A FLORISTIC STUDY OF THE EKLUTNA VALLEY

CHUGACH STATE PARK, ALASKA

A Thesis

Presented to the

Department of Botany and Range Science

Brigham Young University

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

by

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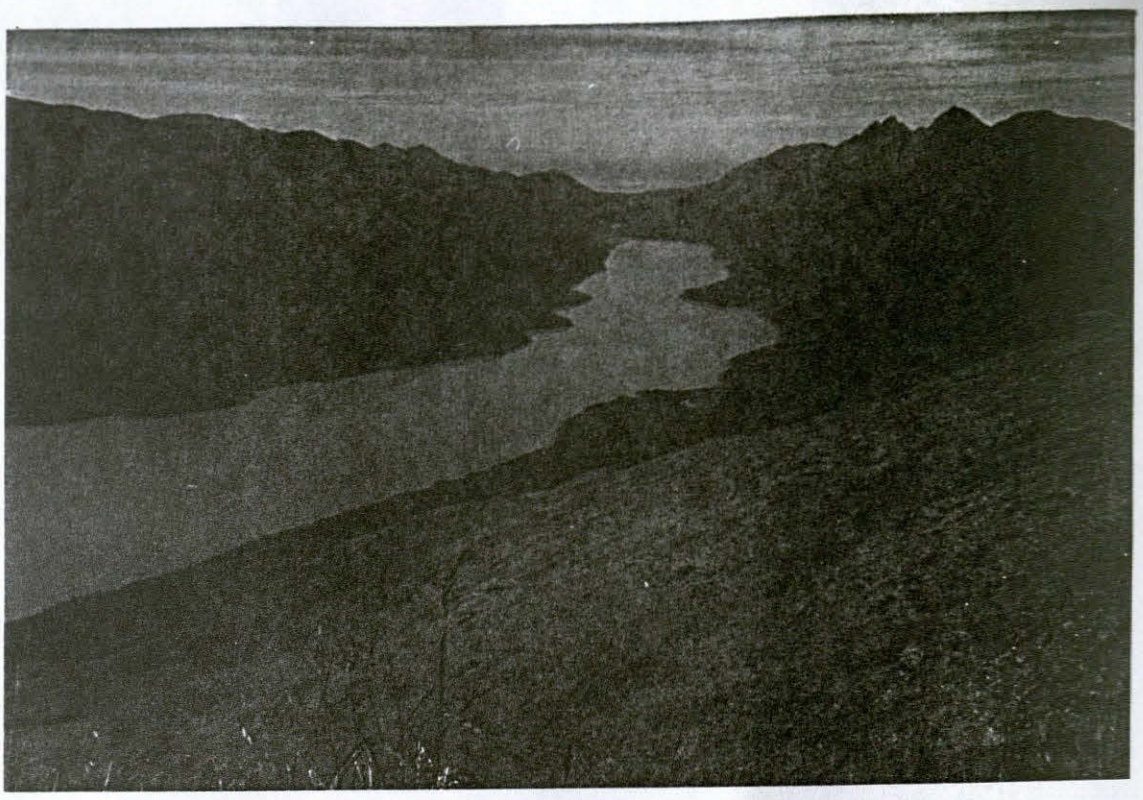
Figure 1. A Photo of the Northern Portion of Eklutna Valley. This photo was taken from Bold Ridge in a N.W.W. direction. Note the rounded glacial valley bottom and the somewhat discernable zonation along the valley rims. Eklutna Lake is in the foreground.

Figure 2. A Photo of the Southern Portion of Eklutna Valley. This photo was taken from Bold Ridge, in a S.S.E. direction. Note the partially forested delta and outwash plain in the foreground and the Eklutna Glacier in the upper left.



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INTRODUCTION

In spite of the relatively recent advances in the knowledge of the Alaskan flora, much of the state is still little known botanically. Collections in Alaska are sporadic because most areas are still inaccessible and can be reached only by boat or plane. Even when an area is reached, a researcher must often travel some distance on foot to reach collection localities. Thus, the primary obstacles to botanical exploration have been, and is, the tremendous effort required of the researcher and the resultant costs in time, money, and human energy.

Despite the many problems involved, a number of very significant works have been produced on the Alaskan flora. The earliest of these works are those of Eric Hulten's. His Flora of the Aleutian Islands was first published in 1937. Later, his Flora of Alaska and Yukon came out over a period of eleven years (from 1940 to 1951). He revised that work under the title Flora of Alaska and Neighboring Territories (1968). J. P. Anderson's accumulated notes and works were published posthumously as the Flora of Alaska and Adjacent Parts of Canada (1959). That work was later completely revised and rewritten by S. L. Welsh under a similar title, Anderson's Flora of Alaska and Adjacent Parts of Canada (1974). Still another significant work is A Flora of the Alaskan North Slope by Wiggins and Thomas (1962). Each of these works were based upon a considerable effort in collecting and field work.

This particular paper is the result of an attempt to increase our present knowledge of the Alaskan flora. The study site, Eklutna Valley, was selected for study because of its accessibility and its flora, which is representative of the montane vegetation of the Chugach Mountains. The valley was researched, through a process of intensive collecting and observation, over a period of three years. The goals were to collect and determine the plant taxa of the valley, to discover and verify range extensions, to solve any taxonomic problems, to describe and map vegetation zones and types, and to discuss the valley's flora in reference to such ecological factors as geology, topography, elevation, climate, and soils.

General Description of the Research Area

The Eklutna Valley is located between the Turnagain and Knik Arms at the head of the Cook Inlet in Southcentral Alaska. The governmental units administering portions of the area include Chugach State Park, the Municipality of Anchorage (formally the Greater Anchorage Area Borough), and along the northernmost portion of the drainage, the Matanuska-Susitna Borough (See figure 3).

The Eklutna Valley Drainage is nearly 25 miles (40 km) long, and trends in a northwesterly direction to its mouth, which opens into the upper portion of the Knik Arm on the Cook Inlet. The drainage is approximately 8 miles (13 km) wide in the southern quarter and less then 2 miles (3 km) wide near the valley's mouth (See figure 4). The most prominent topographic features include the Eklutna River Canyon at the north end of the valley, Eklutna Lake at the middle, and the East and

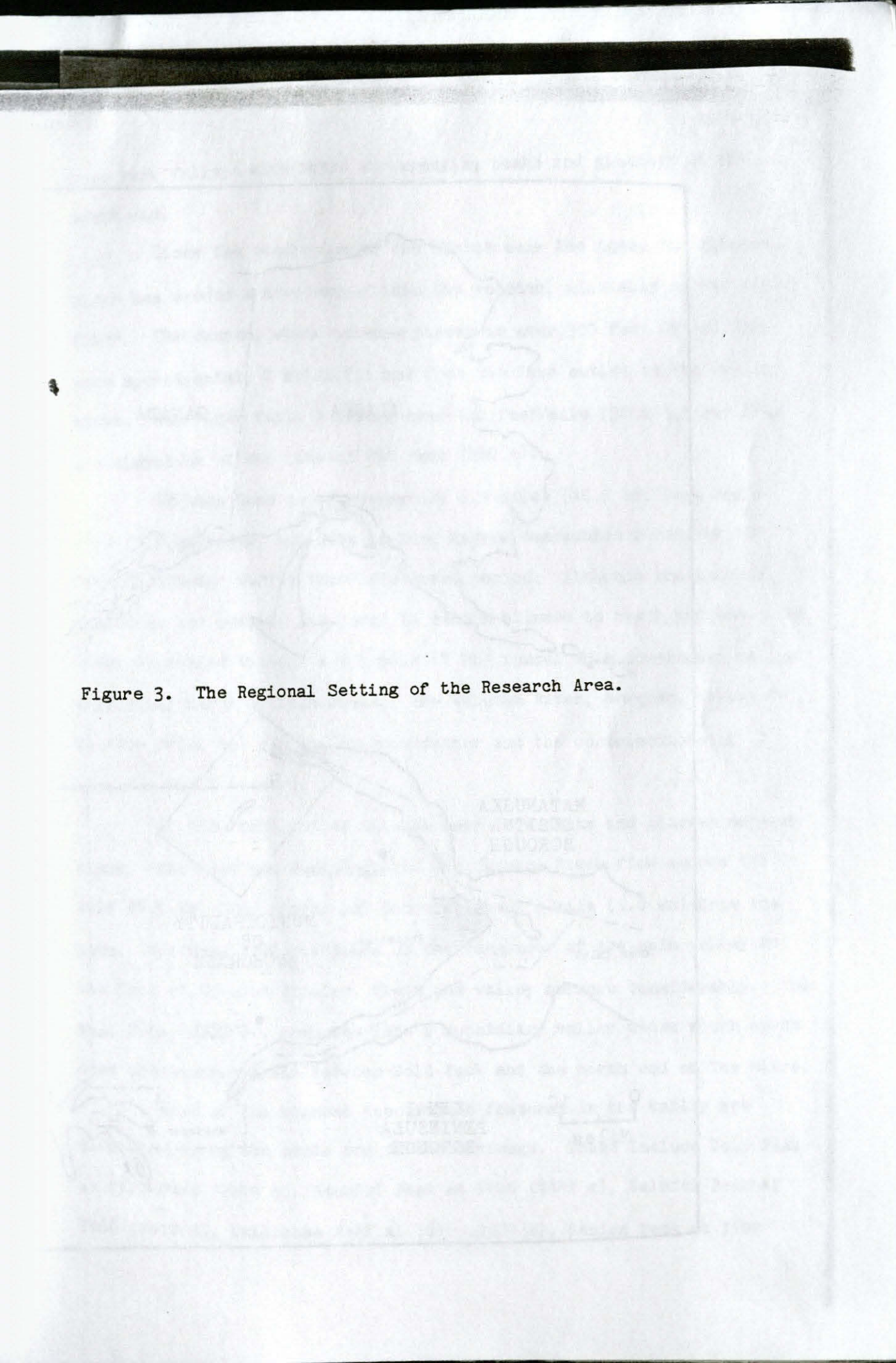
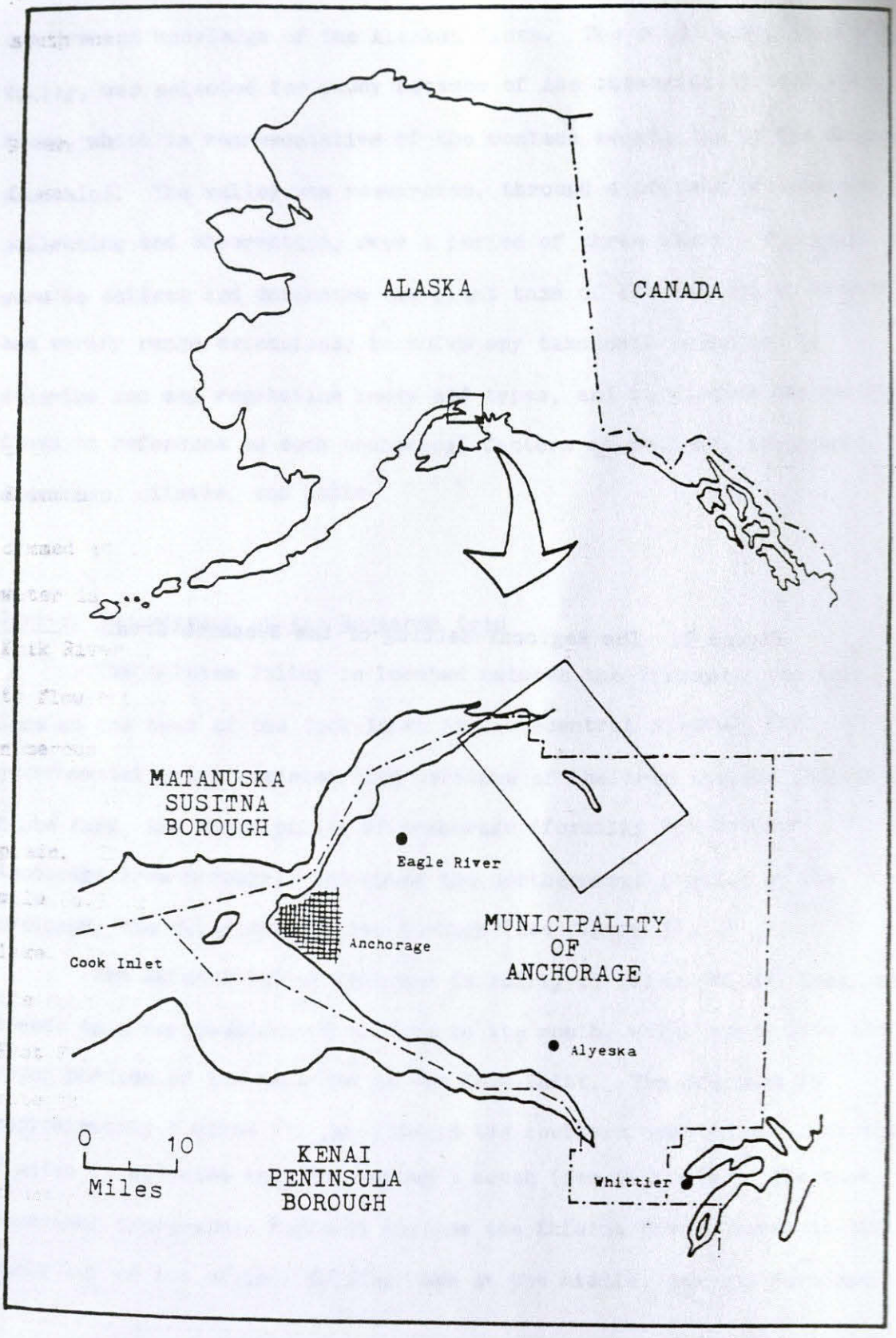


Figure 3. The Regional Setting of the Research Area.


