

## CONTRIBUTIONS TO THE ETHNOBOTANY OF THE CUP'IT ESKIMO, NUNIVAK ISLAND, ALASKA

DENNIS GRIFFIN  
*Archaeological Frontiers*  
295 East 33rd  
Eugene, Oregon 97405

**ABSTRACT.**—Ethnobotanical information on the Native use of 47 species of indigenous plants on Nunivak Island, Alaska is presented. Changes in subsistence use among the Cup'it Eskimo of Nunivak, throughout the twentieth century, have resulted in the loss of traditional ethnobotanical knowledge. While previous studies have presented limited information on the importance of particular plant species to the local diet, additional data regarding the role of indigenous plants and subsequent changes in plant use have recently been recorded. They are discussed here in light of the adoption of western foods and medicines and increased contact of the Cup'it with mainland peoples. Current knowledge of traditional plant use and the importance of plants to local dietary, medicinal and utilitarian uses are summarized.

**Key words:** ethnobotany, Cup'it Eskimo, indigenous plant use, Nunivak Island, Alaska.

**RESUMEN.**—Presentación de datos etnobotánicos de 47 especies de plantas indígenas y las maneras de uso por la gente indígena de la Isla Nunivak en el estado de Alaska. Los cambios en los usos de estas plantas para la subsistencia por los Esquimales Cup'it de Nunivak a través del siglo XX han ocasionado la pérdida de conocimientos etnobotánicos tradicionales. Mientras que los estudios anteriores han presentado datos limitados sobre la importancia de ciertas especies de plantas comestibles en la dieta local, recientemente se ha documentado información adicional respecto al papel de las plantas indígenas y los cambios en los usos de éstas. Esta nueva información se discute en este trabajo en vista de la adaptación de alimentos y medicinas occidentales y del aumento de contacto social entre los Cup'it y los habitantes del continente. El conocimiento actual sobre los usos tradicionales de estas plantas nativas y su importancia en la dieta local, así que los usos utilitarios y medicinales de éstas, se resumen en este trabajo.

**RÉSUMÉ.**—Des informations éthno-botaniques sur l'usage de 47 espèces de plantes indigènes sur l'île de Nunivak sont présentées ici. Les changements dans l'usage de ces plantes comme moyen de subsistance parmi les Esquimaux Cup'it de Nunivak, au cours du vingtième siècle, ont abouti à la perte de connaissances éthno-botaniques traditionnelles. Alors que les études antérieures ont présenté des informations limitées sur l'importance de certaines espèces de plantes dans le régime alimentaire régional, des données supplémentaires concernant le rôle des plantes indigènes et les changements dans l'usage de ces plantes ont été recueillies récemment. On en traite dans cet article en tenant compte de l'adoption d'aliments et de médicaments occidentaux et du contact social plus fréquent des Cup'it avec les gens du continent. La connaissance actuelle de l'usage des plantes

indigènes traditionnelles et l'importance des plantes dans les usages locaux quant au régime alimentaire et à la médecine et dans d'autres emplois utilitaires sont présentées ici en résumé.

## INTRODUCTION

The Yukon-Kuskokwim Delta, a geographic and cultural area historically occupied by Central-Alaskan-Yup'ik speaking Eskimos in southwestern Alaska, encompasses an area of almost 81 million kilometers (31,250 square miles) or 8.1 million hectares (20 million acres). This region consists of a vast and largely roadless expanse of low lying tundra that has attracted limited attention from ethnographers in the past. Native villages are located along the area's major waterways with development largely limited to commercial fishing. The degree of contact between subcultural groups within the Delta cannot accurately be determined due to conflicting early historic data and later movements of peoples throughout the region, but villages are known to have been linked by extensive trade networks, intermarriage among village residents, and village alliances during times of warfare (VanStone 1984:224). Knowledge of the Native use of indigenous flora in the Yukon-Kuskokwim Delta remains quite limited. Early ethnobotanical studies in the region are limited to research on Nunivak Island (Fries 1977; Lantis 1946, 1959), Nelson Island (Ager and Ager 1980) and the village of Napaskiak (Oswalt 1957) located along the Kuskokwim River (see Figure 1). Nunivak Island, located approximately 37 kilometers (23 miles) west of the Alaskan mainland and 209 kilometers (130 miles) west of Bethel, the largest town in the Delta, has traditionally remained the most isolated area in southwestern Alaska. Nunivak is the only major off-shore island inhabited by Central-Yup'ik speaking people, the Cup'it' or Nunivarmiut (VanStone 1989), who maintained their isolation until after World War II when an airstrip linked the island to the mainland. The present study summarizes the known traditional use of indigenous plants on Nunivak Island in addition to changes in plant use during the twentieth century, and provides comparisons of plant use with that of mainland Yukon-Kuskokwim Eskimo peoples. This information was obtained from Cup'it' elders during a four year (ca. 1995–1998) collaborative anthropological project between the author and the community of Mekoryuk. Community members participated in all facets of the project, including archaeological excavations, oral interviews and artifact and plant identification, and were monetarily reimbursed for sharing their expertise.

## REGIONAL SETTING

Nunivak Island is located in the Bering Sea off the western coast of Alaska between 165°30' and 167°30' West longitude and 59°45' and 60°30' North latitude. It is separated from the mainland in the vicinity of the Yukon-Kuskokwim Delta by the 37 kilometer (23 mile) wide Etolin Strait. Nunivak is approximately 112 kilometers long and 80 kilometers wide (70 miles × 50 miles), containing an area of about 4.4 thousand square kilometers (approximately 1.1 million acres or 445,000 hectares). The topography of the island is highly diverse. The west coast is dominated by high sea cliffs, reaching over 122 meters (400 feet) in elevation,



FIGURE 1.—Map of Yukon-Kuskokwim Delta showing villages discussed in text.

which provide a spectacular bird sanctuary for many species of sea birds. The southern coastline contains miles of sand beaches backed by active dunes. The north and east coastlines are comprised of relatively low lying tundra lands with rocky beaches and numerous coves and protective inlets. The island's interior contains an upland plateau-like area rising in elevation from 152 to 244 meters above sea level (498 to 800 feet), culminating in a mountainous area of volcanic origin. The lowland areas are generally well-watered and contain numerous lakes and ponds, while the mountainous areas have fewer lakes and ponds although most of the larger lakes are located within this latter region.

Nunivak Island is subject to a Subarctic maritime climate, influenced by the surrounding sea which produces a relatively stable temperature. Summers are generally cool and windy, with some areas experiencing frequent fog; winters are cold with both wet and dry periods. The island's mean annual temperature is  $-2^{\circ}$  Centigrade (C) ( $20^{\circ}$ F) with mean daily temperatures ranging from  $-25^{\circ}$  C

(-13° F) in January and February to 10° C (49.9° F) in August (Swanson et al. 1986). Rain and snowfall is heavier than on the adjacent mainland, resulting in frequently overcast days with dense fogs. This difference from the mainland delta regions is due to the greater effect of the Bering Sea on the island environment. Precipitation is moderate with a mean annual rainfall of 40.6 cm (16 inches) and snowfall of 137 cm (54 inches).

The present flora of Nunivak has been intensively studied by Bos (1967), who built upon the earlier work of Palmer and Rouse (1945). The island's vegetation is predominantly comprised of Arctic tundra containing a variety of lichens, grasses, sedges, flowers, and shrubs. It is similar to coastal and coastal-upland vegetation found throughout western and northwestern Alaska. The tallest island plants are shrubby willows which can reach up to eight feet in height along some of the island's river courses. Major vegetational types (Figure 2) are comprised of wet tundra, dry tundra, and grass-browse (i.e., grass hummock and beach grass-forb). Wet tundra covers approximately 57% of the island and is most prevalent on the north side of the island between the villages of Mekoryuk and Nash Harbor, extending southward. Dry tundra covers most of the interior portions of Nunivak (13.6%) and includes two recognized subtypes: dry tundra found on areas of sloping terrain having good drainage, and alpine tundra found at higher elevations on hills and mountains. Grass-browse covers approximately 23.4% of the island and is found interspersed with the dry tundra subtype and along edges of streams and rivers adapted to periodic flooding.

#### PREVIOUS ETHNOBOTANICAL RESEARCH

Previous investigations of the Native use of Nunivak Island flora are limited to the works of Margaret Lantis and Janet Fries. Margaret Lantis spent a year on Nunivak (ca. 1939-1940) studying the social dynamics of the Cup'it people (Lantis 1946), with subsequent research efforts focusing on the development of children, local genealogies, the psycho-dynamics of Cup'it society, and community politics. A brief summary of local plant use was later published by Lantis (1959) along with comparisons to the Native use of plants throughout Alaska. In 1977, Janet Fries (1977) completed a senior honor's paper on the vascular flora of Nunivak which addressed the flora she found to be in current use at the time of her study. My investigation of the use and importance of island flora stems from my 1995-1998 Ph.D. anthropology research on Nunivak where I was able to work closely with Cup'it elders from the village of Mekoryuk, the only village remaining on Nunivak, and build upon these earlier studies (Griffin 1999). While my research focus was based on reconstructing changes in Native lifeways over time at the village of Nash Harbor, located approximately 43 kilometers (27 miles) west of Mekoryuk, I was also able to discuss traditional use of indigenous plants with island elders. This paper presents a summary of Cup'it plant use derived from elder interviews both in their homes and during collecting activities.

Indigenous plants were an integral part of the year-round diet of Eskimo people in addition to their incorporation in other facets of their life. Contrary to the popular perception of Eskimo people surviving solely on fish and meat, the Cup'it utilized a large number of local plants for food, medicinal, and utilitarian

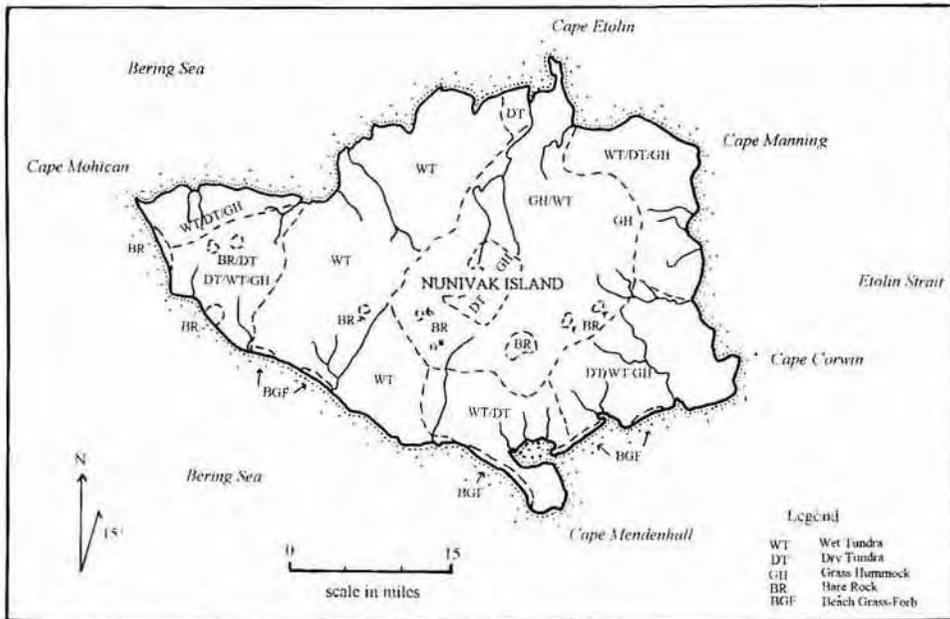


FIGURE 2.—Distribution of major vegetation types (adapted from Bos 1967).

purposes. An earlier Alaskan study estimated that up to 15% of the diet of Western Eskimo people (Kotzebue to Alaska Peninsula) is made up of vegetable resources (Young and Hall 1969:43). While plant resources remained sparse on some off-shore islands such as St. Lawrence Island (Young and Hall 1969), on Nunivak they provided a significant addition to the Cup'it's year-round diet. Table 1 provides a list of the seasonal use of indigenous plants by the Cup'it. A complete list of all utilized species (including subspecies, variations and synonyms), authority for scientific names and voucher specimen numbers is included in the Appendix.

