure); the stalks are divided among the young men, each of whom puts a small bundle of the stalks above his sleeping place in the *kash'gee*. The plant roots are said to represent each man's partner from the underworld and appear to represent spirits of the dead. During four days of feasting the plants are fed at each meal; on the fifth day each young man dances with his bundle of stalks, and then adult men take the bundles and set them afire. They shake the blazing stalks over the dancer, and after they have burned out, each young man is given the remains of his bundle to take outside. On the ground he separates the individual stalks and makes them into the form of some animal.

On Nunivak Island the gathering of wild celery is part of the Bladder Feast; the plant is used in much of the ceremonial activity, which includes young men dancing with the stalks (Lantis, 1946, pp. 184-7). In his summary of the Bladder Feast, Weyer (1932, pp. 340-43) mentions wild parsnips being gathered, dried, and burned to purify the bladders and the man. This is no doubt the plant which I have termed wild celery, *Angelica lucida* L., since the Eskimo name for it is recorded as i-ki-tūk, which is nearly identical with *iki'tuk* at Napaskiak.

Ledum decumbens (Ait.) Lodd., Labrador tea; *ai'yut* no known translation.

Formerly, dried stalks were kept in the house; when a child was ill, a stalk was set afire, shaken around the head and shoulders of the child, and then thrown out the doorway. Some persons believe that when there are ghosts around outside a house a stalk should be lighted, shaken around inside and then thrown out the door. Some people drink Labrador tea mixed with their commercial tea since they enjoy the flavor of the blend.

Anderson (1939, p. 715) reports that this plant is used for tea along the northern coasts. People in Napaskiak mentioned that the Eskimos along the lower Yukon River at Russian Mission do not use it as tea, thinking that to do so would make them weak.

TOBACCO AND PERFUMES

All of the tobacco consumed by villagers is purchased from trader's supplies. It is smoked primarily as cigarettes and rarely as cigars or in a pipe. The leaf tobacco for chewing is mixed with various plant leaves or ashes to extend the tobacco or modify its flavor.

The perfumes are used to lessen an offensive odor or else to strengthen a scent that is enjoyed. The entire plant is usually used either dry or in a green state.

Nicotiana sp., tobacco; *chu'ya*, no known translation (probably from the English word chew).

Commercial leaf tobaccos are considered by some persons to be a good cure for a dog in a weakened condition. The ill dog is not fed for a day or two and is then given dried fish pre-soaked in a solution of strong brine water and a few handfuls of tobacco.

In the period immediately before historic contact, there appears to have been a well established trade of tobacco from Siberia to Alaska (Nelson, 1899, pp. 271-72), and it has been observed that Eskimos living along the northern rivers, such as the Kobuk River, made offerings of pinches of tobacco (Lantis, 1947, p. 45).

Petasites frigidum (L.) Fries., butterbur; *plugu'tuk*, no known translation.

In the spring after last year's butterburs are dry but before the

new growth begins, the plant may be collected, dried more fully, and burned to ashes. The ashes are then mixed into a quid of chewing tobacco. No sex is recognized in this species.

Salix sp., willow; *angvaslo'holik*, a tree that has too much of something.

The leaves of this willow may be dried and mixed with a quid of chewing tobacco if the birch fungus which is preferred is not available. Birch fungus; *kuma'hak*, no translation recorded.

Birch fungus is dried thoroughly and then reduced to ashes in a fire built outside. The fire is not built in the house due to the extremely strong odor of the burning fungus. The fungus ash is mixed with leaf tobacco or commercial chewing tobacco. Traders in the Napaskiak area buy this type of fungus from Eskimos who live along the middle course of the Kuskokwim River where it is quite plentiful. It is resold to the lower river people at the rate of from six to eight pounds for a dollar depending upon the dryness of the plant.

Nelson (1899, p. 271) describes birch fungus being reduced to ash and mixed into tobacco quids in the Bering Sea coast region.

Artemisia tilesii elatior T.&G., wormwood; *kanganu'hoak*, looks like a squirrel.

This plant is often picked in large bunches during its growing season; the juices are smeared over the hands to alleviate strong odors such as those resulting from handling fish head cheese. During the summer before men take steam baths, they collect a bundle of these plants and lash the stalks together at the base with a short length of string. During the bath this bundle is used as a switch with which to strike oneself, either because the stinging sensation is enjoyed or else to aid in the healing of a sprained or sore limb. The plant also may be gathered in the summer, dried thoroughly, shredded and applied as a poultice to a skin infection; after one application the infection will disappear. Formerly this plant was occasionally dried and pulverized to mix with a quid of chewing tobacco.

Artemisia sp. is reported as being used for poultices in northern coastal Alaska, and it is also taken for colds (Anderson, 1939, p. 716).

Viola biflora L., violet; *tiptugu'lik*, smells strong.

Women sometimes place a few stems and blossoms of the violet in the corner of the house or among their clothing to serve as perfume, but the plant has no other use. This practice was said to have prevailed before historic times.

The false-camomile is listed under the heading of foods but is also used as a perfume.

PLANTS NAMED BUT NOT USED

Achillea borealis Bong., yarrow; *punaiyulinu'kait*, bumblebee food.

Achillea sibirica Ledeb., Siberian yarrow; *anoktoulia'hak*, plant that has lots of wind.

Aconitum delphinifolium DC., monkshood; *stoak*, looks like a nail (*Stok* is finger or toe nail).