ALASKA
CANADA
MATANUSKA
SUSITNA
BOROUGH
Eagle River
Anchorage
MUNICIPALITY
OF
ANCHORAGE
Cook Inlet
Alyeska
0 10
Miles
KENAI
PENINSULA
BOROUGH
Whittier

West Fork Valleys with their accompanying peaks and glaciers at the south end.

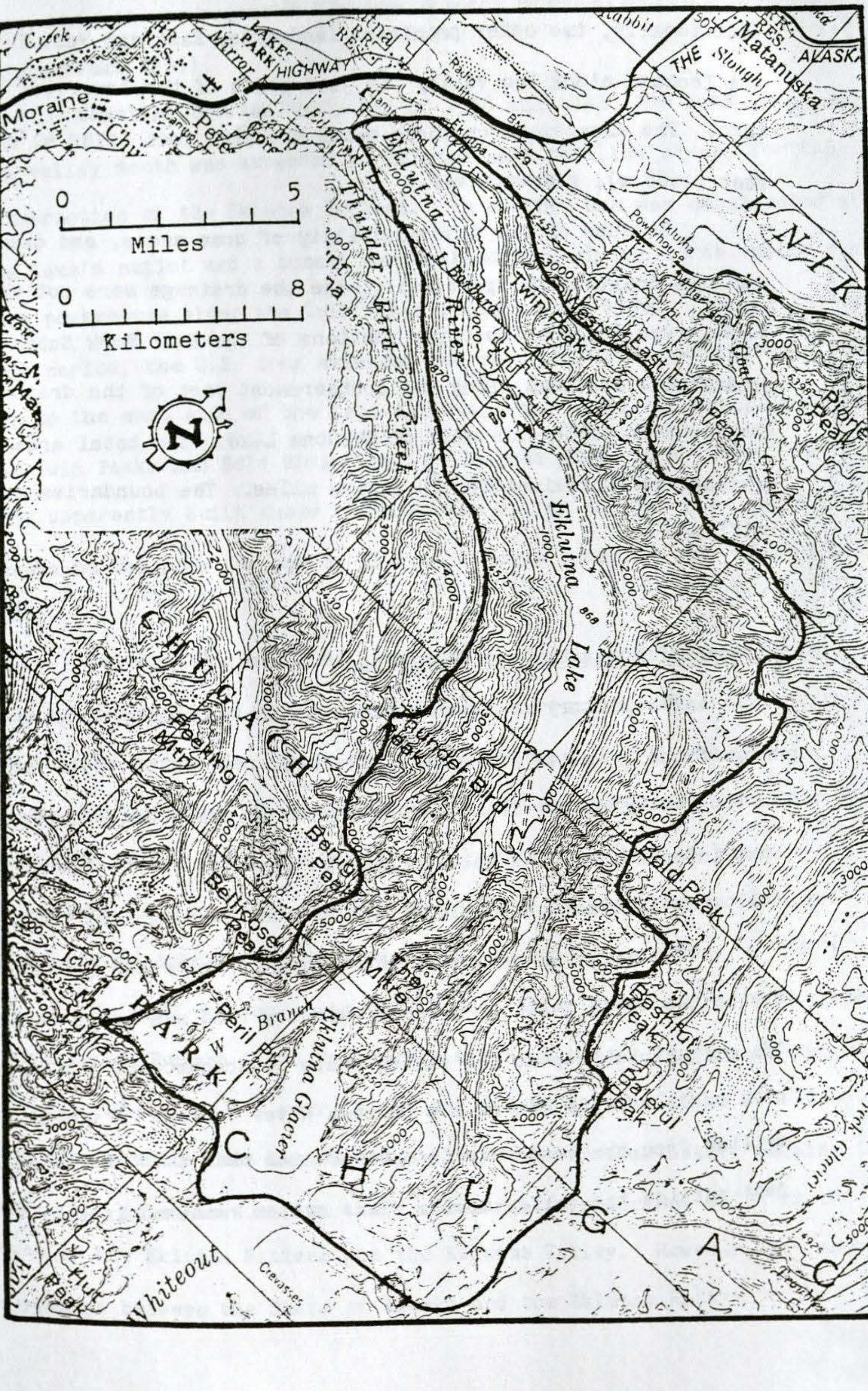
Since the conclusion of the Pleistocene Ice Ages, the Eklutna River has eroded a deep canyon into the rounded, glacially carved valley floor. The canyon, which in some places is over 300 feet (91 m) deep, runs approximately 7 miles (11 km) from the lake outlet to the valley mouth. The river falls a little over 100 feet/mile (30 m/1.5 km) from the elevation of the lake at 860 feet (260 m).

Eklutna Lake is approximately 6.5 miles (10.5 km) long and a mile (1.5 km) wide, and lies in long narrow depression formed by the Eklutna Glacier during the Pleistocene period. Although the lake is dammed at its outlet, its level is seldom allowed to reach the dam. The water is routed through a 4.5 mile (7 km) tunnel to a powerhouse on the Knik River north of Twin Peaks. The Eklutna River, however, continues to flow below the dam due to groundwater and the contributions of numerous small streams.

At the south end of Eklutna Lake is a delta and glacial outwash plain. The East and West Forks of the Eklutna River flow across the 4 mile (6.5 km) long plain, and converge about a mile (1.6 km) from the lake. The West Fork continues up the remainder of the main valley to the foot of Eklutna Glacier, where the valley narrows considerably. The East Fork, however, branches into a subsidiary valley whose mouth opens onto the outwash plain between Bold Peak and the north end of The Mitre.

Most of the highest topographic features in the valley are clustered along the south end of the drainage. These include Bold Peak at 7522 feet (2294 m), Bashful Peak at 8005 (2442 m), Baleful Peak at 7900 (2410 m), Bellicose Peak at 7640 (2330 m), Benign Peak at 7100

Figure 4. A Map of the Research Area. Enlarged from U.S.G.S. (1960)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Miles
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N
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LAKE PARK HIGHWAY
Matanuska
THE Slough
ALASKA
KNIK
Eklutna
Eklutna Powerhouse
Thunder Bird Creek
Eklutna River
Twin Peak
East Twin Peak
Goat
Pioneer Peak
Eklutna Lake
CHUGACH
Peeking Mtn
Bellicose Pea
Thunder Bird Peak
Bold Peak
The Mitre
Bashful Peak
Baleful Peak
Peril Pk
W Branch
Eklutna Glacier
CHUGACH PARK
Whiteout
Crevasses
Hut
Peak
Glacier

(2166 m), and Thunderbird Peak at approximately 6500 feet (1983 m). Additionally, two other prominent landmarks, East and West Twin Peaks, are located along the valley rim just north of the lower end of Eklutna Lake. The elevations on these peaks are 5700 feet (1780 m) and 5401 feet (1668 m), respectively.

Because of the inaccessibility of some areas, and due to safety and time constraints, portions of the the drainage were not visited. These areas include the upper portions of the East Fork Subvalley, the mountainous sections along the southernmost part of the drainage, and the southern valley rim west of Eklutna Lake. The total area of the drainage is approximately 150 square miles. The boundaries are outlined on figure 4.

History of Human Use and Occupation

The history of human occupation in the valley is very sketchy. Many of the agencies who should have kept records of their involvement in the valley either failed to keep them or could not provide them. What information I was able to get was contradictory. Therefore, the following information should be not be considered as the final word.

The first major use of the valley by white man probably occurred during the early 1930's. A steep, winding road was built to the top of the gargantuan step at the valley mouth to accommodate the construction of a small storage dam in the Eklutna River Canyon. A tunnel was drilled from the reservoir to a powerhouse near Eklutna Village, located just outside the valley mouth. This system remained in operation until

1955, when it was superceded by the Eklutna Hydro-electric Project (Sieczkowski 1985).

Sometime between the years of 1948 and 1952, the road leading to the valley mouth was extended to Eklutna Lake to allow access for the construction of the Eklutna Project. An earthen dam was constructed at the lake's outlet and a tunnel was drilled through the north valley rim to a powerhouse along the Knik River (Sieczkowski 1985). During this same period, the U.S. Army extended the road as far as two thirds of the way up the east side of the lake and built the roads currently known as the Twin Peaks and Bold Ridge Trails (Chugach State Park 1985). The Army apparently built these roads in the valley so that they could have access to the area for use as an arctic basic training camp (Canterberry 1985).

Between 1962 and 1963, the Army again extended the road, this time to the vicinity of Eklutna Glacier. During this same period, the valley was apparently opened for federally sponsored homesteading. Nearly 900 acres of land were withdrawn in homesteads and five acre homesites between the lake and the valley mouth. Most of these homesteads have now been legally transferred to the homesteaders and could become subject to development in the near future (B.L.M. 1985).

In 1970, the majority of Eklutna Valley became part of the newly established Chugach State Park, with the homesteaded lands remaining as private inholdings. A year later, the Alaska Native Claims Settlement Act was passed. This legislation allowed the Alaskan native peoples to make land selections within their ancestral territories, which in the case of the Eklutna Natives was the Eklutna Valley. However, due to an agreement between the State of Alaska and the Eklutna Native

Corporation, the lands they have selected within the park will be traded for equivalent lands elsewhere (Sonnen 1985).

The Chugach State Park initially built three campgrounds; one at the north end of the lake, another near the middle of the outwash plain, and the last one a short way below Eklutna Glacier. Army maintenance of the road leading to the campgrounds on the south end of the lake ceased sometime after the establishment of the park. The park, unable to muster the necessary funds to maintain the road, simply allowed it to fall into a state of disrepair. This eventually led to the closure of the road in 1977 due to a washout at the north end of the lake. At this point, the Army abandoned the valley for use as a training camp and the park ceased maintaining the campgrounds at the south end of the lake (Canterberry 1985, Bingham 1985). However, during the fall of 1984 and the spring of 1985, the campground at the north end of the lake was completely rebuilt and expanded to accommodate the increasing popularity of the area for recreation. In addition, negotiations have been underway between the Army and the Park to rebuild the road (Bingham 1985).

During the summer of 1985, construction was begun on the Eklutna portion of the Eklutna Water Project. Construction of a water treatment plant located just inside the valley mouth, and new paved road leading to it, has begun. Work on the pipeline between the lake and the treatment plant should begin sometime in 1986. Portions of the pipeline leading from Anchorage to the valley have been completed, with the entire project due to be finished in 1988 (Bryant 1985).

Previous Workers in Eklutna Valley

A number of people, both professional and amateur, have collected in the valley prior to my own work. Previous botanical collectors in the valley have taken over 150 specimens and approximately 25% of the presently known flora of the valley. The first recorded collections can be attributed to two agronomists from the University of Alaska, J. G. Dickson and W. M. Mitchell, who visited the mouth of the valley in July of 1957. Mitchell returned to the valley several times over a period of four years (from 1958 to 1964). Two other agronomists from the University of Alaska, H. J. Hodgeson and L. J. Klebsedel, also made minor collections during this period.

In 1965, Mitchell made major collections from the Eklutna Valley. During the months of June through September, he returned three times and accumulated at least 25 specimens. These collections were from the vicinities of Eklutna Glacier and Twin Peaks Trail. S. L. Welsh, a plant taxonomist from Brigham Young University, also visited the valley three times that summer. During the months of June and July, he collected over 79 specimens, primarily from the vicinities of Eklutna Lake and the glacier. One of these collections later served as a type specimen for Agropyron caninum var. mitchellii (For a list of types collected from the Cook Inlet vicinity, see table 3 in appendix A). Welsh was accompanied by Mitchell on one of his trips, and apparently named the new variety after him as an expression of his appreciation.

Two other collectors, both amateur botanists, also collected in the valley during the summer of 1965 (and in some of the following summer seasons). Aline Strutz, an Anchorage resident and wild-flower enthusiast, collected at least 17 specimens from the vicinities of the

lake and the glacier during the summers of 1965, '68, and '70. Marion Williams, a very active member of the Juneau Botanical Club, collected at least 13 specimens from the vicinity of Eklutna Lake during the summers of 1965, '66, and '68. She was very likely accompanied by Strutz on at least two of those visits, as their collection dates coincide (A complete list of collectors, collection dates, and numbers can be be found in table 4 of appendix A).

PHYSIOGRAPHY AND GEOLOGY

Physiography

Alaska has parts of four major North American physiographic divisions; the Pacific Mountains System, the Intermontane Plateaus, the Rocky Mountains System, and the Interior Plains (See figure 5). In Alaska, these divisions have been subdivided into a number of provinces. The division of interest here, the Pacific Mountains System, has been divided into the Alaska-Aleutian Province, the Coastal Trough, and the Pacific Border Ranges. Each province is further divided into numerous smaller divisions named after the mountain ranges or basins they contain. The Eklutna Valley is located on the margin of the Kenai-Chugach Mountain Division. The mouth of the valley opens directly into the Cook Inlet-Susitna Lowland, a division of the Coastal Trough Province (Wahrhaftig 1965).