#### NATIVE PLANT TAXONOMY

A dictionary of Cup'ig terms and their roots is in draft form and an analysis of Native root systems is not yet possible. However, an examination of general Yup'ik terms (Jacobson 1984) provides comparative data useful in distinguishing some basic plant terminology distinctions among the Cup'it. Yup'ik speakers (including the Cup'it) tend to divide plants into basic groups based on how plants were traditionally used, their similarity in appearance or physical characteristics. For example the Cup'ig plant name *ciwassit* translates to 'wild greens that can be cooked' and is used to denote several distinct species that are prepared in a similar manner (i.e., *Rumex arcticus* (sour dock), *Polygonum bistorta* (bistort) and *P. viviparum* (alpine bistort)). *Kumarutet* is used to denote all moss species (e.g., *Pohlia nutans*) based on the traditional use of moss as a wick in lamps (*kuman* = lamp, light). Examples of plants grouped by similarity in appearance or setting include: 1) *elquat*—term used to designate several varieties of seaweed (e.g., *Palmaria pal-*

TABLE 1.—Seasonal use of indigenous food and medicinal plants on Nunivak Island.

Scientific name	Common names	Cup'ig names	Season	Plant part
<b>Food Plants</b>				
<i>Angelica lucida</i>	"Wild Celery"	<i>ik'itut</i>	S, Su	leaves, stalk
<i>Arctostaphylos alpina</i>	Alpine Bearberry	<i>kavlag</i>	Su, F	berries
<i>Caltha palustris</i>	Marsh Marigold	<i>wivlut</i>	S, W	entire plant
<i>Carex</i> spp.	Sedges	<i>pekneret</i>	F	root, stem
<i>Cladonia</i> spp.	Lichens		S	entire plant
<i>Claytonia tuberosa</i>	Tuberous Spring-Beauty "Wild Potato"	<i>ulpit</i>	S	corm
<i>Conioselinum chinense</i>	Western Hemlock-Parsley		S, Su	root
<i>Draba borealis</i> or <i>D. hyperborea</i>	"Wild Lettuce"	<i>inguqit</i>	S, Su, W	leaves
<i>Dryopteris dilatata</i>	Shield Fern	<i>cilqaarit</i>	Su, F	fronds
<i>Empetrum nigrum</i>	Crowberry	<i>paunrat, pauner</i>	F, W	berries
<i>Epilobium angustifolium</i>	Fireweed		Su	leaves
<i>Eriophorum angustifolium</i>	Tall Cottongrass	<i>pekner</i>	Su, F	base of stem
<i>Fucus</i> spp.	Bladderwrack	<i>elquat</i>	S, Su, F, W	plant
<i>Hippuris tetraphylla</i> or <i>H. vulgaris</i>	Mare's Tail	<i>tayaarut</i>	S, F, W	leaves, stems
<i>Honckenya peploides</i>	Beach Greens, Seabeach Sandwort	<i>tukullegat</i>	S, Su, W	leaves, stems
<i>Ledum palustre</i>	Labrador Tea	<i>ay'ut</i>	S, Su	leaves
<i>Ligusticum scoticum</i>	Beach Lovage, "Wild Parsnip/Parsley"	<i>tuk'ayut, ciukarrat</i>	S, Su	roots, leaves, stems
<i>Mertensia maritime</i>	Oysterleaf	<i>ciunerturpat</i>	?	leaves
<i>Oxycoccus microcarpus</i>	Bog Cranberry		Su, F	berries
<i>Oxyria digyna</i>	Mountain Sorrel	<i>quulistar</i>	S, Su, W	leaves
<i>Palmaria palmate</i>	Seaweed, Dulse	<i>elquat</i>	Su, F, W	plant
<i>Parrya nudicaulis</i>	"Wild Cabbage/Celery"	<i>inguqit</i>	S, Su, W	leaves
<i>Pedicularis verticillata</i>	Wooly Lousewort		S	flowers
<i>Pohlia nutans</i>	Moss	<i>kumarutet</i>	S	plant
<i>Polygonum bistorta</i>	Bistort, Pink Plumes	<i>ciwassat</i>	S, Su	leaves
<i>Polygonum viviparum</i>	Alpine Bistort, "Wild Rhubarb"	<i>ciwassit</i>	S, Su	rhizome
<i>Ranunculus pallasii</i>	Pallas Buttercup		S, Su	leaves, stems
<i>Rubus arcticus</i>	Nagoonberry	<i>puuyaragur</i>	Su	berries
<i>Rubus chaemaemorus</i>	Cloudberry	<i>atsar atsakutag</i>	Su, W	berries

Table 1 (continued)

Scientific name	Common names	Cup'ig names	Season	Plant part
<i>Rumex arcticus</i>	Dock, Sour Dock	<i>ciwassit</i>	S, Su, W	leaves, stems
<i>Salix alaxensis</i>	Alaska Willow	<i>qogyuguat</i>	S, Su	catkins
<i>Salix pulchra</i>	Diamondleaf Willow	<i>qogyuguat</i>	S, Su	catkins, leaves
<i>Saxifraga</i> spp.	Saxifrages	<i>qulissat</i>	S	leaves
<i>Sedum roseum</i>	Roseroot, Stonecrop	<i>meqtat neqiat</i>	S	flowers
<i>Senecio pseudo-Arnica</i>	Ragwort, Fleabane		Su, W	leaves, stems
<i>Streptopus amplexifolius</i>	Twisted Stalk	<i>atsarllug</i>	Su	berries
<i>Vaccinium uliginosum</i>	Alpine Blueberry, Bog Blueberry	<i>currat</i>	Su	berries
<i>Vaccinium vitis-idaea</i>	Lingonberry, Low-bush Cranberry	<i>tumagllir, tumaglikatat</i>	S, F, W	berries
<b>Medicinal Plants</b>				
<i>Artemisia tilessi</i>	Stinkweed, Wormwood		S, Su, F	leaves
<i>Betula exilis</i>	Dwarf Birch		?	leaves
<i>Dryopteris austriaca</i>	Shield Fern	<i>centurkar</i>	S, Su, ?	fronds
<i>Epilobium angustifolium</i>	Fireweed		Su	leaves
<i>Eriophorum</i> spp.	Cottongrass	<i>musqu, melqitutet</i>	S, SU	flowers
<i>Ledum palustre</i>	Labrador Tea	<i>ay'ut</i>	S, Su, F	leaves, stems
<i>Rubus chamaemorus</i>	Cloudberry	<i>atsar atsakutag</i>	Su, F	berries
<i>Salix fuscescens</i>	Willow	<i>qimugkararat</i>	S, Su, F	leaves, catkins
<i>Salix pulchra</i>	Diamondleaf Willow	<i>qogyuguat</i>	S, Su, F	leaves
<i>Sedum rosea</i>	Roseroot, Stonecrop	<i>meqtat neqiat</i>	S	leaves
<b>Utilitarian Used Plants</b>				
<i>Aconitum delphinifolium</i>	Monkshood	<i>esetegneg</i>	?	unknown
<i>Carex</i> spp.	Sedges	<i>pekneret</i>	F	leaves
<i>Cladonia rangiferina</i>	Lichens, Reindeer Moss		S, Su, F, W	plant
<i>Elymus mollis</i>	Wild Rye Grass		S, Su, F	leaves
<i>Equisetum arvense</i>	Common Horsetail	<i>kenret</i>	S, Su, F	stems
<i>Pohlia nutans</i>	Moss	<i>kumarutet</i>	S, Su, F	entire plant
<i>Rumex arcticus</i>	Sour Dock, "Wild Spinach"	<i>ciwassit</i>	Su, F	leaves
<i>Vaccinium vitis-idaea</i>	Lingonberry, Low-bush Cranberry	<i>tumagllir, tumaglikatat</i>	Su, F	berries

*mata* [dulse], *Fucus* spp. [bladderwrack]), and 2) *agyam an'a(i)*—used for all puffball species (*Lycoperdon* spp. and *Calvatia* spp.). In Yup'ik, *agyam ana* translates to meteor and meteors are traditionally said to turn into puffballs when they land (Jacobson 1984:48). Still other plant names highlight distinctions within a genus such as *qugyuguat* which is used to refer to all *Salix* (willow) species except those exhibiting catkins which are referred to as *qimugkararat*. Further analysis is needed in order to fully understand the Cup'it's concept and categorization of local flora.

A similarity of plant use and some Native plant names between the Cup'it of Nunivak Island and the Inuit on the Seward Peninsula to the north were identified during the study. The Eskimo linguistic branch consists of two clearly differentiated sub-groups, Yup'ik and Inuit-Inupiaq (Woodbury 1984). Yup'ik was spoken aboriginally on the coast of the Chuckchi Peninsula in Siberia and in Alaska from Norton Sound south to the Alaska Peninsula and east to Prince William Sound. The Cup'it speak a sub-dialect of Yup'ik known locally as Cup'ig which is the most divergent dialect within the Yup'ik branch. The Inuit of Northern Alaska and Canada speak Inupiaq which is spoken by Inuit peoples from the Seward Peninsula in Alaska across Arctic Canada. Similarities between some Cup'ig, Yup'ik and Inupiaq plant names (e.g., *kavlag—kavlak—kavlaq* [*Arctostaphylos alpina*], *paunrat—paunraq—paungaq* [*Empetrum nigrum*], *pekner—pekneq—pikneq* [*Eriophorum angustifolium*]) and food preparations (e.g., *akutar—akutaq—akutuq* [Eskimo ice-cream comprised of berries, seal oil, reindeer tallow (Crisco), snow and sometimes salmon eggs]) highlight extended contact between western Alaskan peoples over time. Further research is needed to evaluate the degree of sharing between these language branches with regard to the recognition and use of indigenous plants.

#### PLANT HARVEST, PREPARATION AND STORAGE

On Nunivak, most indigenous plants were traditionally gathered by women and children when the men were harvesting other available resources (e.g., caribou, waterfowl, seal) (Della Boesche, personal communication September 1995; Lantis 1946). While fresh spring greens provided a welcome addition to the diet, which in winter was based largely on dried and stored foods, other greens were harvested throughout the year as they ripened, and used with some of those stored for winter use. With the melting of the island's snow pack, local greens and berries not picked during the previous fall's harvest, begin to appear and were added to the local diet. Depending on the time the ice pack began to break-up, Cup'it families would leave their winter villages and move to spring seal camps. Cup'it men would journey out along the ice to harvest arriving sea mammals (i.e., seals, walrus) while the women would spend much of their time harvesting available plant resources (greens and seaweeds) and shellfish. Early spring plants included: marsh marigold (*Caltha palustris*), sour dock (*Rumex arcticus*), wild celery (*Angelica lucida*), wild lettuce (*Draba borealis* or *D. hyperborea*), wild parsnip (*Ligusticum Hultenii*), wild rhubarb (*Polygonum viviparum*), mountain sorrel (*Oxyria digyna*), Pallas buttercup (*Ranunculus pallasii*), and Labrador tea (*Ledum palustre decumbens*).

After the completion of the hunting season, families would move to summer fish camps. Fish comprised the most prolific and essential subsistence resource for many Alaskan Natives living in the Yukon-Kuskokwim Delta region and its harvest would occupy the majority of the families' efforts for several months. Traditional plants would continue to be harvested as they ripened and were eaten fresh or placed in underground caches for temporary storage. By late summer/early fall, several berry species (e.g., *Rubus chamaemorus*, *R. arcticus*, *Empetrum nigrum*) and local greens (e.g., *Rumex arcticus*) were ready to be harvested and women and children would spend most days on the tundra gathering plant resources.

Most plants were available in a variety of locales and their harvest did not dictate moving the family to specific camps. Plants that grew in abundance in specific terrain, such as several varieties of cliff greens, usually offered other resources that could be harvested at the same time (e.g., fish, Sandhill cranes). Greens such as *Rumex arcticus* (sour dock) could be found throughout the island and all old camp sites are said to contain buried cache pits once used for plant storage (Williams and Williams 1995a). Still, several specific camps were highlighted in oral interviews for their abundance of particular greens. These camps would be visited seasonally and are often marked by the location of numerous stone cache pits used to store the greens until their removal in the fall to the harvester's winter residence.

As an example, when harvesting "wild spinach" or sour dock, elders state that they would stay in an area until they had harvested enough for their family's long-term needs (Amos 1991; Kiokun 1995a). After picking, they would cook the spinach a little bit before placing it into a cache dug underground.

Cook em half way, just for the leaves to just shrivel up and not take much space, and they would dig ditches and line it with a certain type of twigs and grass and put em' in there until the weather gets colder, before the ground get hard, knowing that when it freezes, that *Ciwassat*<sup>2</sup> (*Rumex arcticus*) would freeze in with the earth. So before that time they would go over there again, pull the *Ciwassat* out and this time leave em' on top of the ground . . . . They would cover them with grass, probably willows too to keep them together and they would leave them until it freezes (Amos 1991:16).