Some species of monkshood are poisonous in more temperate regions, but apparently the toxicity varies with the environment in which it grows (Muenscher, 1939, p. 77). The Eskimos at Napaskiak do not consider it to be poisonous. It was not used on Nunivak Island (Lantis 1946, pp. 172, 202) nor is it noted among the poisonous Alaskan plants listed by Heller (1953, p. 147).

Cladonia ?, reindeer moss; *tuntutnu'kaik*, reindeer food.

Deschampsia caepitosa (L.) Beauv., tufted hair grass; *chana'git*, no known translation.

Iris setosa Pall., arctic iris; *choikpu'goak*, like an iron knife (*choik'* is iron or knife).

The seed pod of this plant is called *gusugut'stuk*, like a rattle, since the seeds rattle in the seed pod.

The seeds of the arctic iris were used along north coastal Alaska as coffee after they had been roasted and ground (Anderson, 1939, p. 715).

Menyanthes trifoliata L., buckbean; *puingai'yulit*, grows with three.

Mertensia sp., bluebell; *punaiyulinu'kait*, bumblebee food.

Nuphar polysepalum Engelm., yellow pond lily; *papa'unuk*, no known translation.

Petasites frigidum (L.) Fries., butterbur; *mislko'howuk*, pretends to be a feather (also the word for cotton), or *punaiyulinu'kait*, bumblebee food.

Polemonium actiflorum Willd., polemonium, *akniginai'lituk*, keeps your finger from hurting, i.e., a thimble.

Potentilla palustris (L.) Scop., cinquefoil; *mih'chuk*, no known translation.

Rumex arcticus (?), dock; *kangagatutu'li*, no known translation.

Senecio congestus var. *palustris* (L.) Fern., groundsel; *kuviyuhpu'goak*, looks like a swan.

This plant is never used and it is thought to be poisonous. It was reported that some children once ate the roots and died shortly thereafter, and one informant was certain they had been killed by groundsel roots.

Heller (1953, p. 147) does not list this species among the poisonous Alaskan plants; however, Muenscher (1939, pp. 235-39) notes that sev-

eral of this genus contain a toxic alkaloid and have been responsible for the poisoning of domesticated animals in New Zealand, South Africa, and the southwestern United States.

Spiraea beauverdiana Schneild., spiraea, *chukchuk'goat*, no known translation.

Valeriana capitata Pall., valerian; *punaiyulinu'kait*, bumblebee food.

Informants consider this species to be a male plant and *Martensia* sp. to be the female plant of the same name.

PLANTS RECOGNIZED BUT HAVING NO SPECIFIC NAMES OR USES

Cardamine pratensis L., cuckooflower.

Galium boreale L., northern bedstraw.

Lathyrus palustris pilosus (Cham.) Hult., pea.

Pedicularis laboradorica Panzer., woodbetony.

Pinguicula villosa L., hairy butterwort.

Potentilla pacifica Howell, silverweed.

Stellaria media (L.) Cyril., common chickweed.

Thalictrum spars florum Turcz., meadowdrue.

Trientalis europaea L., starflower.

CONCLUDING REMARKS

In the arctic and sub-arctic regions there is a great range of local adjustments within Eskimo culture. This is strikingly apparent in Alaska, where the Eskimos may be migratory caribou hunters, sedentary coastal whalers, sedentary salmon fishers, sporadically shifting seal hunters, or a combination of these and other types. With such environmental and related cultural diversity it is not surprising that plant utilization varies from one area to another. Only spruce is utilized consistently throughout Alaska. Actually, plants may have been used more extensively than has been reported; remarks such as Stefansson's (1921, pp. 63-4) that it never occurred to the Coronation Gulf Eskimos to eat crowberries even though they were abundant have come to be considered indicative of limited Eskimo plant utilization in general. There is also the fact that the arctic and sub-arctic habitats of the Eskimo are popularly considered to be "deserts", but this is largely untrue.

Considering Eskimo resourcefulness it is rather surprising that plants have not been more important in the economy. I would estimate that five to ten percent of the diet at Napaskiak consists of plant products, while Weyer (1932, p. 53) has estimated that not more than five percent of the Bering Strait Eskimo's is of plant origin. Among the Chugach Eskimo (Birket-Smith, 1953, pp. 42-4) plants are also quite important, and the various methods of preparation and preservation are more sophisticated than those of any other Eskimo group. This latter condition is probably due to Northwest Coast Indian borrowings

as well as to the relatively diverse plant resources of the area. Lantis comments that plant foods are a significant part of the Nunivak Island Eskimo's diet (Lantis, 1946, p. 173) but does not estimate the percentage of plants consumed in the total diet.

It is notable that few plants have acquired important positions in the ceremonial system. The most important ritual plants are wild celery, Labrador tea, and perhaps other umbel or umbel-like plants. It is recorded that on Nunivak Island plant roots are placed in a kayak to pacify a vicious walrus, grasses are used in purification, and there are mythological references to plant charms (Lantis, pp. 201, 286, 295, 314), but none of these nor any other plants seem highly important in Western Eskimo rites, with the possible exception of aconite whale poisoning among the Pacific Eskimos (Heizer, 1943). Thus, while plants may be significant in ceremonies, as foods, and in manufactures, only the latter usage is widely characteristic of the Alaskan Eskimo.

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