Geologic History

The Pacific Mountains System is organized into a series of mountain and trough arcs that resulted from eons of suspect terrane accretion (Coney 1981), deformation, faulting, uplift, and volcanic and plutonic activity. Most of the geologic activity that produced the framework for Southcentral Alaska's present day topography is associated

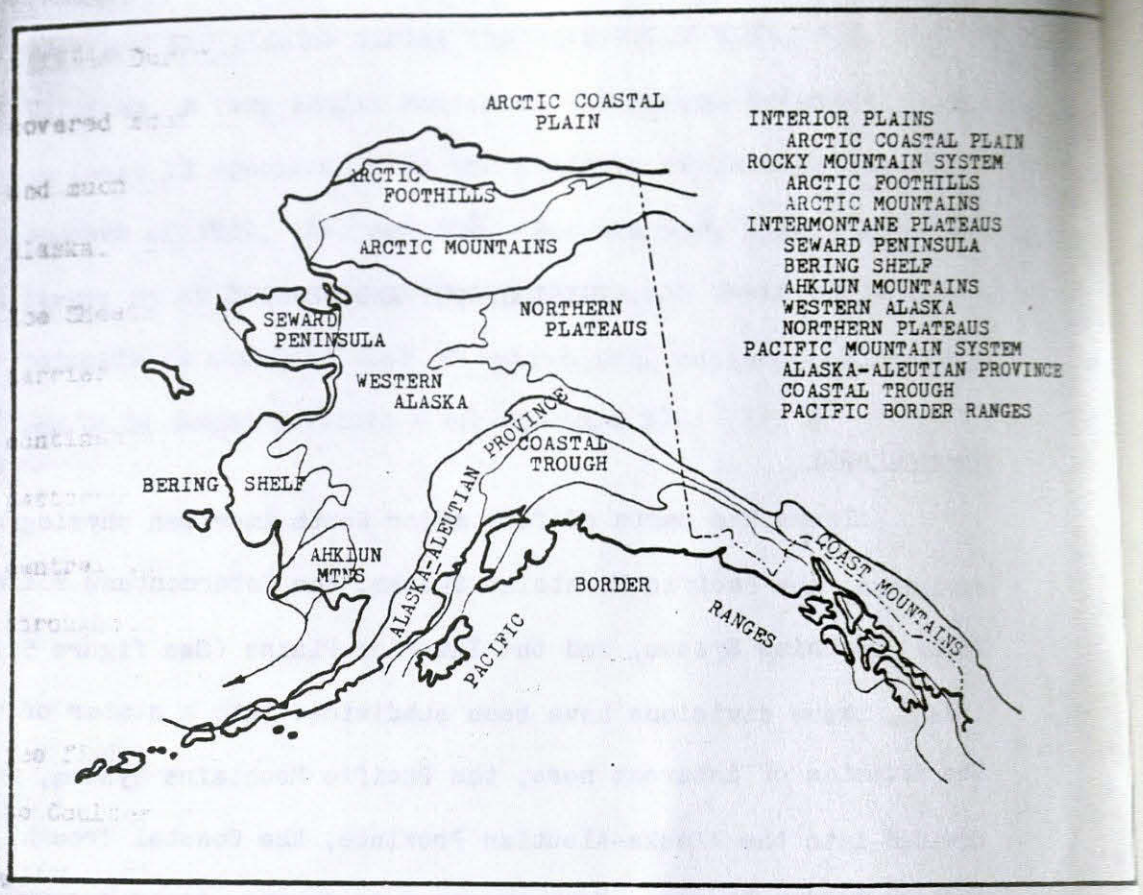


Figure 5. The Physiographic Provinces of Alaska (Wahrhaftig 1965).

with the processes resulting from the subduction of the Pacific Plate under the North American Plate.

According to Hunt (1974), the Alaska Range and the Cook Inlet-Susitna Arcs were geosynclines throughout most of the Mesozoic Era, and at the time, were separated by the Talkeetna-Aleutian Geoanticline. In late Mesozoic, a geosyncline developed along the Kenai-Chugach Mountain Arc. Then, during the Tertiary Period, the Alaska Range and the Kenai-Chugach Arcs began to uplift, eventually forming mountain ranges. Thus, the Cook Inlet-Susitna Arc became a low level trough, that subsequently filled with Tertiary- and Quaternary-age sediments.

During the Pleistocene glaciations, the Cordilleran Ice Sheet covered most of the Rocky Mountain System, the Pacific Border Ranges, and much of the continental shelf from the northern United States to Alaska. During parts of the Pleistocene, the Laurentide and Cordilleran Ice Sheets came so close together that they presented an effective barrier to plant migrations passing between Alaska and the rest of continental North America. However, due to the prevailing weather patterns, the Intermontane Plateaus were only glaciated as far north as central Yukon. This left Alaska's interior lowland unglaciated throughout the ice ages.

The Eklutna Valley was nearly, if not completely, covered with ice fields and glaciers during a portion of the Pleistocene. According to Coulter et al. (1954), the Eklutna Valley was not glaciated until the middle of the Pleistocene, when ice primarily covered the mountains on the east and south sides of the drainage. Glacial advances of the late Pleistocene eventually caused the entire valley, along with its tributaries, to become filled with "rivers" of ice. The Eklutna Glacier, was only a minor tributary to the massive moving ice sheet that filled the Matanuska Valley, Susitna Valley, and much of the Cook Inlet.

Some of the glacial features that can be seen in the valley today include the sweeping "U"-shape of the valley bottoms, the small hung valleys, and the numerous cirques, aretes, and relict glaciers (rock glaciers). Of particular interest are the excellent examples of terminal and lateral moraines in the Bold Ridge Subvalley, the receding Eklutna Glacier, and the gargantuan step at the mouth of the main valley.

Stratigraphy

The stratigraphy and geologic age of the formations in Eklutna Valley are still poorly understood. Potassium-argon dating has been done for a number of samples in the valley, but correlations with geologic time periods are poor due to the jumbled nature of the area's geology, metamorphism, and the lack of fossil materials. In addition, the formations in Eklutna are separated by several major thrust faults. One of these, the Knik Fault, is classified as a profound discontinuity. Separating materials of totally different ages and origins, these discontinuities are believed to be the dividing lines between adjacent suspect terranes (Coney 1981). Because of these problems, geologists have been unable to assign firm ages to the assemblages, or make good correlations with other known formations.

The bulk of Eklutna Valley's exposed rock formations belong to the Valdez (?) Group, labeled "KJv" on figure 6. Considered to be Jurassic and Cretaceous in age, the rock types in this assemblage are described as moderately metamorphosed siltstone and graywacke, and argillite. Another assemblage, the McHugh Complex (labeled "KJm"), is exposed once in a narrow band at the mouth of the valley, and again in a larger exposure at the south end. This complex is considered to be Jurassic and (or) Cretaceous in age. The rocks in this formation are described as argillite, "weakly metamorphosed siltstone, graywackes, arkose, and conglomeratic sandstone," some greenstone of basaltic origin, and metachert (Magoon et al. 1976). Both of these stratigraphic units contain some limestone.

Figure 6. A Geologic Map of the Eklutna Valley. Map enlarged from Magoon et al. (1976). Data in legend quoted from same source.

LEGEND

KJv	"Valdez (?) Group. Metagraywacke, metasiltstone, and argillite... Jurassic (?) and Cretaceous."
KJm	"McHugh Complex. Weakly metamorphosed siltstone, graywacke, arkose, and conglomeritic sandstone; greenstone (mostly basaltic); metachert, and argillite...Jurassic and (or) Cretaceous."
JPu	"Metasedimentary, metaplutonic, and metavolcanic rocks from the Permian and (or) Jurassic."
MzPzum	"Ultramafic rocks. Peridotite, dunite, and pyroxinite...Paleozoic and (or) Mesozoic."
Qs	"Surficial deposits...Quaternary."
▲▲▲▲ / - - - - - - - - - -	"Thrust fault...dotted where concealed."
———— / - - - - - - - - - -	"Fault...dotted where concealed."


0 5
Miles
0 8
Kilometers
N
Moraine
HIGHWAY 2
Eklutna
Flats
Eklutna
Lake

At the mouth of the valley, two additional assemblages are exposed. Rock outcrops along the the rim of the gargantuan step, labeled "JPu", are believed to be Permian and (or) Jurassic in age. This unnamed formation is described as having metasedimentary, metaplutonic, and metavolcanic rocks. The second formation, also unnamed, is labeled "MzPzum". This formation, located between the "KJv" and "JPu" groups, is believed to be Paleozoic and (or) Mesozoic in age. The rocks in this assemblage are described as ultramafic igneous rocks, and contain peridotite, dunite, and pyroxenite. These rocks are high in magnesium and iron silicates (Magoon et al. 1976).

Unconsolidated deposits of glacial till, outwash, and morainal material of Quaternery age cover most of the valley floor as well as the subsidiary valleys, cirques, and miscellaneous depressions. In some places, such as the Eklutna River Canyon, these deposits have been deeply cut by erosion. These deposits are labeled "Qs" on figure 6 (Magoon et al. 1976). Additionally, small amounts of soil have developed over the bedrock and unconsolidated deposits since the close of the ice ages.

CLIMATE

The Eklutna Valley borders the edge of the Boreal or Subarctic Climate Zone. According to Trewartha and Horn (1980), boreal climates typically have lengthy cold winters, brief cool summers, abrupt springs and falls, and rather wide annual temperature changes. The relatively sparse precipitation falls primarily during the summer months. Since the Eklutna Valley is located so near to the coast, the weather tends to have characteristics intermediate between the colder winter temperatures, low precipitation, and mild winds of the interior, and the warmer winter temperatures, high precipitation, and frequent high winds of the coastal area (Selkregg 1974).

Temperature and Precipitation

A weather recording station was maintained at the north end of Eklutna Lake from 1946 to 1977. The average daily maximum temperature for this period ranged from 12.5° F (-10.8° C) in January to 64.9° F (18.2 C) in July. Daily minimums ranged from -3.2° F (-19.6° C) in January to 45.3° F (7.4° C) in July (See figure 7 for a summary of temperature data). The record highs and lows were, respectively, 90° F (32.2° C) and -52° F (-46.7° C). Precipitation at the station varied from an average monthly low of 0.46 inches (1.17 cm) in April to a high of 1.71 inches (4.35 cm) in September (See figure 8 for a summary of

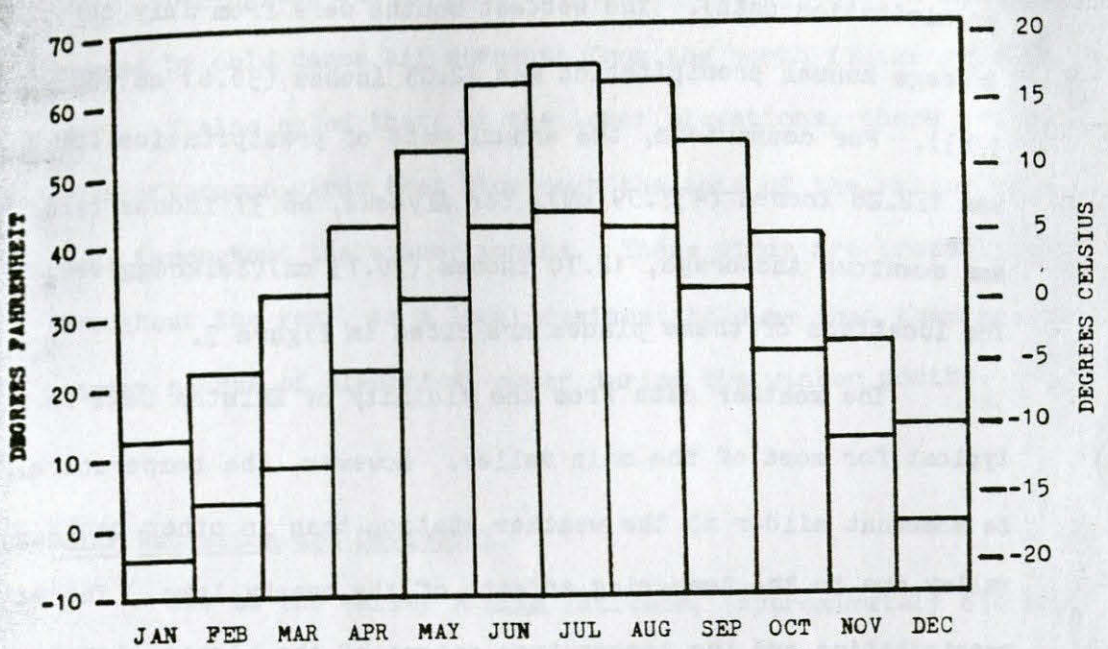


Figure 7. Temperature at Eklutna Lake, 1946-1977. Daily maximums and minimums. Data from Alaska Climate Center, Univ. of Ak. (1984).