Before placing the spinach in the caches, the cooked leaves would be drained of juice and the pit lined with woven grass mats. "Some people rolled them up like a ball and put them away. Each roll was made enough for one meal. They rolled the spinach ball big enough for their dinner or a snack. That's how they took them out of the ground" (Amos and Amos 1989:25). Grass was placed on top before the cache was covered with rocks to insure it would not be disturbed until needed (Kiokun 1995a). Berries were stored in much the same way, except that these pits would be lined with rocks (Kiokun 1995a; Whitman 1995) and raw spinach was used as an inner lining (Kiokun 1995a). The berries would have no juice when removed, since they would have dried out while being stored underground. In the fall, people would return to their seasonal caches and transport their stored berries and greens to their winter village. Curtis (1930:36) describes



FIGURE 3.—Rock-lined cache pits at Nash Harbor Village, Nunivak Island, Alaska.

berry caches as “a small box-like structure of flat stones lined with grass and covered with sod until air-and water-tight.” Examples of such features were discovered during recent archaeological excavations on the island (see Figure 3).

#### METHODS

Earlier ethnobotanical studies among the Cup’it (Fries 1977; Lantis 1946, 1959) identified many of the plants in use in the 1940s and 1970s. Information within these studies do not always agree regarding the traditional use of island vegetation (i.e., Lantis (1946:172) states that no plant poisons were used by the Cup’it in hunting or fishing while Fries (1977:32–33) states *Aconitum delphinifolium* [aconite] was used by “old-timers” to make poison darts or arrows). My research sought additional information and clarification on the Native use of indigenous plants and changes to this use over time.

During my investigation, collecting expeditions were conducted on the local tundra near the villages of Nash Harbor and Mekoryuk in order to gather examples of utilized plants. At Nash Harbor, Cup’it crew members participating in a community archaeology project (Griffin 1999), pointed out significant plants and shared information on their harvest, preparation, use, and storage. On several occasions, I was able to join families on plant forays to gather seasonal greens or berries. Plant specific information was shared on the use of various plants during these trips.

While information on Native uses of indigenous plants was gathered informally during the initial phase of this study, more detailed, plant specific infor-

mation was obtained during subsequent interviews with Cup'it elders. Interviews took place between 1995–1998 and involved elders examining fresh and dried and pressed plant species, in addition to the identification of plants through published botanical guides (e.g., Schofield 1989). Interviews were conducted during all seasons of the year but fresh specimens were not always available during discussions. Pressed and dried specimens, collected while on the island, often proved of little use due to poor recognition resulting from color change and withered condition. In these cases, published botanical guides with large color plates were used to assist the discussion with information regarding plant identification later collaborated with Muriel Amos, a Cup'it educator who has conducted preliminary research on local plant species during the process of compiling a Cup'ig dictionary (Amos and Amos 1999).

Cup'it interpreters were used during all interviews to assist in gathering data on plant usage, although my limited knowledge of Cup'ig prevented me from freely conversing with most elders resulting in perhaps more abbreviated discussions of plant use. The majority of information was shared by Cup'it women (ages 66–85), although several Cup'it men (ages 73–95) also actively participated in these discussions. Ethnobotanical information shared by elders was generally consistent between interviews. However, knowledge of the use of a few plant species was known only by one or two individuals. When information was limited or contradictory, I have listed the source of my information in the following plant summaries. In cases where many elders offered data consistent with previously published sources, no new specific references have been cited.

#### PLANTS USED ON NUNIVAK ISLAND

The following species index details specific data on the Cup'it use of 47 indigenous plant species on Nunivak Island. This list is compiled from plants that I collected on Nunivak Island during the 1995–1998 field seasons, and supplemented with earlier reports of Native plant use (e.g., Fries 1977; Lantis 1946, 1959). In the following text, all species are arranged by alphabetical order (i.e., botanical name) with each species designated by its botanical name, common name, Cup'ig name, and any previously published Native name variation. In cases where the spelling of the Cup'ig name has not been approved, I have included the Yup'ik plant name for additional reference. Data regarding the location of each utilized plant species on Nunivak is also presented along with details regarding harvest, Native use, and storage. Previously published references on specific Cup'it plant use are included with documentation of current knowledge along with any comparative data with other Southwest Alaskan Eskimos. Previous ethnobotanical studies in the Yukon-Kuskokwim Delta include studies on Nelson Island (Ager and Ager 1980) and the village of Napaskiak (Oswalt 1957), in addition to some general data collected by Andrews (1989) and Lantis (1959) from several Lower Kuskokwim River villages (e.g., Eek, Kasigluk, and Nunapitchuk) and by Fierup-Riordan (1986) from several lower Yukon Delta and coastal villages (e.g., Alakanuk, Sheldon's Point, Scammon Bay). Figure 1 shows the location of Nunivak Island in relation to each of these villages. In addition to the villages mentioned above, comparisons of plant use are made with the Inuit from the Seward Pen-

insula in northern Alaska (Jones 1983) due to the similarity in plant use and spelling of some Native plant names (i.e., Cup'ig—Inupiaq).

The identification of plant specimens was obtained by using published guides to the flora of Alaska (Argus 1973; Barr and Barr 1983; Duddington 1971; Grout 1940; Hultén 1968; Viereck and Little 1972; Welch 1974;) with taxonomy following that of Hultén (1968), except in cases of identifying bryophytes, where I used Grout (1940) and Steere (1978), and for seaweeds, Abbot and Hollenbeck (1976) and Guiry (1974). Plant specimens were preserved in the field by drying in plant presses. Inclement weather and the general damp climate of Nunivak Island hampered the rapid drying of many plant specimens. In some cases, specimens deteriorated to such a degree that they had to be discarded. Voucher specimens of the remaining ethnobotanical plants are currently in the possession of the author but will soon be deposited at the Yupiit Piciryarait Museum, Bethel, Alaska. Not all plant species listed in the index were identified during the current study. Previous collections of Nunivak Island flora have been collected by Eric Hultén (1968), Margeret Lantis (ca. 1946), Janet Fries (ca. 1976), Peter Stettenheim (ca. 1954), and Charles Utermohle (ca. 1973). The results of previous investigations have been incorporated here in order to provide a comprehensive summary of Cup'it plant use. The location of earlier Nunivak botanical collections include: Hultén (State Museum of Natural History, Stockholm), Lantis (University of California Herbarium, Berkeley), Fries (Middlebury College, Vermont), Stettenheim (Michigan State University, East Lansing), and Utermohle (University of Alaska Herbarium, Fairbanks).

### Food Plants

*Angelica lucida* L.

"Wild Celery"

Cup'ig: *ik'itut*

Location: Common along shores, dunes, backshores, and on grassy river banks.

Use: Very important food plant. Collected in abundance throughout the summer months and eaten fresh. Leaves and stalk first eaten at the end of June when only a large stem base and few leaves are present. Later, as flower stalk grows, they become very delicious. In late July and August older stalks become woody and lose their flavor. Not stored over winter. Elders state that plant turns bad when stored in barrels. Juiciest plants were found on bird cliffs along west coast (due to nutrient rich soil) and are still harvested by hanging over cliffs on ropes.

References: Andrews 1995; Fries 1977:44–45; Lantis 1946:178; Nowak 1975

Comparisons: Ager and Ager 1980:37; Andrews 1989:340; Jones 1983:17; Oswalt 1957:31. Siberian Eskimos inhale fumes of roasted root as seasick remedy and once carried root as amulet to ward off polar bears (Hultén 1968:705). The Inupiaq name for this plant (*ikuusuk*) is similar to that in Cup'ig (Jones 1983).

Caution: Plant closely resembles the deadly *Cicuta mackenzieana* (Water

Hemlock), one of the most toxic botanicals in North America (Schofield 1989:130).

*Arctostaphylos alpina* (L.) Spreng Alpine Bearberry

Cup'ig: *kavlag* Alternative: *ga'valix*<sup>3</sup> (Lantis 1959)

Location: Common on peat mounds in wet tundra and on dry and alpine tundra.

Use: Berries eaten fresh in 1940s. While berries are large and edible, no evidence of continued use was found on Nunivak in 1970s or 1990s.

References: Fries 1977:46; Lantis 1959:61; Williams and Williams 1997.

Comparisons: Andrews 1989:496; Jones 1983:108; Oswalt 1957:21. The Inupiaq name for this plant (*kavlaq*) is very similar to that in Cup'ig (Jones 1983).

*Caltha palustris* L. ssp. *asarifolia* (DC.) Hult. Marsh Marigold

Cup'ig: *wivlut* (leaves—*arnat*, bulbs—*anngutet*)  
Alternative: *wi'vilux* (Lantis 1959)

Location: Found in marshes and along edges of creeks and rivers throughout island.

Use: In spring, before flowering, stems and leaves are eaten when tender; cooked with seal oil or seal flippers. Whole plant rarely eaten raw. Some store over winter.

References: Lantis 1959:60; Smith, Whitman and Shavings 1997a

Comparisons: Similar use recorded for Nelson Island (Ager and Ager 1980:35) and lower Yukon Delta (Fienup-Riordan 1986:113) while roots were eaten in Nunapitchuk (Andrews 1989:340, 496).

Caution: Plants contain irritant protoanemonin and should never be eaten raw (Turner and Szczawinski 1991:268).

*Carex* L. spp. Sedges

Cup'ig: *pekneret* Alternative: *pa'knex* (Lantis: 1959)

Location: Found near coastal areas in moist, silty, sandy soils.

Use: Root and lower part of stem eaten raw; not stored. Leaves peeled off but not eaten; only the basal stem eaten. Picked in fall and mixed with *akutar* (Eskimo ice cream).

References: Amos, Amos and Mike 1997; Lantis 1959:61; Smith, Whitman and Shavings 1997a; Williams and Williams 1995a, 1997

*Cladonia* Hill spp. Lichens

Cup'ig: Yup'ik: *ciruneruat* (Jacobson 1984)

Location: Found growing on rocks in tundra areas throughout island.

Use: Used in soups with other available food items. Used often during times of starvation but "old timers" liked it other times as well. No longer in use in 1990s.

References: Kiokun 1995b; Kolerok 1995

- Claytonia tuberosa* Pall. Tuberous Spring-Beauty, "Wild Potato"  
 Cup'ig: *ulpit*  
 Location: Grows on bird cliffs along northwest coast of island.  
 Use: Harvested in June. Corm eaten like potato.  
 References: Tootkaylok 1997  
 Comparison: Possible use on Nelson Island (Ager and Ager 1980:35). Corm eaten boiled or roasted by some mainland Natives while leaves are eaten in salads (Hultén 1968:405).
- Conioselinum chinense* (L.) BSP. Western Hemlock-Parsley  
 Cup'ig:  
 Location: Common on back shores.  
 Use: Roots of plant can be found by digging below last year's dead flower stalks and are eaten in spring. Voucher specimen not collected in 1990s.  
 References: Fries 1977:44
- Draba borealis* DC. or *D. hyperborea* (L.) Desv.(?) "Wild Lettuce"  
 Cup'ig: *inguqit*  
 Location: Grows quite large (>0.5m) high on bird cliffs and unconsolidated rocky slopes on the north shore.  
 Use: Appears in early spring and people begin to eat them when they are still sprouts. Leaves are washed and relished raw, dipped in seal oil or mayonnaise. Also boiled in water for few minutes and stored for winter. Sometimes mixed with *Rumex arcticus* (*ciwas-sat*). Species identification uncertain. Voucher specimen not collected in 1990s.  
 References: Amos & Amos 1989; Fries 1977:36
- Dryopteris dilatata* (Hoffm.) Gray (?) Shield Fern  
 Cup'ig: *cilqaarat* Alternative: *ilqaarat*  
 Location: Located along stream banks and marsh areas.  
 Use: Harvested when plant is dying; not when fresh. Used as tea. Not considered a medicine. Identification uncertain. No voucher specimen collected.  
 References: Williams & Williams 1997
- Empetrum nigrum* L. Crowberry  
 Cup'ig: *paunrat* or *pauner* Alternative: *pa'unaxo'tax* (Lantis 1959)  
 Location: Dominant in dry and alpine tundra in addition to peat mounds in wet tundra and sand dunes.  
 Use: Fruit is not generally preferred but the abundant black berries are picked in fall and eaten fresh or stored and mixed with other berries and eaten during winter in *akutar* (Eskimo ice cream). Berries were also added to sour dock and stored in barrels.  
 References: Fries 1977:45-46; Lantis 1959:61; Nowak 1975:26; Smith, Whitman and Shavings 1997a; Williams and Williams 1997  
 Comparison: Use similar on Nelson Island (Ager and Ager 1980:37), the Kus-

kowim and Yukon Delta villages (Andrews 1989:496; Fienup-Riordan 1986:141), Seward Peninsula (Jones 1983:94), and Napaskiak but was not stored in the latter. The entire plant was also used to brew a tea by coastal people (Oswalt 1957:22). The Inupiaq name for this plant (*paungaaq*) is very similar to that in Cup'ig (Jones 1983).