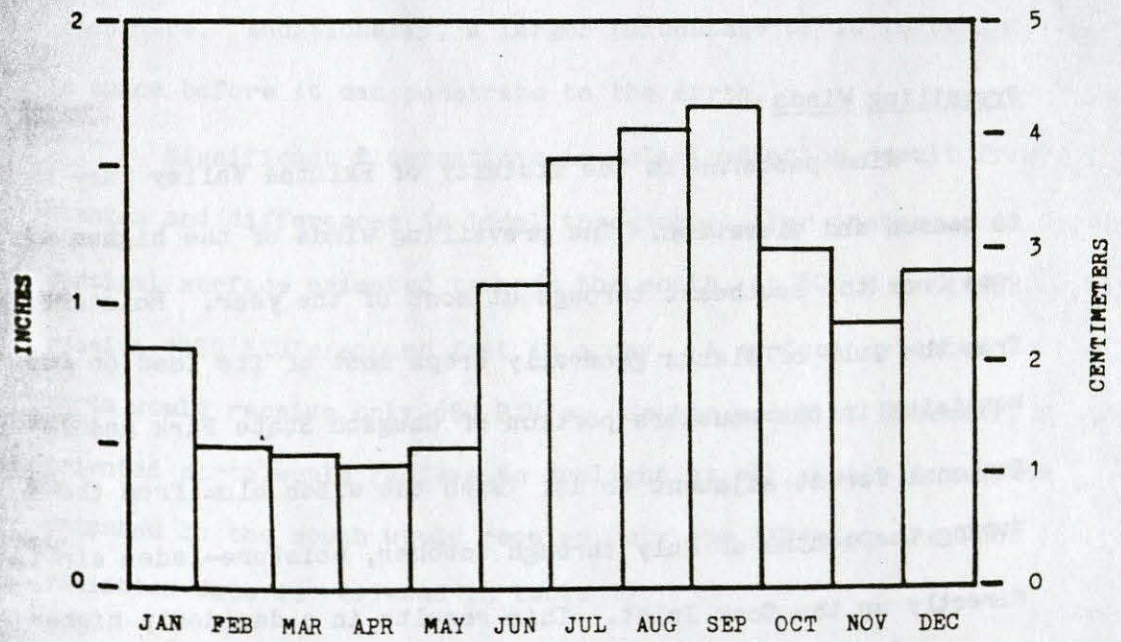


Figure 8. Precipitation at Eklutna Lake, 1946-1977. Data from Alaska Climate Center, Univ. of Ak. (1984).

precipitation data). The wettest months were from July through October. Average annual precipitation was 12.05 inches (30.61 cm)(Univ. of Ak. 1983). For comparison, the annual rate of precipitation for Whittier was 172.28 inches (437.59 cm), for Alyeska, 66.37 inches (168.58 cm), and downtown Anchorage, 12.10 inches (30.73 cm)(Selkregg et al. 1972). The locations of these places are cited in figure 3.

The weather data from the vicinity of Eklutna Lake is probably typical for most of the main valley. However, the temperature data may be somewhat milder at the weather station than in other parts of the valley due to the tempering effects of the nearby lake. The rates of precipitation and the temperature ranges of the higher elevations, the subsidiary valleys, and the main valley below the glacier, are likely to be markedly different than the lake data. Precipitation and temperature may also vary considerably due to topography and prevailing winds.

Prevailing Winds

Wind patterns in the vicinity of Eklutna Valley vary according to season and elevation. The prevailing winds of the higher elevations come from the southeast throughout most of the year. Moisture-laden air from the Gulf of Alaska generally drops most of its load on the mountains in the southern portion of Chugach State Park and in Chugach National Forest adjacent to it. When the winds blow from the southwest during the months of July through October, moisture-laden air is blown directly up the Cook Inlet. This results in a decidedly higher rate of precipitation during this period.

During the winter months, the lower elevations are likely to be invaded by cold dense air currents from the north (Selkregg et al. 1972). I also noted that, at the lower elevations, there are cool, brisk afternoon winds that blow down the axis of the valley on a daily basis throughout the summer months. These winds are probably consistent throughout the year, as a local resident told me that they are his primary source of electrical power during the winter months.

Solar Radiation and Daylength

Due to the valley's high latitude, (approximately 61° N latitude), solar radiation strikes its surfaces at an oblique angle. This causes the sun's energy to be spread out over a larger area than on similar surfaces at lower latitudes. The intensity of this radiation is also reduced because it must pass through longer distances in the atmosphere. Additionally, a larger percentage of it is reflected back to space before it can penetrate to the earth.

Significant fluctuations in solar radiation result from seasonal changes and differences in local topography. For instance, in June, a vertical surface oriented towards the south, at 60° N latitude, would receive 1450 BTU's/square foot in a day. A surface oriented to the north would receive only 650 BTU's. In the month of December, a surface oriented north would recieve no sunlight at all, while a surface oriented to the south would receive only 650 BTU's/square foot (Solar radiation data is reviewed in table 1).

Combined sunlight and twilight in the area varies from only seven and a half hours in late December to 24 hours in late June. The

actual hours of sunlight, of course, are less than that, being only fi
and a half hours in December and nineteen and a half hours in June (Selkregg et al. 1972). Due to the long daylength in the month of Jun a surface oriented southward at 60° N latitude would recieve more BTU's/square foot than a similar surface at 50° N latitude (Table 1). This could be the reason why the south slopes in Eklutna Valley tend to be xeric.

Table 1. Daily Direct Solar Radiation in BTU's/square foot on Various Surfaces at 50 and 60° N Latitude (Johnson & Hartmen 1969).

	JUNE			DECEMBER		
LAT.	HORIZ.	NORTH VERT.	SOUTH VERT.	HORIZ.	NORTH VERT.	SOUTH VERT.
60° N	3035	650	1450	60	0	90
50° N	3145	450	1015	405	0	325

Soils

The soils in Eklutna Valley have not been mapped. However, according to Dr. Chien-Lu Ping at the University of Alaska Agricultural Experiment Station, the most common soils in the valley are likely to be Cryorthids of the Spodosols, Cryochrepts of the Inceptisols, Cryaquents and Cryorthents of the Entisols, and Cryohemists of the Histosols (Mitchell 1985). The Cryorthids are mineral soils likely to be found associated with level, well drained coniferous or mixed coniferous-hardwood forests. This soil type frequently develops on Quaternary

glacial deposits, which are quite common in Eklutna Valley. Like the Cryorthids, the Cryochrepts are also likely to be found in well drained areas. These soils, however, develop in sloped areas and can be found in alpine tundra as well (U.S.D.A. 1980).

The Cryaquents are mineral soils of flood plains and very wet soils of high altitudes. They will only support plants tolerant of the very wet soil conditions present on these soils. Cryorthents are dry shallow soils on slopes, and are also found at high altitudes. These soils are usually found in tundra areas (sometimes in coniferous forest), and can sometimes be only sparsely vegetated due to very cold, dry conditions (U.S.D.A. 1980).

The Cryohemists are organic soils of bogs and muskegs. They contain large amounts of only slightly decomposed plant materials and are commonly found in poorly drained depressions and flat areas. They typically support low ericaceous shrubs and stunted black spruce (Picea mariana)(U.S.D.A. 1980).

VEGETATION

Floristic Regions and Provinces

South Central Alaska is unusual for the number of floristic provinces and plant assemblages represented. The Tsuga heterophylla Province of the Temperate Mesophytic Forest Region, the Picea glauca and Tsuga mertensiana Provinces of the Subarctic-Subalpine Forest Region, and the Rocky Mountain Section of the Arctic-Alpine Tundra Region all merge, disperse, and eventually disappear in the Cook Inlet vicinity.

The Tsuga heterophylla and T. mertensiana provinces are representatives of the Cascade-Sierra coastal mountain flora, whose northernmost representatives diminish and die out along the Turnagain Arm of the Cook Inlet. The T. heterophylla Province is found directly below the alpine tundra and can be found replacing portions of the alder-bluejoint subalpine communities along the south edge of Chugach State Park, which borders on the Turnagain Arm. The T. mertensiana Province essentially disappears along the Turnagain Arm, where its tolerable environment is reduced to sea level. In this northernmost portion of the T. mertensiana Province, Picea sitchensis (Sitka Spruce) appears to be the dominant, where in more southern sections of the province, the tree is characteristically seral (Daubenmire 1978).

The Picea glauca and Tsuga mertensiana provinces merge together briefly in the Chugach Mountains just east of South Anchorage. The

transition between the two assemblages is apparently quite complete. However, the Eklutna Valley, located some twenty miles to the north, does have a few recognizable elements from the T. mertensiana Province. Some of the plants in the Eklutna Flora that could be considered part of this province include Rubus pedatus, Menziesia ferruginea, Romanzoffia sitchensis, and Heuchera glabra (Daubenmire 1978).

The Rocky Mountain Section of the Arctic-Alpine Tundra Region essentially represents a southward extension of the arctic tundra along areas of higher altitude. This section can be subdivided into two plant assemblages, the Beringian-Aleutian assemblage and the Rocky Mountain assemblage. Here again, the Cook Inlet serves as a transitional zone (Daubenmire 1978).

Plant Migration and Distribution

The numerous examples of species ranges interrupted across the Bering Strait, led Hulten (1937) to conclude that at some time in the geologic past, there existed a land bridge between East Asia and North America. The bridge, and its surrounding areas, apparently served as refugia for arctic and boreal species during the Ice Ages. Many plant assemblages can be shown to have migration patterns that emanate from the vicinity.

In The Bering Land Bridge, Hopkins (1967) discusses the geologic events that led to the periodic exposures of the land bridge, and their effects on the development of today's flora. He notes that this land bridge, called Beringia, existed across the Bering Strait from early to middle Tertiary. At that time, the bridge supported a humid mesophytic forest, that extended over the Northern Pacific Arc from Japan to

Oregon. This forest, a portion of the Arcto-Tertiary Geoflora, was separated in late Tertiary when tectonic movements opened the strait. The division of the forest into two parts resulted in separate lines of evolution that eventually led to the formation of many new species and varieties.

By early Pleistocene, climatic conditions had deteriorated severely. The tree lines had retreated south, the arctic floras had begun to develop and expand, and the first of the great ice ages had commenced. Loss of the ocean's water to the advancing ice sheets resulted in a lowering of the sea level, which exposed the Bering Land Bridge and much of the continental shelf. Paleobotanists believe that many elements, mostly arctic-alpine species, were exchanged at this and other subsequent ice ages and exposures of the land bridge. These exchanges probably account for the large number of circumpolar species, and the large number of plants known to have ranges divided across the strait. A large portion of the species in the Eklutna flora are also known to have ranges divided in this way (Hopkins 1967).

Following the Pleistocene glaciations, the Cook Inlet area was revegetated by migrations radiating from several different sources. The single most important source was likely the Intermontane Plateaus of the Alaskan interior. This immense area of unglaciated terrain harbored much of the arctic and boreal flora now present in Alaska. Many of the species that survived there radiated into the Cook Inlet area, as well as into the vast continental areas eastward. Because these species did not have connections with the boreal flora across the land bridge, these plants are primarily limited to North America. Hulten referred to these

species as North American Continental Radiants (Heusser 1957, Hulten 1937); (For a list of plants cited by Hulten, see appendix C).

Other important migrations occurred northward along the Rocky Mountains and the Pacific Coast, and eastward from Southern Beringia and the Aleutian Islands. The plants that inhabited the Pacific side of the land bridge tended to migrate down the coasts away from both sides of the straight, creating the present syndrome of plants referred to as the Southern Beringian Radiants. Plants from the interior of the land bridge and the coast of the Arctic Ocean tended to migrate southward along the alpine areas, eventually becoming part of the arctic-alpine complex that invaded the Alaska Range and the Cook Inlet Region, as well as the Northern Rocky Mountains. Alpine plants from the southern rockies have overlapped the distributions of these migrants in the Southcentral Region of Alaska. Hulten referred to these species as Northern Beringian Radiants.

The Pacific coastal migrations consisted of plants not well adapted to the harsher conditions of higher latitudes. Consequently, these plants were unable to migrate farther north than the coastal portion of South-central Alaska. The northernmost extensions of these migrations essentially coincide with the present boundaries of the T. Mertensiana and T. heterophylla Provinces. A number of these species, distributed along the Pacific Coast from the Cook Inlet to Washington, are examples of plants that were able to survive in relatively small gaps in the Cordilleran Ice Sheet. Migrations from these refugia, otherwise known as nunataks, probably made some significant contributions toward the revegetation of the areas left barren by the

retreating glacial ice. Hulten referred to these plants as the West American Coast Radiants (Heusser 1957, Hulten 1937).

The present day distribution patterns for the species in Eklutna Valley have been mapped in figures 10 through 14 in appendix B. These maps resemble Hulten's maps, primarily because present day distributions are a reflection of past migrational history. However, these maps differ from Hulten's, in that they reflect only present assemblages of plants, and are not intended to demonstrate migrational patterns per se. Many plants, even though they are now distributed alike, have different migrational origins, and would fit into different catagories under Hulten's system than they do in mine (A list of the Eklutna plants, and the catagories to which they have been assigned, is cited in appendix B).

Vegetation Types and Zonation.

For the most part, in discussing vegetation zones and types for Eklutna Valley, I have chosen to follow Selkregg et al. (1972). The Eklutna Valley has five of the possible seven vegetative types described; the Interior Forest Zone (equivalent to the Picea glauca Province), the Subalpine Zone, the Alpine Zone, the Spruce Bogs, and the Treeless Bogs. In this treatment, I have decided to consider the two bog types together. The two other types, the Coastal Forest Zone (equivalent to the two Tsuga provinces) and the Salt Marshes are not present in Eklutna Valley.

The Interior Forest Zone. The dominant vegetation of this zone consists of mixed or pure stands of white spruce (Picea glauca), balsam poplar (Populus balsamifera), black poplar (Populus trichocarpa),

quaking aspen (Populus tremuloides), and paper birch (Betula papyrifera). In portions of the zone with poor drainage, black spruce (Picea mariana) is locally abundant. On alluvial soils, balsam poplar is the dominant. Throughout the moist valley bottoms and along the north- to northeast-facing slopes on the west side of the valley, mixed or pure stands of white spruce and paper birch predominate (See figure 15). This spruce-birch forest type tends to be species-poor. It generally has a woody understory of plants such as currants (Ribes spp), Labrador tea (Ledum groenlandicum), and blueberry (Vaccinium uliginosum). Some of the herbaceous species include bluejoint (Calamogrostis canadensis), horsetails (Equisetum spp), bunchberry (Cornus canadensis), wintergreens (Pyrola spp), yellow anemone (Anemone richardsonii), and orchids (Listera and Habenaria spp).