*Epilobium angustifolium* L.

Fireweed

- Cup'ig: Alternative: *ci'lkax* (Lantis 1959)  
 Location: Found in disturbed areas along coastline. Common in backdune areas and mesic tundra.  
 Use: Leaves boiled for tea and occasionally eaten when tender.  
 References: Lantis 1959:5, 59  
 Comparison: Used as tea in both Nelson Island (Ager and Ager 1980:34) and Napaskiak (Oswalt 1957:22). Young shoots also harvested in early summer and eaten raw or blanched, with seal oil on the mainland and Seward Peninsula (Jones 1983:23–24).

*Eriophorum angustifolium* Honck.

Tall Cottongrass

- Cup'ig: *pekner*  
 Location: Located in bogs and wet tundra areas.  
 Use: Base of stem was eaten raw and considered to have a sweet taste in the summer. Bulbous underground stem was collected by lemmings for winter use and caches were often found and eaten before freeze up. No knowledge of plant use as a food source identified in 1990s.  
 References: Fries 1977:21–22; Smith, Whitman and Shavings 1997b  
 Comparison: Stems were considered edible in Napaskiak (Oswalt 1957:27), plant greens were eaten in summer while roots were collected in fall along the lower Yukon Delta region, and the roots were eaten in Nunapitchuk while the reeds were dried and braided for use in construction of bags and mats (Andrews 1989:496). In the Seward Peninsula, the base of the stem was collected from mice or vole caches and eaten raw or boiled after the root hairs have been removed. Also preserved in seal oil (Jones 1983:120). The Inupiaq name for this plant (*pikniq*) is similar to that in Cup'ig (Jones 1983).

*Fucus* L. spp.

Bladderwrack

- Cup'ig: *elquat*  
 Location: Found washed up on beaches year round  
 Use: Harvested year-round but chiefly collected in late spring and early summer. Eaten raw or cooked with mussels or clams. Some people cook it by dipping in it hot water (turns green) then dipping in seal oil.  
 References: Amos, Amos and Mike 1997; Williams and Williams 1995b, 1997

*Hippuris tetraphylla* L. or *Hippuris vulgaris* L. Mare's tail

- Cup'ig: *tayaarut* Alternative: *taxa'xo* (Lantis 1959)  
 Location: Common in tundra ponds.  
 Use: In autumn, stems and leaves are cooked with seal blubber and salmon eggs. One informant said plants are collected just before ponds freeze, leaves and stems are chopped up, cooked separately, then beaten with salmon eggs and blubber. In spring, when plant floats on ponds, it's gathered and cooked in seal-meat soup. Only plant part above water used. Some stored over winter.  
 References: Lantis 1959:61; Smith, Whitman and Shavings 1997b; Williams and Williams 1997  
 Comparison: Ager and Ager 1980:37; Oswalt 1957:22; roots were eaten in Nunapitchuk (Andrews 1989:496).

*Honckenya peploides* (L.) Ehrh. ssp. *major* (Hook.) Hult. (syn. *Arenaria peploides* var. *major* Hook.) Beach greens, Seabeach sandwort

- Cup'ig: *tukullegat* Alternative: *tuku'lixax* (Lantis 1959)  
 Location: Common adjacent to tidal zone on beaches around island.  
 Use: Actively harvested on Nunivak. Edible from spring to mid-August and collected before flowering. Leaves and stems are boiled and said to taste like buttered greens. Leaves are sometimes chopped and boiled with other plants such as *Rumex arcticus* (*ciwassat*) or with seal oil blubber & fish eggs. Leaves are often cooked inside of fish when baked in open fire. Greens are stored with dock leaves for winter.  
 References: Fries 1977:31–32; Lantis 1959:60; Smith, Whitman and Shavings 1997b; Tootkaylok 1997  
 Comparison: Ager and Ager 1980:35; Jones 1983:43–44

*Ledum palustre* L. ssp. *decumbens* (Ait.) Hult Labrador Tea

- Cup'ig: *ay'ut* Alternative: *ai'yu* (Lantis 1959)  
 Location: Abundant on dry tundra and on peat mounds in wet tundra.  
 Use: Picked in spring/early summer before plant flowers. Leaves are delicious used in tea. Recently used primarily as flavoring in black tea.  
 References: Fries 1977:46; Kiokun 1995a; Lantis 1959:61  
 Comparison: Similar use in Nelson Island (Ager and Ager 1980:37–38), Nunapitchuk (Andrews 1989:340, 496), lower Yukon Delta area (Fienup-Riordan 1986:113), Seward Peninsula (Jones 1983: 61), and Napaskiak (Oswalt 1957:32) although the latter village also used dried stalks in healing practices to get rid of ghosts.  
 Caution: Plant contains andromedo toxins. Safe in weak tea solutions but should not be used too strong (Turner and Szczawinski 1991:267).

*Ligusticum scoticum* L. ssp. *hultenii* (Fern.) Calder & Taylor  
 Beach Lovage or "Wild Parsnip/Parsley"

- Cup'ig: *tuk'ayut, ciukarrat*  
 Alternative: *tukai'yuk* or *ciuga'Xax* (Lantis 1959)
- Location: Common along backdunes and sandy areas in addition to the interior.
- Use: First thing available in spring once snow melts. When plant first sprouts, roots eaten raw, dipped in seal oil or eaten without oil. Often eaten with dried fish in spring. Leaves and stems are eaten raw or dipped in seal oil or boiled and eaten as greens. By late summer, leaves gets large and are considered mildly poisonous. Cooked and added to *akutar* (Eskimo ice cream). Fresh leaves provide a good source of Vitamins A and C.
- References: Fries 1977:44; Kiokun 1995a, 1995c; Lantis 1959:60; Smith, Whitman and Shavings 1997b; Williams and Williams 1997
- Comparison: Ager and Ager 1980:37; Fienup-Riordan 1986:112; Jones 1983:14. The Inupiaq name for this plant (*tukkaayuk*) is similar to that in Cup'ig (Jones 1983).

*Lycoperdon* Pers. spp. and *Calvatia* Fr. spp. Puffballs

- Cup'ig: *agyam an'a(i)*
- Location: Located in wet tundra near coastline.
- Use: Said to be eaten by mainlanders but not on Nunivak. Considered "feces of the stars." Matthiessen (1967:23) earlier reported harvest of "red mushrooms" on Nunivak but no knowledge of the Native use of fungi is recalled today.
- References: Williams & Williams 1997

*Mertensia maritima* (L.) S.F. Gray Oyster Leaf

- Cup'ig: *ciunerturpat*
- Location: Along coastal areas.
- Use: Leaves eaten on Nunivak long ago but harvest and preparation information no longer known.
- References: Williams & Williams 1997
- Comparison: On Nelson Island, the long leafy stems were placed whole in cold water and brought to boil. They were cooked briefly and eaten with seal oil. No longer used today (Ager and Ager 1980:38).

*Oxycoccus microcarpus* Turcz. (syn. *Vaccinium oxycoccus* L.) Bog Cranberry

- Cup'ig: Yup'ik: *uingiar* (Jacobson 1984)
- Location: Common in peat bogs.
- Use: Berries eaten by people of Mekoryuk but not found in sufficient quantity to constitute an important part of the berry harvest.
- References: Nowak 1975:26
- Comparison: Ager and Ager 1980:37; Fienup-Riordan 1986:141

*Oxyria dignya* (L.) Hill Mountain Sorrel, "Sourgrass"

- Cup'ig: *quulistar*
- Location: Abundant on cliffs in alpine tundra and in dry tundra near the coast.

Use: Beginning in spring, leaves are eaten raw, dipped in seal oil, or boiled. Larger leaves are relished by families that used to live at Nash Harbor where the plant grows in abundance along rocky slopes. Others prefer the leaves of the similar *Rumex arcticus* (*ci-wassat*), common near fish camps and Mekoryuk. Leaves were added to sour dock and berries and stored in barrels.

References: Fries 1977:29; Lantis 1959:61; Nowak 1975; Smith, Whitman, & Shavings 1997b

Comparison: Ager and Ager 1980:35; Jones 1983:65

Caution: Edible in moderation. If eaten in large quantities or over long periods of time, they can cause poisoning and interfere with the bodies calcium metabolism (Turner and Szczawinski 1991:211).

*Palmaria palmata* (L.) Stackhouse Seaweed, Dulse

Cup'ig: *elquat*

Location: Common on rocks in middle and upper tidal zones.

Use: Collected in summer or during winter when ice cracks expose seaweed on rocks. Eaten raw or in fresh soup with fish, mussels or seal meat. Dipped in hot water (turns green), seal oil and then eaten. *Elquat* appears to be a generic name for seaweed species however no other varieties were seen or collected during 1990s.

References: Kiokun 1995a; Lantis 1959:61; Nowak 1975:26; Williams & Williams 1995a

*Parrya nudicaulis* (L.) Regel (?) "Wild Cabbage", "Wild Celery"

Cup'ig: *inguqit* Alternative: *inu'kit* (Lantis 1959)

Location: Found along cliffs.

Use: Leaves usually eaten raw, occasionally boiled, or stored with dock leaves for winter use. Cliff greens. Species identification uncertain. No voucher specimen collected.

References: Kiokun 1995a; Lantis 1959:62

*Pedicularis verticillata* L. Woolly Lousewort

Cup'ig: Yup'ik: *ulevleruyak* (Jacobson 1984)

Location: Common on island back shores, wet tundra, and mesic tundra.

Use: Flowers of this genus are popularly called "Bumblebee food" and are picked and sucked for nectar.

References: Fries 1977:50

Comparison: In addition to the use of its nectar, Nelson Island Natives are known to harvest the roots of some *Pedicularis* spp. in the early spring and eat them raw with seal oil (Ager and Ager 1980:38).

*Pohlia nutans* (Hedw.) Lindb. (syn. *Webera nutans* Hedw. Descr.) Moss

Cup'ig: *kumarutet* Alternative: *ke'agenax* (Lantis 1959)

Location: Generally found in wet tundra areas.

Use: In spring, seal meat is boiled with moss for soup. Moss sometimes mixed with seal oil and fish eggs. Also used as tea. No longer used in 1990s.

References: Burg 1941; Kolerok 1995; Lantis 1959:61; Williams & Williams 1995b

Comparison: Ager and Ager 1980:33

*Polygonum bistorta* L.

Bistort, Pink Plumes

Cup'ig: *ciwassat*

Location: Found on grassy hummocks in the interior.

Use: Cup'ig name is similar to that given to several other plants (e.g., *Polygonum viviparum*, *Rumex arcticus*) but is not thought to have been actively sought on Nunivak Island due to scarcity. No information on use available during 1990s.

References: Fries 1977:30

Comparison: Jones 1983:19

Caution: Leaves of several polygonum spp. are phototoxic. They should not be eaten in large quantities or over prolonged periods (Turner and Szczawinski 1991:24, 211, 272).

*Polygonum viviparum* L.

Alpine Bistort, "Wild Rhubarb"

Cup'ig: *ciwassat*

Alternative: *an.agocu'noax* (Lantis 1959)

Location: Common in many habitats particularly along the coastline.

Use: In the early spring and summer the rhizome is collected and eaten raw. Cup'ig plant name similar to that given to several other local plants (e.g., *Polygonum bistorta*, *Rumex arcticus*). Not stored.

References: Fries 1977:29; Lantis 1959:59

Comparison: Leaves of *P. alaskana* were gathered and eaten in early summer in Nunapitchuk (Andrews 1989:340, 496).

Caution: Leaves of several polygonum spp are phototoxic. They should not be eaten in large quantities or over prolonged periods (Turner and Szczawinski 1991:24, 211, 272).

*Ranunculus pallasii* Schlecht.

Pallas Buttercup

Cup'ig:

Alternative: *agolu'noux* (young), *pi'nasga'sax* (mature)  
(Lantis 1959)

Location: Common in tundra ponds (submerged or floating).

Use: Leaves and stems of plant are collected in spring and eaten boiled. They're considered very tender and delicious. After boiling, seal oil poured over them or else shoots are boiled in seal meat soup. In late summer they are cooked with dock leaves. (Fries states that they are locally called "wivalook" but she is probably referring to *wivlut* which is the same name given to *Caltha palustris* (marsh marigold). Species not identified in 1990s.

References: Fries 1977:33–34; Lantis 1946:178, 1959:61

Comparison: Ager and Ager 1980:35; Andrews 1989:340, 496; Fienup-Riordan 1986:112

Caution: *Ranunculus* spp known to contain varying quantities of an acrid, blistering causing juice which yields protoanemonin. Plant considered potentially poisonous to humans (Turner and Szczawinski 1991:104–105).

*Rubus arcticus* L. Nagoonberry, Arctic Raspberry

- Cup'ig: *puuyaragur*; bloom = *puuyuraqur*  
 Location: Found in mesic tundra, backdunes and on peat mounds.  
 Use: Not many on island. Berries picked from mid-August to September and eaten fresh. Fries had earlier reported no evidence of harvest in 1970s although well known in 1990s.  
 References: Fries 1977:39–40; Kiokun 1997; Smith, Whitman & Shavings 1997b  
 Comparison: Oswalt 1957:23; Jones 1983:103

*Rubus chamaemorus* L. Cloudberry, "Salmonberry"

- Cup'ig: *atsar atsakutag* Alternative: *a'tsax* (Lantis 1959)  
 Location: Abundant in many habitats including back shores, roadsides, peat mounds of wet tundra, and dry tundra.  
 Use: Fruit is abundant all over island in mid to late August. It is the most sought-after berry on the island. Berries are eaten raw, frozen for winter use (alone or with *Vaccinium uliginosum* (*currat*) and *Empetrum nigrum* (*pauner*), or mixed with other berries into *akutatar*. Cup'it believe that a long winter with lots of snow insures a large harvest the following summer. Berries were traditionally stored in seal-pokes without being cooked or stored in rock-lined underground pits that were lined with *Rumex arcticus* (sour dock) leaves, berries packed in, covered with more leaves, sod, then rocks.  
 References: Edwards 1995; Fries 1977:39; Nowak 1975:26; Williams & Williams 1997  
 Comparison: Andrews 1989:496; Fienup-Riordan 1986:141; Jones 1983:74; Oswalt 1959:23

*Rumex arcticus* Trautu. Sour Dock, Dock, "Wild Spinach"

- Cup'ig: *ciwassat* Alternative: *ciwa'sax* (Lantis 1959)  
 Location: Common in wet tundra areas including along tundra ponds, peat ridges and standing water.  
 Use: Delicious and important edible plant for Nunivak people. Contains high amounts of Vitamins A and C. Young stems are eaten raw in spring, or chewed with juice sucked from them. Leaves are eaten raw with seal oil or boiled in summer. By late summer stalks are considered too stringy. For winter use, leaves were parboiled, juice drained off and placed underground in temporary caches. Braided grass mats were used to line caches with grass and willows placed on top for protection. Later stored in large wooden storage dishes; frozen. When removed from storage to make soup, it's cooked with salmon eggs and dried fish (fresh fish?) or salmon eggs and seal oil; or boiled with a little seal oil; or chopped and beaten up with fish and seal oil. Most abundantly used plant except possibly *Empetrum nigrum* (crowberries). Leaves are often chopped and boiled until all flavor enters water with the resulting sour tasting mixture frozen for use in winter and taken with sugar as a drink

- or frozen dessert. Cup'ig plant name is similar to that given to several other plants (e.g., *Polygonum bistorta*, *P. viviparum*)
- References: Curtis 1930:35; Fries 1977:28–29; Kiokun 1995a, 1995b; Lantis 1959:59; Nowak 1975:26; Williams & Williams 1995a; Whitman 1995
- Comparison: Ager and Ager 1980:35; Andrews 1989:340, 496; Fienup-Riordan 1986:112; Jones 1983:36; and Oswald 1957:24. Plant also used in the Kuskokwim River area as a landmark and navigational aid in marshy areas because plant is known to always grow in the same place (Andrews 1989:340).
- Caution: Plant contains soluble oxalatis which can interfere with calcium uptakes (Turner and Szczawinski 1991:267)

*Salix alaxensis* (Anderss.) Cov.

Alaska Willow

- Cup'ig: *qugyyguat* (common name for willow spp.)
- Location: Found along slopes of stream banks and gravel bars.
- Use: Eskimo children strip the catkins of this shrub and chew them. They are commonly referred to as "Eskimo bubble-gum" and are eaten before seeds ripen in June and July.
- References: Fries 1977:28; Williams & Williams 1997
- Comparison: Similar use reported for Nelson Island (Ager and Ager 1980:34–35), Napaskiak (Oswald 1957:24–25) and the Seward Peninsula (Jones 1983:8), in addition to the tips of leaves being eaten raw with seal oil or added to meat or fish stews and soups. On Nelson Island, the shrub was also sometimes burned to produce ashes which were added to chewing tobacco or snuff.

*Salix pulchra* Cham.

Diamondleaf Willow

- Cup'ig: *qugyyguat* (common name)  
Alternative: *ki'xmi'ax* (Lantis 1959)
- Location: Located on wet tundra and along gravel bars and banks of rivers and streams.
- Use: Flowers were eaten raw. In 1927, Curtis recorded the use of this plant as a food source. In 1940, Lantis states that while most Cup'it denied ever eating willow leaves, one old woman said the leaves were once soaked in seal oil and eaten with dried fish. In 1990s, elders state that willow leaves were traditionally picked by Natives in Northern Alaska and that some Cup'it had recently adopted the practice. There is no memory of the traditional use of this plant by the Cup'it.
- References: Curtis 1930:35; Lantis 1959:60; Smith, Whitman & Shavings 1997b
- Comparison: Jones 1983:10; Oswald 1957:24. Young leaves are eaten raw with seal oil by Siberian Eskimos (Hultén 1968:359).

*Saxifraga* L. spp.

Saxifrages

- Cup'ig: *quulisstat*
- Location: Found in cliff areas
- Use: Leaves are eaten fresh in spring. Tastes like lime. Species not positively identified during 1990s interviews but believed to be *S.*

*punctata* or *S. spicata*. Cup'ig name similar to *Oxydria digyna* (Mountain Sorrel). No voucher specimen collected.

References: Williams and Williams 1997

Comparison: On the Seward Peninsula, *S. punctata* leaves were picked from spring through fall and eaten in seal oil with fish or meat or preserved in seal oil (Jones 1983:22).

*Sedum rosea* (L.) Scop. (syn. *Rhodiola rosea* L.) Roseroot, Stonecrop

Cup'ig: *megtat neqiat* Alternative: *ca'klax* (Lantis 1959)

Location: Found along coastal cliffs and rocky slopes in addition to river banks, meadows, and peat mounds in wet and dry tundra.

Use: Flowers boiled in water to make tea, not necessarily for medicine, just as a drink. Plant no longer in use in 1990s.

References: Fries 1977:36-37; Lantis 1959:24, 60

Comparison: In earlier times this plant used medicinally to treat sores in mouth on Nelson Island but it is no longer used (Ager and Ager 1980:36). The entire plant (stems, leaves, young flower buds, and roots) are picked, eaten and preserved each spring in many northern Alaskan communities (Jones 1983:55).

Caution: Various species contain oxalic acid and soluble oxalates and should be used only in moderation (Turner and Szczawinski 1991:268)

*Senecio pseudo-Arnica* Less. Ragwort

Cup'ig: Alternative: *ko'xoyu'xoax* (Lantis 1959)

Location: Found in well-drained sandy and gravelly soils on upper beaches and along crests of beach ridges.

Use: Leaves and sometimes stems are boiled with fresh fish in late summer. Also stored and eaten with dock leaves.

References: Lantis 1959:60

Comparison: On Nelson Island, in addition to above usage, the top of shoot is often peeled and eaten raw with seal oil (Ager and Ager 1980:38). The root is considered poisonous by Napaskiak residents (Oswalt 1957:34).

Caution: Plants contain pyrrolizidine alkaloids which can produce liver-damaging compounds. Ingestion is not recommended (Turner and Szczawinski 1991:16).

*Streptopus amplexifolius* (L.) DC. Twisted stalk

Cup'ig: *atsarllug*

Location: Found along river banks.

Use: Berries make noise when chewed. Some are eaten but most spit out. Very bitter and seedy.

References: Williams and Williams 1997

*Vaccinium uliginosum* L. Alpine Blueberry, Bog Blueberry

Cup'ig: *currat*

Location: Found in interior and along the coast on dry tundra slopes.

Use: Berries are sought by natives in August.

- References: Fries 1977:47; Williams & Williams 1997  
 Comparison: Ager and Ager 1980:37; Andrews 1989:496; Jones 1983:79; Oswalt 1957:25

*Vaccinium vitis-idaea* L. ssp. *minus* (Lodd.) Hult.

Lingonberry, Low-bush Cranberry

- Cup'ig: *tumagilir* or *tumaglikatat*  
 Location: Common in dry alpine tundra and on peat mounds of wet tundra.  
 Use: Berries are very sour and eaten fresh in fall. Local preference is to wait until after the first frost or the next spring and eat berries that have remained under snow all winter. Islanders occasionally make wine from them. Berries are sometimes stored. Now used in *akutar* (Eskimo ice cream) and bread.  
 References: Fries 1977:47; Lantis 1959:61; Smith, Whitman, & Shavings 1997a; Williams and Williams 1997; Tootkaylok 1997  
 Comparison: Ager and Ager:1980:37; Andrews 1989:265, 496; Jones 1983:87; Oswalt 1957:25-26

#### Medicinal Use of Plants

*Artemisia tilesii* Ledeb.

Stinkweed, Wormwood, "Caribou Leaves"

- Cup'ig: *neqniangut*  
 Location: Common on coastal cliffs and back shores.  
 Use: Leaves are boiled and 1-2 cups of the infusion taken daily for a variety of ailments including asthma. Mostly used by "old timers." Kolerok (1995) states use as medicine was introduced after arrival of Euro-Americans.  
 References: Fries 1977:52; Kolerok 1995; Smith, Whitman and Shavings 1997b  
 Comparison: On Nelson Island, tea was used as a laxative, for arthritic ailments, swollen areas, and as general tonic. Natives in both Nelson Island and Napaskiak applied leaves directly to wounds to stop bleeding, used on skin for infection, or crushed and applied to hands to remove or mask odors after cleaning fish (Ager and Ager 1980:38; Fineup-Riordan 1986:113). In Napaskiak, switches from this plant were also used during the sweatbath (Oswalt 1957:33).

*Betula exilis* (Sukatsch.) Hult

Birch, Dwarf Birch

- Cup'ig: Alternative: *cupu'yaxotet* (Lantis 1959)  
 Location: Found in dry tundra and peat mounds in wet tundra.  
 Use: Leaves boiled to make a tea. Medicine for stomach ache and intestinal discomfort. Fries found no use of birch in 1970s.  
 References: Fries 1977:28; Lantis 1959:5, 61

*Dryopteris austriaca* (Jacq.) Woyнар

Shield Fern

- Cup'ig: *centurkar* Alternative: *sto'xkax* (Lantis 1959)  
 Location: Found near stream banks.  
 Use: Fronds put in boiling water and boiled a long time to make tea. Used as medicine for stomach aches and intestinal discomfort.

References: Lantis 1959:5, 61; Williams and Williams 1997

*Epilobium angustifolium* L.

Fireweed

Cup'ig: Alternative: *ci'lkax* (Lantis 1959)

Location: Common in backdune areas and mesic tundra; in disturbed areas along coastline.

Use: Leaves boiled to make medicine for stomach ache and intestinal discomfort.

References: Lantis 1959:5, 59

Comparison: Ager and Ager 1980:36-37

*Eriophorum* L. spp.

Cottongrass

Cup'ig: *musqu'* or *melqitutet*

Location: Found near wet bogs and tundra

Use: Cotton-like flowers picked in spring and summer by children and given to old women for wiping eyes. Also used for cuts to staunch bleeding. No distinction in use between available species. Known species include *E. angustifolium*, *E. russeolum albidum*, *E. Scheuchzeri*, and *E. vaginatum*.

References: Lantis 1946:202; Smith, Whitman and Shavings 1997a; Williams and Williams 1997

Comparison: In Napaskiak, stems of plant were gathered in summer, dried, and woven for use as boot soles (Oswalt 1957:28). Cotton-like flowers were used in Eek to treat boils; method not reported (Lantis 1959: 17).

*Ledum palustre* L. ssp. *decumbens* (Ait.) Hult

Labrador tea

Cup'ig: *ay'ut* Alternative: *ai'yu* (Lantis 1959)

Location: Common throughout dry tundra, alpine tundra, and on peat mounds in wet tundra.

Use: Stems and leaves used as medicinal tea for stomach ache and intestinal discomfort and considered useful in curing colds.

References: Fries 1977:46; Kiokun 1995a; Lantis 1959:61

Comparison: On Nelson Island the leaves were also used as treatment "for those that spit blood" (Ager and Ager 1980:37). Plants even collected in winter when wind exposed them from snow.

*Rubus chamaemorus* L.

Cloudberry

Cup'ig: *atsar atsakutag* Alternative: *a'tsax* (Lantis 1959)

Location: Abundant in many habitats including back shores, roadsides, peat mounds of wet tundra, and dry tundra.