Along the lower south- to southwest-facing slopes, the vegetation is typically dominated by mixed or pure stands of birch, aspen, both poplars, and an understory of immature white spruce. Scouler's willow (Salix scouleriana) is also a typical element of this type, which can be found either scattered throughout the moister locations, or concentrated along the stream courses. This mixed deciduous forest type can be seen on the east side of the valley, from the valley mouth to the opening of the East Fork Subvalley. Some of the common woody plants in the understory of this association include wild rose (Rosa acicularis), soapberry (Shepherdia canadensis), highbush cranberry (Viburnum edule), lingonberry (Vaccinium vitus-idaea), currants, clubmoss (Lycopodium annotinum), and twin-flower (Linnaea borealis). Some of the herbaceous species include bluejoint, bluebells (Mertensia paniculata), cow parsnip (Heracleum lanatum), oak fern (Gymnocarpium dryopteris), death camas (Zigadenus elegans), white violet

Figure 15. Vegetation Zones and Types.

LEGEND

The Inland Forest Zone

Black Spruce-Birch Forest.

Mixed Deciduous Forest.

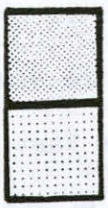
The Subalpine Zone

Alder-Bluejoint Meadows.

Willow-Bluejoint Meadows.

Xeric Shrub-Fescue Meadows.

The Alpine Zone



Alpine Tundra.

Barrens.

Spruce Bogs and Treeless Bogs

Bogs.

Figure 15. Vegetation Zones and Types.

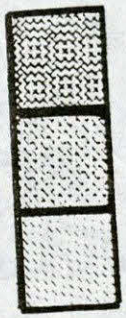
LEGEND

The Inland Forest Zone

Black Spruce-Birch Forest.

Mixed Deciduous Forest.

The Subalpine Zone

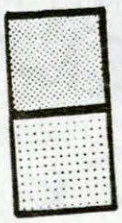


Alder-Bluejoint Meadows.

Willow-Bluejoint Meadows.

Xeric Shrub-Fescue Meadows.

The Alpine Zone

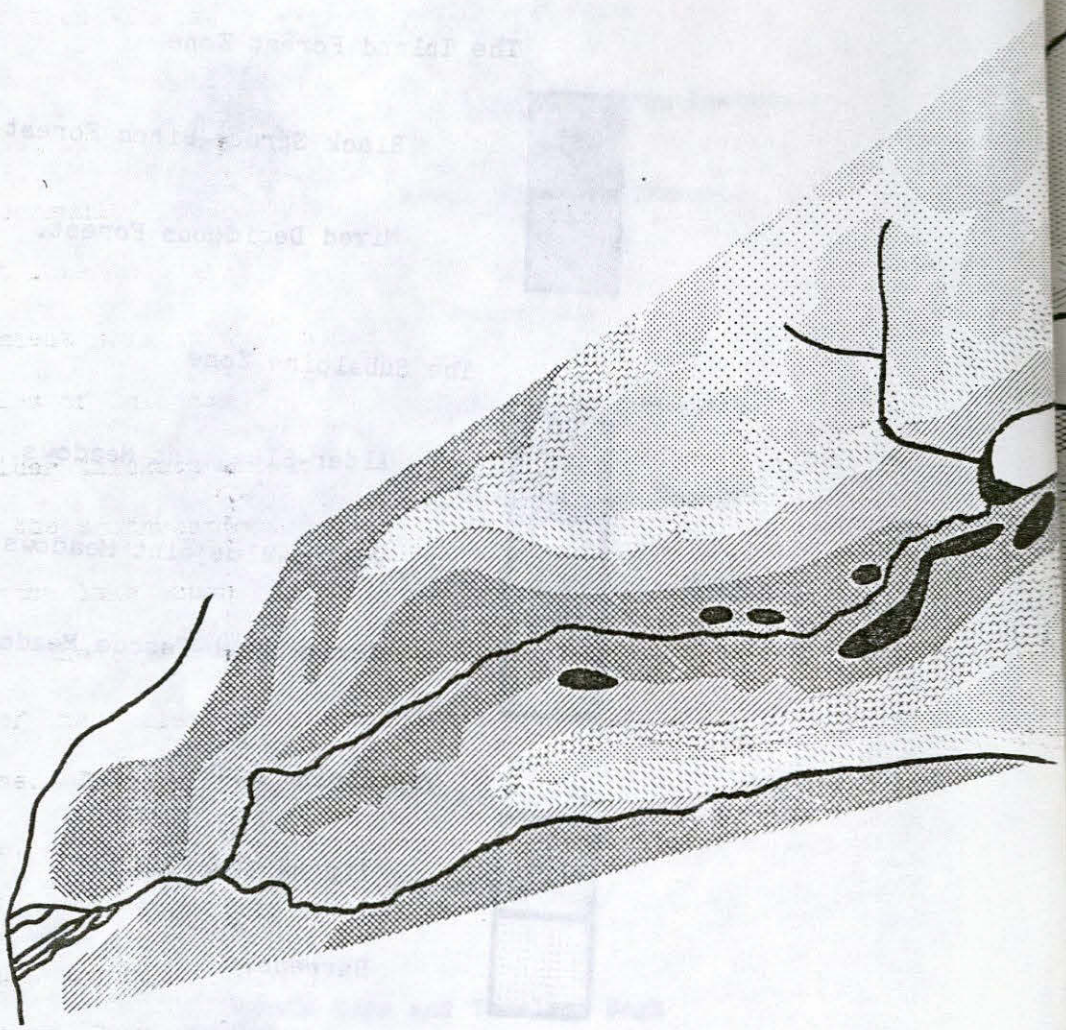


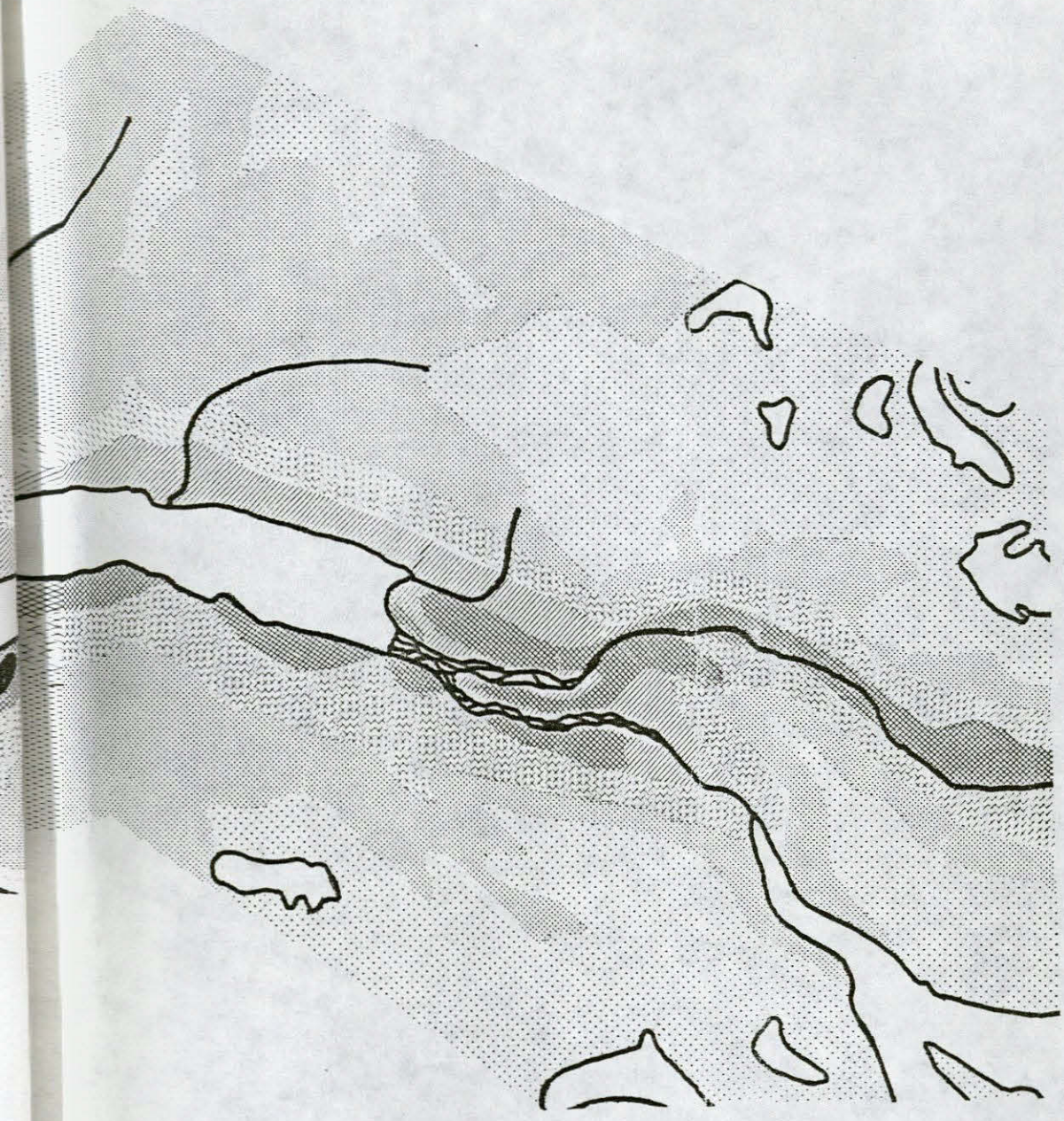
Alpine Tundra.

Barrens.

Spruce Bogs and Treeless Bogs

Bogs.





(Viola renifolia), wintergreens (Pyrola spp), fireweed (Epilobium angustifolium), and starflower (Trientalis europaea).

The Subalpine Zone. This zone covers a relatively narrow band between timberline, at approximately 2500 feet (760 m), and the Alpine Tundra Zone, at 3000 feet (900 m). Portions of the zone on the north- to northeast-facing slopes along the west side of the valley, and the southwest slopes along the southeast side of the valley, are dominated by moist bluejoint meadows and thickets of Sitka alder (Alnus crispa). This community type can also be seen extending well into the Interior Forest Zone in areas either too steep for trees to grow, or where sufficient soil to support the forest type is lacking (See figure 15). Examples of this can be seen in the vicinity of Eklutna Glacier, where the alder thickets extend right to the edge of the valley floor, and along the southwest quarter of Eklutna Lake, where the alders nearly reach the lake shore (Mitchell 1966).

The south- and southeast-facing subalpine slopes along the east side of the valley, though considerably drier, are floristically more diverse. These slopes, dominated by numerous herbaceous species and low shrubs, show strong resemblances to the understories of the Interior Forest Zone below. The shrubby species include willows (Salix spp), highbush cranberry (Viburnum edule), soapberry (Shepherdia canadensis), raspberry (Rubus idaeas), and juniper (Juniperus communis). Herbaceous species include siberian fescue (Festuca altaica), indian paintbrush (Castelleja unalaschcensis), fireweed (Epilobium angustifolium), sage

(Artemesia spp), wild geranium (Geranium erianthum), three-tooth saxifraga (Saxifrage tricuspidata), jacobs ladder (Polemonium pulcherrimum), and field chickweed (Cerastium arvensis).

It could be argued that these dry slopes are not subalpine at all, and were not considered to be so by Mitchell (1966). At least the lower portions of these slopes are obviously subclimaxes caused by fires and the lack of enough soil or moisture to support forest vegetation. These factors become readily apparent when observing occasional burned logs and stumps scattered across the hillsides, and by the presence of aspen or poplar thickets and small clumps of spruce high above the "timberline." If these slopes really aren't subalpine, however, then it becomes difficult to explain why none of the major elements of the Inland Forest Zone extend onto these moister southwest slopes. Whether or not these slopes are technically subalpine or not, it is still more convenient to treat them as a portion of the subalpine zone.

A portion of the subalpine is dominated by large specimens of scouler's willow (not a "major" element in the Interior Forest Zone). These tree size-willows extend up the southwest faces of the stream valleys from the interior forest zone, and apparently fill a niche similar to that of the alder on the north-facing slopes. In the vicinity of Bold Ridge, one of these willow-bluejoint communities wraps completely around the ridge and merges with the alder-bluejoint communities that come up from the south (See figure 15). The willow-bluejoint communities are richer floristically than the alder-bluejoint. Some species typical of the willow-bluejoint type include watermelon berry (Streptopus amplexifolius), spinulose shield-fern (Dryopteris austriacus), larkspur (Delphinium glaucum), monkshood (Aconitum

delphinifolium), wild geranium, fireweed, Sitka burnet (Sanguisorba stipulata), and harebells (Campanula rotundifolia).

The Alpine Zone. This zone consists of plants capable of withstanding very cold temperatures and short growing seasons. Plants in this zone are low growing and tend to be mat-forming where moisture is not a limiting factor. This zone also includes elevations so high, or environments so severe, that virtually no vascular plants are capable of surviving (See figure 15). Some of the typical mat forming species include crowberry (Empetrum nigrum), bearberries (Arctostaphylos spp), blueberry (Vaccinium uligonosum), moss heaths (Cassiope spp), clubmosses (Lycopodium spp), and luetkea (Leatkea pectinata). In protected hollows, this zone can also support low thickets of willow and dwarf birch (Betula glandulosa), and moist meadows populated with herbaceous species. Some common herbaceous species include buttercups (Ranunculus spp), mountain avens (Geum rossii), pussytoes (Antennaria spp), arnicas (Arnica spp), valerians (Valerian spp), louseworts (Pedicularis spp), saxifragas (Saxifrage spp), and bistorts (Polygonum spp).