Use: Juice of berries drunk as medicine.

References: Edwards 1995; Fries 1977:39; Nowak 1975:26; Williams & Williams 1997

*Salix fuscescens* Anderss.

Willow

Cup'ig: *qimugkararat* (common name for willow with "cottonballs" [catkins]) Alternative: *pa'li* (Lantis 1959)

Use: Leaves chewed to treat sore mouth; not eaten. Old men known to put willow cotton or "Alaska cotton" (cotton grass) in inner corner of eye, if suffering from watery eyes.

References: Lantis 1959:60

*Salix pulchra* Cham.

Willow

Cup'ig: *qugyuguat* (common name for willow spp.)

Alternative: *ki'xmi'ax* (Lantis 1959)

Location: Located on wet tundra and along gravel bars and banks of rivers and streams.

Use: Leaves chewed to treat sore mouth.

References: Curtis 1930:35; Lantis 1946:202, 1959:60; Smith, Whitman & Shavings 1997a

Comparison: Nelson Island Eskimo used leaves from *Salix alaxensis* in similar manner (Ager and Ager 1980:34). Lantis (1959:5-6) reports that the inner and outer bark of willow (*Salix* spp.) was boiled and used as a gargle in one Kuskokwim River village while only the inner bark was used in another.

*Sedum rosea* (L.) Scop. (syn. *Rhodiola rosea*)

Roseroot, Stonecrop

Cup'ig: *megtat neqiat*

Alternative: *ca'klax* (Lantis 1959)

Location: Found along coastal cliffs and rocky slopes in addition to river banks, meadows, and peat mounds in wet and dry tundra.

Use: Leaves were boiled and used for medicinal tea for stomach ache or intestinal discomfort. Flowers eaten raw as aid for tuberculosis. No one recognized use of the plant in the 1970s or 1990s. Referred to as "bee's food."

References: Fries 1977:36-37; Lantis 1959:5, 24, 60; Williams and Williams 1997

Comparison: Nelson Island Eskimo used to chew roots raw to treat sores in mouth. The juice was then spit out and not swallowed. No longer in use (Ager and Ager 1980:36).

#### Utilitarian Use of Plants

*Aconitum delphinifolium* DC.

Monkshood

Cup'ig: *esetegneg*

Location: Common in mesic tundra, backdunes and near old village sites.

Use: Fries told that "old-timers" used to make poison darts or arrows from plant. Lantis states that no plant poison was used on Nunivak and denies use of plant. No knowledge of traditional use was recalled during the 1990s interviews.

References: Fries 1977:32-33; Lantis 1946:172

Caution: Plants considered highly toxic and potentially fatal. Contains aconitine and aconine (Turner and Szczawinski 1991:204-205)

*Carex* L. spp.

Sedges

Cup'ig: *pekneret*

Alternative: *pa'knex* (Lantis 1959)

Location: Common in bogs and along coastline.

- Use: Grassy leaves picked in fall, cleaned, dried, and smoked a little to make thinner for mukluk lining and socks.
- References: Amos, Amos and Mike 1997; Lantis 1959:61; Smith, Whitman and Shavings 1997a; Williams and Williams 1997

*Cladonia rangiferina* (L.) Hoffm. Lichens, Reindeer Moss

- Cup'ig: Yup'ik: *tuntut neqait* (Jacobson 1984)
- Location: Common in bogs and tundra areas.
- Use: Used for applying oil to kayak frame or pottery. Dipped in seal oil and applied to object. Plant no longer in use in 1990s.
- References: Kiokun 1995b; Kolerok 1995

*Elymus mollis* Trin. Wild Rye Grass, Dune Grass

- Cup'ig: Yup'ik: *taperrnaq* (Jacobson 1984)
- Location: Found along coastline.
- Use: Braided "seahorse grass" was traditionally used as menstrual pad for a girl's first menstruation. Leaves used for thread, woven mats and basket construction.
- References: Lantis 1946:178-181; Noatak 1986; Pratt 1990:77
- Comparison: Nelson Island Eskimo use grass in construction of baskets, mats, and ropes (Ager and Ager 1980:34). In Scammon Bay (Fienup-Riordan 1986:113) the grass is used for basket weaving and for braiding to aid in the spring harvest of herring and tom cod.

*Equisetum arvense* L. Common Horsetail

- Cup'ig: *kenret*
- Location: Found in a variety of habitats including marshy areas and tundra.
- Use: Not eaten. Stalks are used by children as play matches
- References: Smith, Whitman and Shavings 1997b
- Comparison: On Nelson Island, upper stem is brewed in tea to stop internal bleeding. Black edible nodules attached to roots are also collected and eaten. Roots are often ground up when green and added to *akutar* (Eskimo ice cream), or mixed with fish eggs into soup (Ager and Ager 1980:33).
- Caution: Common Horsetail is known to be toxic to livestock. Green vegetative shoots should never be eaten (Turner 1995:24).

*Pohlia nutans* (Hedw.) Lindb. Moss

- Cup'ig: *kumarutet* Alternative: *ke'agenax* (Lantis 1959)
- Location: Generally found in wet tundra and bog areas.
- Use: Moss dried and used as children's diapers and dressing for wounds, or soaked in seal oil for fire starter. Earlier wrapped around clay pottery (i.e., greenware) before being fired. Moss no longer harvested in 1990s.
- References: Burg 1941; Kolerok 1995; Lantis 1959:19, 61; Williams & Williams 1995b

- Rumex arcticus* Trautu. Sour Dock, Dock, "Wild Spinach"  
 Cup'ig: *ciwassat* Alternative: *ciwa'sax* (Lantis 1959)  
 Location: Common in wet tundra areas including along tundra ponds, peat ridges and standing water.  
 Use: Leaves used for lining underground cache pits used for storing berries.  
 References: Kiokun 1995a
- Vaccinium vitis-idaea* L. Lingonberry, Mountain Cranberry  
 Cup'ig: *tumagilir* or *tumaglikatat*  
 Location: Common in dry alpine tundra and on peat mounds of wet tundra.  
 Use: Berries used for dyeing dog hair for seal gut parka decorations or grass for baskets. No longer in use in 1990s.  
 References: Fries 1977:47; Lantis 1959:61; Smith, Whitman, & Shavings 1997a; Williams and Williams 1997; Tootkaylok 1997

Plants recognized by Cup'ig name but without knowledge of Native use:

Botanical Name	Common Name	Cup'ig Name
<i>Palmaria mollis</i> (Setch. & Gard.) Meer & Bird (syn. <i>Rhodymenia palmata</i> (L.) Grev.)	Dulse	<i>elqurlut</i> or <i>cinarassit</i>
<i>Ulva</i> L. spp.	Sea lettuce	<i>cinarassit</i> , <i>cinarayet</i>
<i>Alaria</i> Greville spp.	Ribbon Kelp	<i>cinarassit</i>
<i>Petasites</i> Pers. spp.	Coltsfoot	<i>qallngaguar</i>

#### CHANGES IN PLANT USE

While oral accounts have added extensive details to previous knowledge of subsistence procurement and storage techniques of the Cup'it on Nunivak Island, one must keep in mind that the memories of earlier subsistence use may be affected by recent changes to island culture. The most obvious change in Cup'it indigenous plant use, from the time of Curtis and Lantis' earlier studies, is the current lack of use of many previously used plants. With the abandonment of all but two island villages by the early 1940s, and an increased reliance on western foods, fewer families rely on traditional subsistence resources (Nowak 1975). In time, information on earlier plant use may be forgotten and influences resulting from increased contact with mainland peoples can add or supplant earlier local knowledge. For example, in 1927 Curtis (1930:35) recorded the use of willow leaves (*Salix* spp.) as a food and medicinal item. In 1939, Lantis (1959:60) found only one elder who still recalled the earlier use of willow and today such traditional use is routinely denied by Cup'it elders. Recent influence of northern Eskimos on the island population has resulted in a renewed use of the plant, although contemporary Cup'it elders believe that its use is only of recent innovation. A similar pattern of traditional versus recent use has been noted for stinkweed/wormwood (*Artemisia Tilesii*).

It is easy to assume that observed Native lifeways in the early twentieth century reflect those practiced during the late prehistoric period or before. However, in spite of the evident continuity of tool use and general subsistence practices on Nunivak throughout the past 500 years (Griffin 1999), the Cup'it's traditional lifeways may have been different, possibly more complex than those historically recorded. Following increased contact with mainland Native peoples (i.e., trade, intermarriage) and Euro-Americans (after the island's "discovery" by Russia in 1821) during the nineteenth century, changes in the use of indigenous plants were probably an on-going process, influenced by the degree and type of contact with non-Cup'it people, as well as impacts from a serious loss in Native population resulting from the introduction of western diseases throughout the nineteenth century (Griffin 1999:205-208).

The Cup'it historically maintained close ties with the people of Nelson Island to the east and may have assimilated mainland refugees from regional internecine warfare during the eighteenth century (Griffin 1999:158-163; Nelson 1877-1881: 60-61). As such, one would expect a similarity in plant use between Nunivak Island and Alaska mainland peoples based on their degree of contact in the past. Differences in recorded plant use may be due to local cultural variations, outside influence since historic contact, and/or loss of knowledge of the extent of past plant use. Another factor which may affect the comparison of Cup'it plant uses with those of other Yup'ik groups is the general lack of ethnobotanical data from the Yukon-Kuskokwim Delta.

Previous research in Native communities within the Delta have focused on documenting changes to Native lifeways following the arrival of Euro-Americans to the region (e.g., Fienup-Riordan 1983, Lantis 1946) however, these studies have provided little detailed information on traditional use of indigenous plants. As with the present Cup'it study, the collection of ethnobotanical information was not the central focus of research efforts and a systematic analysis of Native plant use throughout region has yet to be undertaken. Given the incorporation of western foods in Native diets and a corresponding decline in the harvest of many indigenous plants, additional efforts to collaborate with Native communities need to be undertaken before information on traditional use of area vegetation has been forgotten.

## CONCLUSION

The Cup'it of Nunivak Island traditionally occupied an isolated portion of southwestern Alaska with limited contact between island residents and mainland peoples until the late nineteenth century. Having to primarily rely on locally available resources for their subsistence, the Cup'it incorporated many of the island's indigenous plants into their year-round diet. As a result of working collaboratively with the residents of Nunivak Island, information on the traditional use of 47 indigenous plant species was collected along with details regarding seasonality of use, plant harvest and storage. Contrary to earlier stereotypes of Arctic peoples' heavy reliance on a meat-based diet for survival, island flora were routinely incorporated into the Cup'it's diet in addition to Native pharmacology and utilitarian tasks.

The present study comprises a survey of the Cup'it use of indigenous plants located along the north coast of Nunivak Island, Alaska, with focal areas around the villages of Mekoryuk and Nash Harbor. Given the general inaccessibility of the island's interior and southern dunes region (i.e., lack of roads and prevailing dense fog during the summer months), a wide variety of additional plant species, more acclimatized to the island's dry and alpine tundra and sand dunes may have been in common use by the Cup'it in the past but have yet to be documented. Prior to historic contact, the majority of island residents resided on the south side of the island near the Cape Mendenhall area (i.e., dune portion of the island). After 1930, a general shift in island population to the north side of the island (i.e., area dominated by low-lying wet tundra) occurred, induced by the establishment of an island trading post, school and mission (Lantis 1946). There have been no attempts to date, to document differences in variety and use of indigenous plants within Nunivak's dune region.

Extensive Native trail systems are known to have also once crisscrossed the island (Griffin 1999:333–334). Elders recall that trips through the island's interior were quite common before the island school was moved to Mekoryuk in 1940 and the majority of Cup'it villages on Nunivak Island were forced to be abandoned. Given the emphasis of the current Nunivak study on northern wet tundra areas, further research on indigenous plant use in other island vegetative regimes is needed to better understand traditional Cup'it plant use. Elders knowledgeable of traditional plant use on Nunivak remain few and younger generations have not expressed an interest in preserving this data. Except for the continuing harvest of a few popular plant species (e.g., *Angelica lucida* [wild celery], *Rumex arcticus* [sour dock], *Caltha palustris* [marsh marigold], *Rubus chamaemorus* [cloudberry]), much of their knowledge is not being passed on and will likely disappear with the passing of today's elders. It is important that additional research efforts to record traditional use of plants in these areas occur before knowledge of such use is forgotten.

#### NOTES

<sup>1</sup> The Cup'it of Nunivak Island have a distinct culture and speak their own sub-dialect of Yup'ik (Lantis 1984) known locally as Cup'ig (Drozda 1994) and by linguists as Cux (Hammerich 1958, Woodbury 1984). It is the most distinct dialect within the Yup'ik language family and serves to highlight the isolation and uniqueness of the Cup'it people.