At higher altitudes, or on dry exposed ridges, vegetation can be sparse or almost non-existent. Some species typical of sparse tundra include black oxytrope (Oxytropis nigrescens), draba (Draba stenopetala), fleabane (Erigeron humilis), long-podded sandwort (Arenaria macrocarpa), reddish sandwort (Arenaria rubra), moss campion (Silene acaulis), arctic willow (Salix arctica), and leatherleaf saxifraga (Saxifraga bronchialis).

Many elements of the alpine vegetation type are frequently found well below their normal elevations on rock outcrops, cliffs, and barren areas. An excellent example of this occurs on a limestone outcrop about a 1/4 mile (0.5 km) north of Eklutna Glacier. This particular area is also unusual for its tremendous floristic diversity.

Spruce Bogs and Treeless Bogs. In Selkregg et al. (1972), Spruce bogs and Treeless bogs are treated separately. However, the Treeless Bogs in Eklutna Valley are so similar to the Spruce Bogs in their complement of species that it would serve no useful purpose to discuss them separately. The majority of the bogs in the valley are typified by the presence of small stunted specimens of black spruce. The outer edges of these bogs are generally surrounded by a ring of larger specimens. However, the black spruce is seldom seen very far from the immediate area of the bog. In addition to the spruce, a low shrub cover is often present. Some of the shrubby species typical of the bogs include Labrador tea (Ledum decumbens), low willows, blueberry, bearberry (Arctostaphylos alpina), crowberry, bog rosemary (Andromeda polifolia), bog cranberry (Oxycoccus microcarpus), and dwarf birch. Some of the herbaceous species include cottongrass (Eriophorum spp), sundew (Drosera rotundifolia), orchids (Habenaria and Orchis spp), and numerous sedges (Carex spp).

Some of the bogs, particularly along the northwest lake margin, are highly calcareous, and like the limestone outcrops in the valley, they support a large number of plant species. These calcareous bogs tend to be individualistic, in that in each one, I found at least one

or two species not found elsewhere. Possibly due to the high pH of these bogs, they lacked the spruce element seen elsewhere.

At the north end of the lake is an unusual "bog" community growing on a section of gradually sloping beach below the lake's natural waterline. Due to the use of the lake water for hydro-electric power, the water periodically floods the swamp and deposits a fresh layer of glacial silt. The community is dominated by several species of horsetails on the lower portions, and by sedges on the upper levels. When the lake levels are low, the sedge community receives abundant moisture from the ground water that seeps out along the upper portions of the beach. Elsewhere along the shore, the beaches are exceedingly steep and lack this unusual community type.

Plant Succession

Primary or Glacial Succession. Observations of succession below Eklutna Glacier are hampered by the erosive effects of the Eklutna River. The valley is so narrow that the successional stages are not allowed to develop before they are washed away. Lateral moraines on the west side of the valley presently show the most advanced stages of succession. The alpine and subalpine communities, clinging to the walls high above, apparently contributed most of the flora presently colonizing the area. Alder is the first woody plant to be seen growing below the glacier, although it is not too abundant at first. Herbaceous plants such as moss campion, jacobs ladder, river beauty (Epilobium latifolium), and Nutzotin's oxytrope (Oxytropis nutzotinensis), are more abundant prior to the alder becoming common. Other species collected in

the vicinity include dwarf hawks's-beard (Crepis nana), alpine bluegrass (Poa alpina), diamond willow (Salix glauca), and yarrow (Achillea millifolium).

Approximately 1/4 mile (0.5 km) below the glacier, the valley bottom is crowded by a large limestone knob. Here, the river flows through the narrow opening and into a section of the valley that widens appreciably. This area is dominated by alder and scrub poplar thickets, which quickly pass into mature stands of Black Poplar. Eventually, an understory of white spruce develops, which gradually becomes the dominant species about a mile (1.6 km) from the glacier. From this point, the successional stages become indistinct due to the interference by the East and West Fork Rivers, the interruption of a long section of the valley by Eklutna Lake, and secondary successional stages caused by fire and other natural catastrophes. However, by observing the forest along the west side of the valley, it can be seen that the poplar element in the spruce forest is replaced with birch well before it reaches the middle of the lake. Small black spruce bogs occur frequently along the north half of the west lake shore. As the forest rounds the north end of the lake, it opens onto a poorly drained, gently sloping valley bottom. Here, sphagnum mosses have accumulated, causing a reduction in drainage. This has resulted in the formation of some moderately large black spruce bogs.

It has been argued that the ultimate climax vegetation of the boreal forest region is bog (Lawrence 1958). Having observed the stages of plant succession in Eklutna Valley, I would have to conclude that this argument has merit. I have noted that the build up of sphagnum mosses has resulted in bogs and areas of poor drainage even on inclines.

It would appear that, except for the possiblity of a fire, all level to mildly sloped land in the valley bottom is destined to become bog.

Fire Succession. The mixed deciduous forest portion of the Interior Forest Zone has largely been determined by the combined effects of low moisture and fire. The aspen and poplars, particularly, are more tolerant of the drier conditions prevailing on the south-facing slopes than are the white spruce. By the same token, the lower moisture levels have made these slopes more susceptable to damage by either manmade or natural fires. Consequently, these slopes have been burned off relatively frequently, resulting in a variety of different stages in fire succession. At the south end of the lake, in the vicinity of the campground and the lower end of the Twin Peaks Trail, evidence of an old burn in an intermediate stage of succession can be discerned. Groves of poplar, birch, and aspen, with an understory of young white spruce can be observed. Scattered in among the groves are old burned logs and stumps. According to Lutz (1956), the spruce will eventually dominate this forest as the stand ages and deteriorates.

Other evidence of fire can be seen approximately a quarter of the way down the east side of the lake. Since it is a more recent burn, it has not yet developed a layer of organic soil. The dominant tree on this burn appears to be black poplar of approximately twenty years age. Lutz (1956) specifically mentions the tendency of poplar species to invade burned areas away from their normal habitat on alluvium. Also, near the mouth of the valley is a long stretch of mature birch forest that replaces the spruce-birch type. A pronounced edge between the two

types can be readily discerned. According to Lutz (1956), this would be a relatively advanced stage in fire succession. The birch, when they begin to decline, will be slowly displaced by the longer lived spruce.

Alluvial Succession. At the south end of Eklutna Lake, an example of alluvial succession can be seen. Sometime during the last 50 to 100 years, the East and West Forks of the Eklutna River made some major changes in their routes across the delta. This shift left large areas of alluvium open for plant colonization. The area is presently populated with small poplar trees intermingled with white spruce. Some of the species found associated with these stands include Yellow Dryas (Dryas drummondii), two species of wintergreen (Pyrola grandiflora and P. secunda), soapberry, and occasional alders and willows. Other than the species mentioned, the ground is virtually barren of plant life (other than lichens). More advanced stages of succession along the margins of the area support stands of mature poplar grading into almost pure stands of white spruce. In areas near the present course of the river, the first colonizers appear to be grasses, willows, alder, and miscellaneous herbs.

ANNOTATED LIST OF VASCULAR PLANTS

Presented below is an annotated list of the vascular plant species presently known for Eklutna Valley, Alaska. Other than the specimens taken by other workers, these plants were collected during the 1983 to 1985 summer seasons. Different habitat types were identified, and when practical, were sampled several times during the season.

The list is arranged phylogenetically down to class, and then alphabetized according to family, genus, and species. The identification of the plants are, for the most part, based on Anderson's Flora of Alaska and Adjacent Parts of Canada, by Stanley L. Welsh (1974). The synonyms, when provided, are only intended as cross references for those who prefer to follow Eric Hulten's treatment, the Flora of Alaska and Neighboring Territories (1968). In some instances, the correct equivalent is uncertian, so no synonym is given. In such cases, the problem is noted under the comments section of the species involved. Common names of the plants, when given, are for those workers less familiar with the botanical names.

Plant longevity is derived from Welsh (1974) and from my own personal observations and knowledge. The habitat information given is from actual observation of the species in Eklutna Valley. The meanings of the terms used to describe relative abundance are as follows: Common - found almost everywhere. Frequent - found at numerous scattered

locations, but not seen everywhere. Occasional - seen in relatively few locations. Rare - rarely encountered.

Citations of the plant specimens have been arranged chronologically. When the elevations and dates of the citations are all, they are grouped together in order to conserve space. They or may not have been collected at the same location. When tements concerning range extensions are made, they are based upon the ge maps of Hulten (1968). It must be realized that these maps are er fifteen years old, and may not reflect current species concepts or eir ranges. Unless indicated otherwise, all specimens cited are posited in the Arctic Collection at the herbarium of Brigham Young rsity (BRY). A few specimens are at the herbarium of the sity of Alaska Agricultural Experiment Station (AES), in Palmer ska. Specimens collected by myself are preceded by my initials LCM. her individuals that have collected in Eklutna Valley include J. G. ckson (JGD), H. J. Hodgeson (HJH), L. J. Klebesadel (LJK), William itchell (WmM), Aline Strutz (AS), Stanley L. Welsh (SLW), and Maxine illiams (MW).

Duplicates of my specimens have been distributed to a number of herbaria. The most complete collection of duplicates has been sent to the University of Alaska-Fairbanks (ALA). Other sets of duplicates were sent, in descending order, to New York Botanical Garden (NY), Rancho Santa Ana (RSA), National Herbarium of Canada (CAN), and to the Komarov Institute in Leningrad (LE).

DIVISION LYCOPODIOPHYTA

LYCOPODIACEAE

Lycopodium annotinum L. var. **pungens** (LaPyl.) Desv.

Stiff Clubmoss. Native evergreen perennial. Common. Woods, subalpine meadows, alpine tundra. Vouchers: LCM 676 - 520-760 m, 13 June 1983. LCM 919 - 1130 m, 11 July 1983. LCM 1795 - 7600 m, 13 Aug. 1984.

Lycopodium clavatum L.

Running Clubmoss. Native evergreen perennial. Rare (?). Alpine tundra. Vouchers: LCM 1944 - 600 m, 8 June 1985. Comments: Due to its similarity to other Lycopodiums, this species may have been overlooked elsewhere. The single specimen collected was found on an ultramafic substrate.

Lycopodium complanatum L.

Ground Cedar. Native evergreen perennial. Frequent. Subalpine meadows, alpine tundra. Vouchers: LCM 677 - 520-760 m, 13 May 1983. LCM 1900 - 1200 m, 21 Aug. 1984. LCM 1945 - 600 m, 8 June 1985.

Lycopodium selago L.

Fir Clubmoss. Native evergreen perennial. Frequent. Alpine tundra. Vouchers: LCM 918 - 1130 m, 1 July 1983. LCM 1541 - 900-1000 m, 23 June 1983.

SELAGINELLACEAE

Selaginella selaginoides (L.) Link.

Low Selaginella. Herbaceous perennial. Occasional (?). Calcareous swamp. Voucher: LCM 2016 - 270 m, 3 July 1985. Comment:

plant's small size and strong resemblance to the mosses suggests it is probably more common than my observations indicate.

DIVISION EQUISETOPHYTA

EQUISETACEAE

uisetum arvense L.

Meadow Horsetail. Native perennial. Common. Moist woods, reambanks, lake shores, from low elevations to sub-alpine. Vouchers: M 565 - 290 m, 23 May 1983. LCM 566 - 290 m, 23 May 1983. LCM 649 - 90 m, 13 June 1983. LCM 751 - 880 m, 20 June 1983. LCM 814 - 350 m, 3 uly 1983. LCM 1415 - 350 m, 19 May 1984.

uviatile L.

Horsetail. Native perennial. Occasional. Shallow ponds. hers: LCM 796 - 300 m, 3 July 1983. Comments: Habitat for this cies is very limited in Eklutna Valley. It was quite abundant in the e site where I observed it.

uisetum scirpoides Michx.

Dwarf scouring-rush. Native evergreen perennial. Frequent. ist open woods, pond and lake margins. Vouchers: WmM 1399 (AES) - 12 ly 1962 (?). AS 611 - 24 June 1965. LCM 571 - 290 m, 23 May 1983. M 798 - 350 m, 3 July 1983. LCM 1665b - 270 m, 18 July 1984.

um sylvaticum L.

Woodland Horsetail. Native perennial. Frequent. Woods, alder s, subalpine meadows. Vouchers: LCM 1500 - 460-600 m, 23 June LCM 1771a - 370 m, 12 Aug. 1984. LCM 1771b - 370 m, 12 Aug.

1984. Comment: This plant is probably more common than my collections would suggest.

Equisetum variegatum Schleich.

Variegated Scouring-rush. Native evergreen perennial. Occasional. Moist to wet lake margins. Vouchers: LCM 569 - 290 m, 23 May 1983. LCM 1603 - 250 m, 12 July 1984.

DIVISION FILICOPHYTA

OPHIOGLOSSACEAE

Botrychium boreale (Fries) Milde

Northern Grapefern. Native perennial. Rare. Subalpine meadow. Vouchers: LCM 888 - 760 m, 11 July 1983. Comment: Observed at only one location.

Botrychium lunaria (L.) Swartz var. lunaria

Moonwort. Native perennial. Frequent. Woods, meadows, rock outcrops. Vouchers: LCM 674 - 460 m, 13 June 1983. LCM 849b - 270 m, 4 July 1983. LCM 1579 - 400 m, 2 July 1984. LCM 1698 - 300-460 m, 18 July 1984.

POLYPODIACEAE

Cryptogramma crispa (L.) R. Br. ex Hook. var. acrostichoides (R. Br.) C. B. Clarke

Parsley Fern. Native perennial. Occasional (?). Rocky alpine slope. Vouchers: LCM 947 - 870 m, 18 July 1983. LCM 1938 - 550-600 m, 8 June 1985. Comment: Observed at only two sites, but since its

habitat type is common, it is probably more abundant than my observations suggest.

Cystopteris fragilis (L.) Bernh.

Fragile Fern. Native perennial. Common. Woods, thickets, stream banks, rock outcrops. Vouchers: WmM 620B15 (AES) - 20 June 1965. AS 1298 - 25 June 1968. AS 1306 - 25 June 1968. MW 2226 - 25 June 1968. LCM 625 - 400 m, 6 June 1983. LCM 652 - 290 m, 13 June 1983. LCM 659 - 290 m, 13 June 1983. LCM 708 - 450 m, 20 June 1983. LCM 922 - 400 m, 18 July 1983. LCM 199 - 400-560 m, 19 May 1984. LCM 1434 - 430-460 m, 26 May 1984. LCM 1700 - 300-460 m, 18 July 1984. Comment: This species is highly variable in Eklutna Valley.

Dryopteris austriaca (Jacq.) Woynor ex Schinz & Thell.

Spinulose Shield-fern. Native perennial. Common. Moist woods, thickets, meadows, from low elevations to sub-alpine. Synonym: D. dilatata (Hoffm.) Gray ssp. americana (Fisch.) Hult. Vouchers: LCM 658a - 290 m, 13 June 1983. LCM 678 - 520-760 m, 13 June 1983. LCM 74[illegible] - 270 m, 20 June 1983. LCM 1497 - 457-600 m, 23 June 1984. LCM 1773 - 370 m, 12 Aug. 1984.

Dryopteris fragrans (L.) Schott

Fragrant Shield-fern. Native evergreen perennial. Occasional. Talus slopes, boulder fields, rock outcrops. Vouchers: SLW 4209 - 18 June 1965. MW 1594 - 24 June 1966. LCM 1401 - 400-560 m, 19 May 1984. LCM 1458 - 330 m, 2 June 1984. LCM 1752 - 330 m, 12 Aug. 1984. LCM 1990 - 80 m, 29 June 1985.

Gymnocarpium dryopteris (L.) Newman

Oak-fern. Native perennial. Common. Woods, moist meadows, thickets, stream banks. Vouchers: LCM 650 - 290 m, 13 June 1983. LCM

1772 - 370 m, 12 Aug. 1984. Comment: This species is considerably more common than my collections would suggest.

Woodsia ilvensis (L.) R. Br.

Rusty Woodsia. Native perennial. Occasional. Rock outcrops, talus, dry gravelly slopes. Vouchers: LCM 978 - 1100 m, 18 July 1983. LCM 1402 - 400-560 m, 19 May 1984. LCM 1436 - 370 m, 26 May 1984.

Woodsia scopulina D. C. Eaton

Rocky Mountain Woodsia. Native perennial. Rare. Talus and soil pockets in a rock outcrop. Vouchers: LCM 1400 - 400-560 m, 19 May 1984. Comments: Observed at only one location. A slight range extension from its nearest distribution on the Kenai Peninsula.

DIVISION PINOPHYTA

CUPRESSACEAE

Juniperus communis L. var. montana Ait.

Common Juniper. Native evergreen shrub. Occasional. Talus slopes, dry meadows. Low elevations to subalpine. Synonym: J. communis L. ssp. nana (Willd.) Syme. Vouchers: LCM 675 - 460 m, 13 June 1983. LCM 679 - 520-760 m, 13 June 1983. LCM 1754 - 335 m, 12 Aug. 1984.

PINACEAE

Picea glauca (Moench) Voss

White Spruce. Native evergreen tree. Common. Woods, well drained substrates. Vouchers: LCM 1651 - 268 m, 18 July 1984. LCM 1658 - 270 m, 18 July 1984. LCM 1857 - 460 m, 16 Aug. 1984. Comment:

This species is considerably more common than my collections would suggest.

Picea mariana (Mill.) Britt., Sterns & Pogg

Black Spruce. Native evergreen tree. Common. Woods, spruce muskeg. Vouchers: LCM 1630 - 270 m, 12 July 1984. LCM 1846 - 260 m, 15 Aug. 1984. Comment: This species is considerably more common than my collections would suggest.

DIVISION MAGNOLIOPHYTA

CLASS MAGNOLIOPSIDA

ADOXACEAE

Adoxa moschatellina L.

Moschatel. Native perennial. Occasional (?). Moist subalpine meadows. Vouchers: LCM 741 - 880 m, 20 June 1983. LCM 1502 - 460-600 m, 23 June 1984. LCM 1979 - 100 m, 22 June 1985. Comments: This plant is probably more abundant than my observations indicate. Its small size, and tendency to grow in dense vegetation, make it difficult to see.

ARALIACEAE

Oplopanax horridum (J. E. Smith) Miq.

Devil's Club. Native deciduous shrub. Occasional. Moist woods, stream banks, bases of rock outcrops. Synonym: Echinopanax horridum (Sm.) Decne. & Planck. Vouchers: LCM 657 - 350 m, 13 June 1983. LCM 1489 - 260-300 m, 23 June 1984. LCM 1786 - 460 m, 12 Aug. 1984.

APIACEAE

Angelica lucida L.

Native perennial. Frequent. Subalpine meadows. Vouchers: SLW 4638 - 12 July 1965. LCM 695 - 760 m, 13 June 1983. LCM 70 - 940 m, 20 June 1983. LCM 1671 - 305-460 m, 18 July 1984. LCM 1794 - 760 m, 13 Aug. 1984.

Heracleum lanatum Michx.

Cow Parsnip. Native perennial. Common. Moist open woods, subalpine meadows. Vouchers: LCM 885 - 760 m, 11 July 1983. LCM 1787 - 460 m, 12 Aug. 1984.

Osmorhiza depauperata Phil.

Native perennial. Rare. Moist woods. Voucher: LCM 1765 - 360 m, 12 Aug. 1984. Comment: Observed at only one location. A slight range extension from the Kenai Peninsula.

ASTERACEAE

Achillea millefolium L. ssp. **borealis** (Bong.) Brietung

Yarrow. Native perennial. Common. Dry meadows and subalpine slopes, roadsides, gravel. Synonym: A. borealis Bong. Vouchers: WmM 92B8 (AES) - 2 Sept. 1965. LCM 714 - 620 m, 20 June 1983. LCM 937 - 620 m, 18 July 1983. LCM 1568 - 400 m, 2 July 1984. LCM 1678 - 305-460 m, 18 July 1984.

Antennaria alpina (L.) Gaertn. var. **stolonifera** (Porsild) Welsh

Alpine Pussytoes. Native perennial. Rare. Alpine tundra. Synonym: A. frieseana (Trautv.) Ekm., A. stolonifera Porsild. Vouchers: LCM 707 - 450 m, 20 June 1983. LCM 1571 - 400 m, 2 July

1984. Comments: Observed at only two locations. An apparent range extension from its nearest distribution in Yukon.

Antennaria monocephala DC.

Native perennial. Common. Alpine tundra. Vouchers: WmM 91083 (AES) - 10 Sept. 1965. LCM 894b - 1000 m, 11 July 1983. LCM 903a - 1060 m, 11 July 1983. LCM 959 - 300 m, 18 July 1983. LCM 962 - 300 m, 18 July 1983. LCM 1538 - 910-1060 m, 23 June 1984. LCM 1842 - 1220-1370 m, 14 Aug. 1984. LCM 2127 - 1470 m, 19 July 1985. LCM 2129 - 1150-1300 m, 19 July 1985. LCM 2140b - 1130 m, 6 Aug. 1985.

Antennaria parvifolia Nutt.

Native perennial. Rare. Open woods, dry slopes. Synonym: A. rosea Greene. Vouchers: LCM 706 - 510 m, 20 June 1983. LCM 2021 - 430 m, 3 July 1983. Comment: This species is called A. rosea in both Welsh (1974) and Hulten (1968).

Antennaria umbrinella Rydb.

Native perennial. Frequent. Dry alpine tundra. Synonym: A. pallida E. Nels., A. isolepis Greene. Vouchers: LCM 852 - 280 m, 4 July 1983. LCM 894a - 1000 m, 11 July 1983. LCM 903b - 1060 m, 11 July 1983. LCM 2112 - 1300-1400 m, 19 July 1984.

Arnica amplexicaulis Nutt. var. amplexicaulis

Native perennial. Occasional (?). Alpine meadows. Vouchers: LCM 2076 - 1050-1150 m, 19 July 1985. Comments: I observed this plant at only one location, but it is likely to be more abundant than indicated due to the extensive habitat available to it. For this variety of the species, it represents a range extension from its nearest distribution on the Alaskan Panhandle.

Arnica chamissonis Less. ssp. chamissonis

Native perennial. Rare. Open woodland. Vouchers: LCM 1650 - 270 m, 18 July 1984. Comment: Observed at only one site.

Arnica diversifolia Greene

Native perennial. Rare. Rock outcrop. Vouchers: AS 829 - 1 Aug. 1965. Comments: I personally did not observe any of these plants in Eklutna Valley. Welsh (1974) mentions that these plants are rare and may actually represent a hybrid between A. latifolia and A. amplexicaulis, both of which can be found in the valley. If this entity does indeed represent a valid taxon, then it represents a range extension from its nearest distribution in the Wrangell Mountains.

Arnica latifolia Bong.

Native perennial. Frequent. Subalpine to alpine meadows. Vouchers: LCM 892 - 910 m, 11 July 1983. LCM 1805a - 970 m, 13 Aug. 1984.

Arnica lessingii Greene

Native perennial. Occasional. Alpine tundra and heath. Vouchers: LCM 916 - 1130 m, 1 July 1983. LCM 1818b - 1220-1370 m, 14 Aug. 1984. LCM 1878 - 1200-1400 m, 6 Aug. 1985. Comment: This species was often found growing near populations of A. louiseana.

Arnica louiseana Farr. var. frigida (C. A. Mey.) Welsh

Native perennial. Frequent. Alpine tundra, terraces, open woods. Synonym: A. frigida C. A. Mey. Vouchers: SLW 4636 - 12 July 1965. LCM 635 - 270 m, 13 June 1983. LCM 875 - 230 m, 4 July 1983. LCM 965 - 1100 m, 18 July 1983. LCM 1702 - 330-460 m, 18 July 1983. LCM 1818a - 1220-1520 m, 14 Aug. 1984. LCM 1877 - 370-430 m, 21 Aug.

1984. LCM 1972 - 100 m, 22 June 1985. LCM 2025 - 270 m, 3 July 1985. LCM 2113 - 1300-1400 m, 6 Aug. 1985.

Artemesia campestris L. ssp. borealis (Pallas) H. & C.

Native perennial. Rare. Dry talus slope. Synonym: A. borealis Pall. Vouchers: LCM 1749 - 330 m, 12 Aug. 1984. Comment: Observed at only one location.

Artemesia dracunculus L.

Native subshrub. Occasional. Dry slopes from low elevations to subalpine. Vouchers: WmM 1403 (AES) - 12 July 1962. LCM 936 - 620 m, 18 July 1983. LCM 1726 - 610 m, 25 July 1984. Comment: Observed at only two locations.

Artemesia frigida L. var. frigida

Prairie Sagewort. Native perennial. Occasional. Dry gravelly slopes. Voucher: LCM 1725 - 600 m, 25 July 1984. Comments: Habitat for this plant appears to be common, so it may be more abundant than my observations indicate. An apparent range extension from its nearest ıution in the Alaska Range and in the Chugach Mountains.

emesia furcata Bieb. var. heterophylla (Besser) Hulten

Native perennial. Frequent. Dry rocky alpine slopes. uchers: WmM 92B6 - 760 m, 2 Sept. 1965. WmM 910B14 - 1400 m, 10 . 1965. LCM 976 - 2000 m, 18 July 1983. LCM 1871 - 1200-1360 m, 21 g. 1984.

mesia norvegica Fries var. saxatilis (Besser) Jeps.

Native perennial. Common. Subalpine meadows, alpine tundra. ynonym: A. arctica Less. ssp arctica. Vouchers: AS 830 - 1 Aug. 965. WmM 910B14 (AES) - 10 Sept. 1965. LCM 682 - 550-760 m, 13 June 1983. LCM 898 - 900 m, 11 July 1983. LCM 1731 - 670 m, 25 July 1984.

LCM 1796 - 760 m, 13 Aug. 1984. LCM 1863 - 300 m, 21 Aug. 1984.

Comment: Specimen WmM 910B14 has no inflorescences, so varietal status for that specimen has not been determined.

Artemesia tilesii Ledeb. var. unalaschcensis Besser

Native perennial. Frequent. Woods, sandy lake shores, disturbed soils. Vouchers: LCM 1584 - 265 m, 2 July 1984. LCM 1639 - 270 m, 12 July 1984. LCM 1663 - 300-460 m, 18 July 1984. LCM 1761 - 330 m, 12 Aug. 1984.

Aster sibericus L.

Siberian Aster. Native perennial. Frequent. Open woods, streambanks and terraces, meadows. Vouchers: SLW 4635 - 12 July 1965. LCM 720 - 620 m, 20 June 1983. LCM 856 - 280 m, 4 July 1983. LCM 1545 - 360 m, 23 June 1984. LCM 1681 - 300-460 m, 18 July 1984. LCM 2115 - 1300-1400 m, 19 July 1985.

Crepis nana Richards. var. nana

Dwarf Hawk's-beard. Native perennial. Occasional. Alpine to subalpine talus slopes, moraines. Vouchers: LCM 613 - 400 m, 6 June 1983. LCM 1703 - 370 m, 18 July 1984. LCM 1873 - 1200-1400 m, 21 Aug. 1984. LCM 1923 - 300 m, 1 June 1985. LCM 2120b - 1360-1400 m, 19 July 1985.