<sup>2</sup> The current Cup'ig spellings of all plant and proper names are taken from the Cup'ig dictionary by Amos and Amos (1999) and have been placed in bold italics.

<sup>3</sup> Previously published Cup'ig names do not conform with current orthography (i.e., Amos and Amos 1999). All instances have been underlined in text.

#### ACKNOWLEDGMENTS

The fieldwork for this research was supported in part, by a Phillips Grant for Native American Research from the American Philosophical Society, and a National Science Foundation Doctoral Dissertation Improvement grant. I owe a special debt of gratitude to the

many Cup'it elders who participated in my research and shared with me their extensive knowledge of the use of indigenous plants. Elders included: Nona Amos, Walter Amos, Bertha Andrews, Irene Davis, Richard Davis, Nancy Edwards, Nan Kiokun, the late Robert Kolerok, Harry Mike, Helen Noatak, Daisy Olrún, Susie Shavings, Mary Smith, Katie Tootkaylok, Sophie Weston, Mildred Whitman, the late Elsie Williams, and George Williams, Sr. A special thanks to Muriel Amos who provided me with the Cup'ig spellings of many traditionally used plants. I would also like to extend my appreciation to the three anonymous reviewers who provided many useful comments on an earlier draft of this paper.

## LITERATURE CITED

- ABBOT, ISABELLA A., AND GEORGE J. HOLLENBERG. 1976. *Marine Algae of California*. Stanford University Press, California.
- AGER, THOMAS A., and LYNN PRICE AGER. 1980. Ethnobotany of the Eskimos of Nelson Island, Alaska. *Arctic Anthropology* 17(1):27-48.
- AMOS, MURIEL, and HOWARD AMOS. 1999. *Nunivak Island Cup'ig Language Dictionary*. Manuscript in possession of authors, Mekoryuk, Alaska.
- AMOS, WALTER. 1991. Taped interview. Robert Drozda, interviewer. Hultman Kiokan, interpreter. Mekoryuk, Alaska. 25 July. Tape 91NUN09. Copy on file at the Bureau of Indian Affairs ANCSA, Anchorage and Nunivak Island Mekoryuk Alaska (NIMA) Corporation, Mekoryuk.
- , and NONA AMOS. 1989. Taped interview. Ken Pratt, interviewer. Howard Amos, interpreters. Mekoryuk, Alaska. 2 April. Tape 89NUN02. Copy in possession of interviewer.
- , and HARRY MIKE. 1997. Taped interview. Dennis Griffin, interviewer. Howard Amos and Muriel Amos, interpreter. Mekoryuk, Alaska. 8 June. Tape 97NUN04. Copy on file at the Nunivak Island Mekoryuk Alaska (NIMA) Corporation, Mekoryuk and in interviewer's possession.
- ANDREWS, BERTHA. 1995. Taped interview. Dennis Griffin, interviewer. Marvin Kiokun, interpreter. Mekoryuk, Alaska. 22 September. Tape 95NUN25. Copy on file at the Nunivak Island Mekoryuk Alaska (NIMA) Corporation, Mekoryuk, American Philosophical Society, Philadelphia and in interviewer's possession.
- ANDREWS, ELIZABETH F. 1989. *The Akulmiut: Territorial Dimensions of a Yup'ik Eskimo Society*. Alaska Department of Fish and Game, Division of Subsistence, Technical Report No. 177, Juneau, Alaska.
- ARGUS, GEORGE W. 1973. *The Genus Salix in Alaska and the Yukon*. National Museums of Canada, Publications in Botany, No. 2, National Museum of Natural Sciences, Ottawa.
- BARR, LOU, and NANCY BARR. 1983. *Under Alaskan Seas: The Shallow Water Marine Invertebrates*. Alaska Northwest Publishing Company, Anchorage, Alaska.
- BOS, Gregory N. 1967. Range types and their utilization by Muskox on Nunivak Island. M.S. thesis, University of Alaska, Fairbanks.
- BURG, AMOS. 1941. *Nunivak Island: Nunee-wak*. Unpublished ethnographic notes from 1941 trip. Records on file in the Amos Burg Manuscript Collection, Box 1, Folder 18, Oregon Historical Society, Portland.
- CURTIS, EDWARD S. 1930. *The North American Indian, being a series of volumes picturing and describing the Indians of the United States, the Dominion of Canada, and Alaska*. Vol. 20. 1978 Reprint. Johnson Reprint Corporation, New York.
- DROZDA, ROBERT. 1994. *Qikertamteni Nunat Atrit Nuniwarmiuni: The names of places on our island*. Draft manuscript assembled by the Mekoryuk IRA Council, Nunivak Island, Alaska. Copy in possession of the author.
- DUDDINGTON, C. L. 1971. *Beginner's Guide to Seaweeds*. Drake Publishers, New York.
- EDWARDS, NANCY. 1995. Taped interview. Dennis Griffin, interviewer; Marvin Kiokun, interpreter. Mekoryuk, Alaska. 23 September. Tape 95NUN27.

- Copy on file at the Nunivak Island Mekoryuk Alaska (NIMA) Corporation, Mekoryuk; American Philosophical Society, Philadelphia, and in interviewer's possession.
- FIENUP-RIORDAN, ANN. 1983. *The Nelson Island Eskimo: Social Structure and Ritual Distribution*. Alaska Pacific University Press, Anchorage.
- . 1986. "When Our Bad Season Comes": A Cultural Account of Subsistence Harvesting and Harvest Disruption on the Yukon Delta. Aurora, Alaska Anthropological Association, Monograph Series #1.
- FRIES, JANET. 1977. *The Vascular Flora of Nunivak Island, Alaska*. Senior honors paper (Environmental Studies), Middlebury College, Middlebury, Vermont.
- GRIFFIN, DENNIS. 1999. *Portrait of Nash Harbor: Prehistory, History and Lifeways of an Alaskan Community*. Ph.D. dissertation (Anthropology), University of Oregon, Eugene. University Microfilms International, Ann Arbor.
- GROUT, A.J. 1940. *Moss Flora of North America North of Mexico, Volume II*. Nefane, Vermont.
- GUIRY, M. 1974. A preliminary consideration of the taxonomic position of *Palmaria palmata*. *Journal of the Marine Biological Association, U.K.* 54:509-528.
- HAMMERICH, LOUIS L. 1958. The western Eskimo dialects. Pp. 632-639 in *Proceedings of the 32<sup>nd</sup> International Congress of Americanists*. Munksgaard, Copenhagen.
- HULTEN, ERIC. 1968. *Flora of Alaska and Neighboring Territories: A Manual of Vascular Plants*. Stanford University Press, Stanford, California.
- JACOBSON, STEPHEN A. 1984. *Yupik Eskimo Dictionary*. Alaska Native Language Center, University of Alaska, Fairbanks.
- JONES, ANORE. 1983. *Nauriat Nigiñaqtuat: Plants That We Eat*. Maniilaq Association, Kotzebue, Alaska.
- KIOKAN, NAN. 1995a. Taped interview. Dennis Griffin, interviewer; Mona David, interpreter. Mekoryuk, Alaska. 12 September. Tape 95NUN01. Copy on file at the Nunivak Island Mekoryuk Alaska (NIMA) Corporation, Mekoryuk; American Philosophical Society, Philadelphia, and in interviewer's possession.
- . 1995b. Taped interview. Dennis Griffin, interviewer; Mona David, interpreter. Mekoryuk, Alaska. 22 September. Tape 95NUN23. Copy on file at the Nunivak Island Mekoryuk Alaska (NIMA) Corporation, Mekoryuk; American Philosophical Society, Philadelphia, and in interviewer's possession.
- . 1995c. Taped interview. Dennis Griffin, interviewer; Mona David, interpreter. Mekoryuk, Alaska. 12 September. Tape 95NUN02. Copy on file at the Nunivak Island Mekoryuk Alaska (NIMA) Corporation, Mekoryuk; American Philosophical Society, Philadelphia and in interviewer's possession.
- . 1997. Taped interview. Dennis Griffin, interviewer. Mona David, interpreter. Mekoryuk, Alaska. 14 June. Tape 97NUN17. Copy on file at the Nunivak Island Mekoryuk Alaska (NIMA) Corporation, Mekoryuk and in interviewer's possession.
- KOLEROK, ROBERT. 1995. Taped interview. Dennis Griffin, interviewer; Marvin Kiokun, interpreter. Mekoryuk, Alaska. 21 September. Tape 95NUN18. Copy on file at the Nunivak Island Mekoryuk Alaska (NIMA) Corporation, Mekoryuk; American Philosophical Society, Philadelphia, and in interviewer's possession.
- LANTIS, MARGARET. 1946. *The Social Culture of the Nunivak Eskimo*. Transactions of the American Philosophical Society XXXV, Pt. 3. American Philosophical Society, Philadelphia.
- . 1959. Folk medicine and hygiene: Lower Kuskokwim and Nunivak-Nelson areas. *Anthropological Papers of the University of Alaska* 8(1):1-75.
- . 1984. Nunivak Eskimo. Pp. 209-223 in *Arctic*, David Dumas (editor). Handbook of North American Indians, Vol. 5, William G. Sturtevant (general editor). Smithsonian Institution, Washington, D.C.
- MATHIESSEN, PETER. 1967. *Oominmak: The Expedition to the Musk Ox Island in the Bering Sea*. Hastings House, New York.
- NELSON, EDWARD W. 1877-1881. *Edward William Nelson's Alaska Journals, Volume VI*. Original manuscripts on file

- at the Smithsonian Institution Archives, Washington, D.C.
- NOATAK, ANDREW. 1986. Taped interview. Ken Pratt and Bill Sheppard, interviewer; Howard Amos, interpreter. Mekoryuk, Alaska. 25 June. Tape 86NUN03. Copy on file at Bureau of Indian Affairs ANCSA, Anchorage and Nunivak Island Mekoryuk Alaska (NIMA) Corporation, Mekoryuk.
- NOWAK, MICHAEL. 1975. Subsistence trends in a modern Eskimo community. *Arctic* 28(1):21-34.
- OSWALT, WENDELL. 1957. A Western Eskimo ethnobotany. *Anthropological Papers of the University of Alaska* 6(1):16-36.
- PALMER, L.J., and C.W. ROUSE. 1945. Study of the Alaskan Tundra with reference to its reaction to Reindeer and other Grazing. U.S. Fish and Wildlife Research Report No. 10. U.S. Government Printing Office, Washington D.C.
- PRATT, KENNETH. 1990. Economic and social aspects of Nunivak Eskimo "cliff-hanging." *Arctic Anthropology* 27(1): 75-86.
- SCHOFIELD, JANICE J. 1989. *Discovering Wild Plants: Alaska, Western Canada, the Northwest*. Alaska Northwest Books, Anchorage.
- SMITH, MARY, MILDRED WHITMAN and SUSIE SHAVING. 1997a. Taped interview. Dennis Griffin, interviewer. Mona David, interpreter. Mekoryuk, Alaska. 11 June. Tape 97NUN08. Copy on file at the Nunivak Island Mekoryuk Alaska (NIMA) Corporation, Mekoryuk and in interviewer's possession.
- , ———, and ———. 1997b. Taped interview. Dennis Griffin, interviewer. Mona David, interpreter. Mekoryuk, Alaska. 11 June. Tape 97NUN09. Copy on file at the Nunivak Island Mekoryuk Alaska (NIMA) Corporation, Mekoryuk and in interviewer's possession.
- STEERE, WILLIAM CAMPBELL. 1978. *The Mosses of Arctic Canada*. J. Cramer, Germany.
- SWANSON, J. DAVID, DEVONY LEHNER, JENNY ZIMMERMAN, and DALE PAULING. 1986. *Range Survey of Nunivak Island, Alaska*. U.S.D.A. (three volumes). Soil Conservation Service, Washington, D.C.
- TOOTKAYLOK, KATIE. 1997. Taped interview. Dennis Griffin, interviewer. Bethel, Alaska. 7 June. Tape 97NUN02. Copy on file at the Nunivak Island Mekoryuk Alaska (NIMA) Corporation, Mekoryuk and in interviewer's possession.
- TURNER, NANCY J. 1995. *Food Plants of Coastal First Peoples*. Royal British Columbia Museum Handbook. UBC Press, Vancouver.
- , and ADAM F. SZCZAWINSKI. 1991. *Common Poisonous Plants and Mushrooms of North America*. Timber Press, Portland, Oregon.
- VANSTONE, JAMES W. 1984. Mainland Southwest Alaska Eskimos. Pp. 224-242 in *Handbook of North American Indians: Arctic*, Volume 5, David Dumas (editor). Smithsonian Institution, Washington, D.C.
- . 1989. *Nunivak Island Eskimo (Yuit) Technology and Material Culture*. Fieldiana New Series, No. 12. Field Museum of Natural History, Chicago.
- VIERECK, LESLIE A., and ELBERT L. LITTLE, JR. 1972. *Alaska Trees and Shrubs*. Agricultural Handbook No. 410. U.S. Department of Agriculture, U.S. Forest Service, Washington, D.C.
- WELCH, STANLEY L. 1974. *Anderson's Flora of Alaska and Adjacent parts of Canada*. Brigham Young University Press, Provo, Utah.
- WHITMAN, MILDRED. 1995. Taped interview. Dennis Griffin, interviewer; Marvin Kiokun, interpreter. Mekoryuk, Alaska. 14 September. Tape 95NUN11. Copy on file at the Nunivak Island Mekoryuk Alaska (NIMA) Corporation, Mekoryuk; American Philosophical Society, Philadelphia, and in interviewer's possession.
- WILLIAMS, GEORGE, SR., and ELSIE WILLIAMS. 1995a. Taped interview. Dennis Griffin, interviewer; Marvin Kiokun, interpreter. Mekoryuk, Alaska. 13 September. Tape 95NUN05. Copy on file at the Nunivak Island Mekoryuk Alaska (NIMA) Corporation, Mekoryuk; American Philosophical Society, Philadelphia, and in interviewer's possession.
- , and ———. 1995b. Taped interview. Dennis Griffin, interviewer; Marvin Kiokun, interpreter. Mekoryuk, Alaska. 21 September. Tape 95NUN15.

Copy on file at the Nunivak Island Mekoryuk Alaska (NIMA) Corporation, Mekoryuk; American Philosophical Society, Philadelphia, and in interviewer's possession.

———, and ———. 1997. Taped interview. Dennis Griffin, interviewer; Mona David, interpreter. Mekoryuk, Alaska. 12 June. Tape 97NUN13. Copy on file at the Nunivak Island Mekoryuk Alaska (NIMA) Corporation, Mekoryuk and in interviewer's possession.

WOODBURY, ANTHONY C. 1984. Eskimo and Aleut Languages. Pp. 49–63 in *Handbook of North American Indians: Arctic*, Volume 5, David Dumas (editor). Smithsonian Institution, Washington, D.C.

YOUNG, STEVEN B., and EDWIN S. HALL, JR. 1969. Contributions to the ethnobotany of the St. Lawrence Island Eskimo. *Anthropological Papers of the University of Alaska* 14(2):43–53.

## APPENDIX.—Catalog of plants utilized by the Cup'it.

Scientific name and identification <sup>1</sup>	Common names	Specimen numbers <sup>2</sup>
Equisetaceae (Horsetail family)		
<i>Equisetum arvense</i> L.	Common Horsetail	Fries/Shea 22–24, 116a, 186, 275, 276, 295, 308; NUN96-06
Aspidiaceae (Shield Fern family)		
<i>Dryopteris dilatata</i> (Hoffm.) Gray	Shield Fern	Fries/Shea 337, 223a
<i>Dryopteris austriaca</i> (Jacq.) Woyнар	Fern	Lantis (1959)
Gramineae (Grass family)		
<i>Elymus mollis</i> Trin.	Wild rye grass, dune grass	Fries/Shea 329; Lantis 1946; NUN95-14, NUN96-11
Cyperaceae (Sedge family)		
<i>Eriophorum angustifolium</i> Honck.	Tall cottongrass	Fries/Shea 20, 36, 315; NUN95-13, NUN96-14
<i>Eriophorum</i> L. spp.	Cotton grass	Fries/Shea 292, 55, 18, 38, 79; Hultén (1968); NUN96-23
<i>E. scheuchzeri</i> Hoppe		Fries/Shea 292
<i>E. russeolum</i> E. Fries var. <i>albidum</i> Nyl.		Fries/Shea 55; Hultén (1968); Lantis (1946)
<i>E. vaginatum</i> L.	Hare's tail grass	Fries/Shea 18, 38, 79
<i>Carex</i> L. spp.	Sedges	Bos (1967); Fries/Shea 140, 176, 193, 296, 323, 324, 366; Hultén (1968); Utermohle (ca. 1973)
Liliaceae (Lily family)		
<i>Streptopus amplexifolius</i> (L.) DC.	Twisted stalk	Fries/Shea 171
Salicaceae (Willow family)		
<i>Salix pulchra</i> Cham.	Diamondleaf willow	Hultén (1968); Lantis (1959); NUN96-13
<i>Salix alaxensis</i> (Anderss.) Cov.	Alaska willow	Fries/Shea 102
<i>Salix fuscescens</i> Anderss.	Willow	Fries/Shea 4, 17; Hultén (1968); Lantis (1946, 1959)
Betulaceae (Birch family)		
<i>Betula exilis</i> (Sukatsch.) Hult	Dwarf birch	Fries/Shea 7, 196; Hultén (1968); Lantis (1959); NUN96-17

## Appendix (continued)

Scientific name and identification <sup>1</sup>	Common names	Specimen numbers <sup>2</sup>
Polygonaceae (Buckwheat family)		
<i>Rumex arcticus</i> Trautu.	Dock, Sour dock	Fries/Shea 318; Hultén (1968); Lantis (1959); NUN95-01
<i>Oxyria dignya</i> (L.) Hill	Mountain sorrel	Fries/Shea 113, 152, 205, 223; Hultén (1968); Lantis (1959); NUN95-05
<i>Polygonum bistorta</i> L.	Bistort, Pink plumes	Fries/Shea 124
<i>Polygonum viviparum</i> L.	"Wild rhubarb" or Alpine bistort	Fries/Shea 160, 189, 360; Hultén (1968); Lantis (1959)
Portulacacaeae (Purslane family)		
<i>Claytonia tuberosa</i> Pall.	Tuberous spring-beauty, "Wild potato"	no sample collected
Caryophyllaceae (Pink family)		
<i>Honckenyia peploides</i> (L.) Ehrh. ssp. <i>major</i> (Hook.) Hult. (Syn. <i>Arenaria peploides</i> var. <i>major</i> Hook.)	Seabeach sandwort	Fries/Shea 30, 62; Hultén (1968); Lantis (1959); NUN96-07
Ranunculaceae (Crow Foot family)		
<i>Caltha palustris</i> L. spp. <i>asarifolia</i> (DC.) Hult.	Marsh marigold	Fries/Shea 34; Hultén (1968); Lantis (1946, 1959); NUN96-05, NUN97-01
<i>Aconitum delphinifolium</i> DC.	Monkshood	Fries/Shea 224, 320
<i>Ranunculus pallasi</i> Schlecht.	Pallas buttercup	Fries/Shea 8; Hultén (1968); Lantis (1946, 1959)
Cruciferae (Mustard family)		
<i>Parrya nudicaulis</i> (L.) Regel	"Wild cabbage" or "Wild celery"	Fries/Shea 180; Hultén (1968)
<i>Draba borealis</i> DC. or <i>D. hyperborea</i> (L.) Desv.	"Wild lettuce"	Fries/Shea 204
Crassulaceae (Stone Crop family)		
<i>Sedum rosea</i> (L.) Scop.	Roseroot	Fries/Shea 15, 54, 118, 206; Hultén (1968); Lantis (1959); Stettenheim (Lantis 1959); NUN95-17
Saxifragaceae (Saxifrage family)		
<i>Saxifraga punctata</i> L. or <i>S. spicata</i> D. Don	Cordate-leaved saxifrage Spiked saxifrage	Fries/Shea 110, 200a

## Appendix (continued)

Scientific name and identification <sup>1</sup>	Common names	Specimen numbers <sup>2</sup>
Rosaceae (Rose family)		
<i>Rubus chamaemorus</i> L.	Cloudberry	Fries/Shea 32; Hultén (1968); Lantis (1959); NUN95-12, NUN96-09
<i>Rubus arcticus</i> L.	Nagoonberry, Arctic raspberry	Fries/Shea 87, 262, 303; NUN96-10
Onagraceae (Evening primrose family)		
<i>Epilobium angustifolium</i> L.	Fireweed	Hultén (1968); Lantis (1946); NUN95-07
Haloragaceae (Water milfoil family)		
<i>Hippuris tetraphylla</i> L. or <i>H. vulgaris</i> L.	Mare's tail	Fries/Shea 11, 94; Hultén (1968); Lantis (1959) Hultén (1968)
Umbelliferae (Parsley family)		
<i>Ligusticum scoticum</i> L. spp. <i>Hultenii</i> (Fern). Calder & Taylor	Beach lovage or "Wild parsnip/parsley"	Fries/Shea 26, 352, 237; Hultén (1968); Lantis (1959); NUN95-02
<i>Conioselinum chinense</i> (L.) BSP.	Hemlock parsley	Fries/Shea 252; Hultén (1968)
<i>Angelica lucida</i> L.	"Wild celery"	Fries/Shea 167; Hultén (1968); Lantis (1959); NUN95-08, NUN96-04
Empetraceae (Crowberry family)		
<i>Empetrum nigrum</i> L.	Crowberry	Fries/Shea 3; Hultén (1968); Lantis (1959); NUN95-03
Ericaceae (Heath family)		
<i>Ledum palustre</i> L. ssp. <i>decumbens</i> (Ait.) Hult	Labrador tea	Fries/Shea 13; Hultén (1968); Lantis (1959); NUN95-04
<i>Arctostaphylos alpina</i> (L.) Spreng	Alpine bearberry	Fries/Shea 16; Hultén (1968); Lantis (1959); NUN95-18
<i>Vaccinium uliginosum</i> L.	Bog blueberry	Fries/Shea 127, 270, 335; NUN95-15
<i>Vaccinium vitis-idaea</i> L. ssp. <i>minus</i> (Lodd.) Hult.	Lingonberry, Low-bush cranberry	Fries/Shea 117; Hultén (1968); Lantis (1959); NUN95-06
<i>Oxycoccus microcarpus</i> Turcz.	Bog cranberry	NUN95-33

## Appendix (continued)

Scientific name and identification <sup>1</sup>	Common names	Specimen numbers <sup>2</sup>
Boraginaceae (Borage family)		
<i>Mertensia maritima</i> (L.) S.F. Gray	Oysterleaf	Reported by Bos (1967) and Utermohle (ca 1973); Hultén (1968); NUN96-03
Schrophulariaceae (Figwort family)		
<i>Pedicularis verticillata</i> L.	Wooly lousewort	Fries/Shea 120, 143, 161; Hultén (1968); NUN95-11, NUN96-08
Compositae (Composite family)		
<i>Artemisia tilesii</i> Ledeb.	Stinkweed, wormwood, "Caribou leaves"	Fries/Shea 207; Hultén (1968); NUN95-10; NUN96-12
<i>Senecio pseudo-Arnica</i> Less.	Ragwort	Hultén (1968); Lantis (1959); NUN96-18
Cladoniaceae (Lichen family)		
<i>Cladonia</i> Hill spp.		Lichens
<i>Cladonia rangiferina</i> (L.) Hoffm.	Lichen	NUN96-01
Bryaceae (Thread-moss family)		
<i>Pohlia nutans</i> (Hedw.) Lindb.	Moss	
(syn. <i>Webera nutans</i> Hedw. Descr.)	Moss	Lantis (1959)
Lycoperdaceae (Puffball family)		
<i>Lycoperdon</i> Pers. spp.	Puffballs	
<i>Calvatia</i> Fr. spp.	Puffballs	
Fucaeeae (Brown algae)		
<i>Fucus</i> L. sp. (most likely <i>F. vesiculosus</i> L.)	Bladderwrack	NUN96-15
Palmariaceae (Red algae)		
<i>Palmaria palmata</i> (L.) Stackhouse		NUN96-16
(syn. <i>Rhodymenia palmata</i> (L.) Grev.)	Seaweed, Dulse	Lantis (1959)

<sup>1</sup> Scientific nomenclature and arrangement of species follows Hultén (1968), except in cases of identifying bryophytes (Grout 1940 and Steere 1978) and for seaweeds (Abbott and Hollenberg 1976 and Guiry 1974). Nomenclature for *Dryopteris austriaca* follows Lantis (1959).

<sup>2</sup> Voucher specimen numbers included for all referenced species: Fries/Shea specimen deposited at Middlebury College, Vermont; Hultén (1968)—State Museum of Natural History, Stockholm; Lantis (1946, 1959)—University of California Herbarium, Berkeley; Stettenheim (ca. 1954)—Michigan State University, East Lansing; Utermohle (ca. 1973)—University of Alaska Herbarium, Fairbanks; NUN#—currently in author's possession but will be deposited at Yupiit Piciryarit Museum, Bethel, AK.