Erigeron acris L. var. kamtschaticus (DC.) Herder

Fleabane Daisy. Native biennial or perennial. Common. Open woods, streambanks and terraces, roadsides. Synonym: E. acris L. ssp. politus (Fries) Schinz & Keller. Vouchers: LCM 846 - 280 m, 4 July 1983. LCM 881 - 270 m, 11 July 1983. LCM 934 - 620 m, 18 July 1983. LCM 1002 - 380 m, 31 July 1983. LCM 1563 - 400 m, 2 July 1984.

Erigeron humilis Grah.

Native perennial. Frequent. Alpine gravelly soils. Vouchers: LCM 1843 - 1220-1520 m, 14 Aug. 1984. LCM 1887 - 1400-1600 m, 21 Aug. 1984. LCM 2090 - 1150-1300 m, 19 July 1985. LCM 2101, LCM 2102 - 1300-1400 m, 19 July 1985. LCM 2142 - 1128 m, 6 Aug. 1985. Comments: This species is apparently quite variable in this area. Specimen LCM 2102 has green bracts, white ray flowers, and lacks purple cross walls in the multicellular hairs. Collection LCM 2142 has particularly robust specimens.

Erigeron lonchophyllus Hook.

Native biennial or short-lived perennial. Occasional. Bogs, wet places. Vouchers: LCM 874 - 250 m, 4 July 1983. LCM 1577 - 400 m, 2 July 1984. LCM 2008 - 300 m, 3 July 1985.

Erigeron peregrinus (Pursh) Greene ssp. peregrinus

Coastal Fleabane. Native perennial. Occasional. Moist subalpine meadows. Vouchers: LCM 949 - 950 m, 18 July 1983. LCM 1797 - 850 m, 13 Aug. 1984. LCM 2073 - 900-1050 m, 19 July 1985. Comment: Specimens vary considerably even within populations, in ray length and width; and in color, which varies from white to purple.

Erigeron purpuratus Greene

Perennial. Occasional. Alpine gravel and rock outcrops. Vouchers: LCM 1886 - 1370-1600 m, 21 Aug. 1984. LCM 2117 - 1300-1400 m, 19 July 1985. Comments: Endemic to the Alaska-Yukon region. Immature flowers turn from white to purplish as they mature, as can be seen in LCM 2117.

Hieracium triste Willd.

Woolly Hawkweed. Native perennial. Rare (?). Subalpine meadow. Vouchers: LCM 1802 - 850 m, 13 Aug. 1984. Comments: Seen at only one location. The plant is likely to be more common than my observations indicate due to the abundance of suitable habitat.

Matricaria matricarioides (Less.) Porter

Pineapple Weed. Introduced annual. Frequent. Weeds of roadsides, habitations. Vouchers: LCM 1006 - 380 m, 31 July 1983. LCM 1902 - 270 m, 21 Aug. 1984.

Petasites frigidus (L.) Fries var. nivalis (Greene) Cronq.

Arctic Sweet Colt's-foot. Native perennial. Occasional. Moist subalpine meadows, alpine tundra. Synonym: P. hyperboreus Rydb. Vouchers: LCM 755 - 2880 m, 20 June 1983. LCM 1499 - 460-610 m, 23 June 1984. LCM 1901 - 870 m, 21 Aug. 1984.

Senecio indecorus Greene

Native perennial. Occasional. Open woods, roadsides. Synonym: S. pauciflorus Pursh var. fallax Greenm. Vouchers: LCM 863 - 280 m, 4 July 1983. LCM 932 - 500 m, 18 July 1983. LCM 1646 - 270 m, 18 July 1984. Comment: An apparent range extension from its nearest distribution in Yukon Territory.

Senecio lugens Richards.

Native perennial. Occasional. Bogs, moist woods. Vouchers: LCM 1608 - 275 m, 12 July 1984. LCM 1672 - 300-460 m, 18 July 1984. LCM 2002 - 270 m, 2 July 1985. LCM 2009 - 300 m, 3 July 1985.

Senecio pauperculus Michx.

Native perennial. Occasional. Open woods, roadsides. Vouchers: LCM 863 - 280 m, 4 July 1983. LCM 939 - 620 m, 18 July 1983. LCM 1566 - 400 m, 2 July 1984.

Senecio triangularis Hook.

Native perennial. Occasional. Alpine and subalpine meadows. Vouchers: LCM 950 - 950 m, 18 July 1983. LCM 1805b - 970 m, 13 Aug. 1984.

Senecio vulgaris L.

Common Groundsel. Introduced annual. Occasional. Weeds of roadsides, habitations. Vouchers: LCM 1004 - 380 m, 31 July 1983. Comment: Observed in several places along the roadsides.

Solidago multiradiata Ait.

Northern Goldenrod. Native perennial. Frequent. Woods, meadows, alpine to subalpine slopes. Vouchers: SLW 4609 - 12 July 1965. SLW 4642 - 12 July 1965. AS 840 - 1 Aug. 1965. LCM 724 - 620 m, 20 June 1983. LCM 868 - 250 m, 4 July 1983. LCM 900 - 1000 m, 11 July 1983. LCM 938 - 620 m, 18 July 1983. LCM 1565 - 400 m, 2 July 1984. LCM 1621 - 275 m, 12 July 1984. LCM 1637 - 270 m, 12 July 1984. LCM 1680 - 300-460 m, 18 July 1984. LCM 1783 - 460 m, 12 Aug. 1984. LCM 1831 - 1220-1520 m, 14 Aug. 1984.

Taraxacum carneocoloratum A. Nels.

Native perennial. Rare. Dry gravelly alpine ridge. Synonym: T. eriophorum Rydb. Voucher: LCM 2093 - 1300-1400 m, 19 July 1985. Comments: This rare and unusual plant has apparently been collected in only two other locations; Mt. McKinley National Park and the Olgilvie Mountains in Yukon Territory. My plants were collected from a

population of approximately twenty-five to thirty plants growing on a gravelly alpine ridge east of Twin Peaks. They were growing in among a larger population of T. eriophorum.

Murray (1980) describes this plant as having the lowermost involucral bracts being "broadly ovate, with pale, even hyaline margins," and the uppermost bracts being "narrow and tapering." In the Eklutna population, there were some plants which had lower bracts that were narrowly ovate and lacked the pale margin. This character was quite common in the remarkably similar sympatric population of T. eriophorum. In addition, some of the Taraxacum eriophorum had the broadly ovate bracts and hyaline margins of T. carneocoloatum.

In Welsh (1974), this species was synonomized with T. eriophorum. However, I have elected to follow Hulten in recognizing this taxon, not because I believe it to be a valid species, but because of its intrinsic interest and its inclusion for consideration, by Murray (1980), for threatened status. In the opinion of Welsh (1985) and myself, this "species" is an apparent mutation that has occurred several times in a few widely disparate locations.

Taraxacum ceratophorum (Ledeb.) DC.

Horned Dandelion. Native perennial. Frequent. Disturbed sites of natural or manmade origin, open woods. Vouchers: LCM 878 - 230 m, 4 July 1983. LCM 1840 - 1220-1520 m, 14 Aug. 1984. LCM 1897 - 1200 m, 21 Aug. 1984. LCM 1971 - 100 m, 22 June 1985. Comments: Specimen LCM 1971 has very robust heads. This composite species is considered in a much broader sense by Welsh than it is by Hulten. I am not certain how these specimens would be classified under Hulten's definition of the species, so no synonym is given.

Taraxacum eriophorum Rydb.

Native perennial. Rare. Alpine tundra, heath. Synonyms: T. kamtschaticum Dahls., T. lateritium Dahls. Vouchers: LCM 986 - 1240 m, 18 July 1983. LCM 2092 - 1200-1370 m, 19 July 1985. LCM 2150 - 1220 m, 6 Aug. 1985.

Taraxacum officinale Weber ex Wiggers

Common Dandelion. Introduced perennial. Frequent. Weeds along roads, habitations. Vouchers: LCM 1388 - 400 m, 19 May 1984. LCM 1404 - 560 m, 19 May 1984. LCM 1859 - 270 m, 16 Aug. 1984. LCM 1936 - 400 m, 8 June 1985.

BETULACEAE

Alnus crispa (Ait.) Pursh var. laciniata Hulten

Sitka or Green Alder. Native deciduous shrub or small tree. Common. Subalpine slopes, streambanks, moraines, disturbed sites. Synonym: A. crispa var. sinuata (Reg.) Hulten. Vouchers: SLW 4249 - 20 June 1965. WmM 729B22 (AES) - 24 Aug. 1965. LCM 576 - 290 m, 23 May 1983. LCM 619 - 400 m, 6 June 1983.

Betula glandulosa Michx. var. sibirica (Ledeb.) Blake

Glandular Birch. Native deciduous shrub. Frequent. Bogs, subalpine meadows, tundra. Synonym: B. nana var. exilis (Sukatsch.) Hult. Vouchers: WmM 910B15 - 1220 m, 10 Sept. 1965. LCM 690 - 760 m, 13 June 1983. LCM 771 - 940 m, 20 June 1983. LCM 1946, LCM 1947 - 600 m, 8 June 1985. Comment: Specimen LCM 1947 is an apparent glandulosa/papyrifera hybrid.

Betula papyrifera Marsh var. papyrifera

Paper Birch. Native deciduous tree. Common. Woods on valley bottoms. Synonym: B. kenaica Evans. Vouchers: LCM 1909 - 400 m, 18 May 1985.

BORAGINACEAE

Mertensia paniculata (Ait.) G.Don ssp. paniculata

Tall Bluebell. Native perennial. Common. Woods, meadows, streambanks. Synonym: M. paniculata var. alaskana (Britt.) L. O. Williams. Vouchers: LCM 567 - 290 m, 23 May 1983. LCM 638 - 270 m, 13 June 1983. LCM 882 - 760 m, 11 July 1983. LCM 951 - 950 m, 18 July 1983. LCM 966 - 1200 m, 18 July 1983.

Myosotis sylvatica Hoffm.

Forget-me-not. Native perennial. Occasional. Subalpine meadows, slopes, rock outcrops. Synonym: M. alpestris F. W. Schmidt ssp. asiatica Vesterb. ex Hulten. Vouchers: LCM 692 - 760 m, 13 June 1983. LCM 953 - 950 m, 18 July 1983. LCM 1474 - 500-600 m, 2 June 1984. LCM 1695 - 300-460 m, 18 July 1984. LCM 1940 - 550-600 m, 2 June 1985. Comments: This beautiful plant is the state flower of Alaska. Collection LCM 1474 has a single specimen with purple and pink striped corollas.

BRASSICACEAE

l divaricarpa A. Nels.

Native biennial. Rare. Roadsides, disturbed soils. Vouchers: 722 - 620 m, 20 June 1983. Comment: Observed at only one location.

s hirsuta (L.) Scop. var. eschscholtziana (Andrz.) Rollins

Hairy Rockcress. Native biennial or short lived perennial. ent. Roadsides, rock outcrops. Vouchers: MW 966 - 24 June 1965. 709 - 450 m, 20 June 1983. LCM 1005 - 380 m, 31 July 1983. LCM 93 - 400-560 m, 19 May 1984. LCM 1471 - 500-600 m, 2 June 1984. LCM 37 - 400 m, 8 June 1985. LCM 2057 - 640 m, 18 July 1985. Comments: ollections MW 966 and LCM 1005 are well branched robust specimens. pecimen LCM 1005 is oddly formed due to an aphid infestation.

mens LCM 709, LCM 1005, LCM 1393, and LCM 1471 definitely appear to erennial. The others may be biennial.

s holboellii Hornem.

Holboell Rockcress. Native biennial. Occassional. Var. llii. Vouchers: LCM 1574 - 400 m, 2 July 1984. Var. retrofracta ah.) Rydb. Vouchers: LCM 632 - 270 m, 13 June 1983. Comments: cimen LCM 632 is not typical, in that it lacks pubescence on the per cauline leaves. The leaf margins, however, are strongly revolute they should be for var. retrofracta.

abis lyrata L.

Native biennial or short lived perennial. Frequent. Var. mchatica Fisch. ex DC. Vouchers: SLW 4194 - 18 June 1965. LCM 621 - 0 m, 6 June 1983. LCM 661 - 366 m, 13 June 1983. LCM 1397b - 400-560 19 May 1984. LCM 1991 - 80 m, 29 June 1985. Var. lyrata. Vouchers:

LCM 623 - 400 m, 6 June 1983. LCM 1376 - 270 m, 12 May 1984. LC
- 370 m, 26 May 1984. Comment: Observed elsewhere.

Capsella bursa-pastoris (L.) Medic

Shepherd's Purse. Introduced annual. Occasional. Weed
roadsides, around habitations. Vouchers: LCM 1567 - 400 m, 2 Ju
1984. Comment: Observed in several other locations along the
roadsides.

Cardamine bellidifolia L. var. bellidifolia

Alpine Bittercress. Native perennial. Occasional. Grave
alpine slopes. Vouchers: LCM 1515 - 610-910 m, 23 June 1984.
Comment: Observed at only one other location, but because specime
were not at anthesis, they were not collected.

Cardamine oligosperma Nutt. ex T. & G.

Native annual or biennial. Occasional. Moist open woods,
subalpine to alpine meadows. Synonym: C. umbellata Greene. Vouc
LCM 698 - 760 m, 13 June 1983. LCM 744 - 880 m, 20 June 1983. LC
- 610-910 m, 23 June 1984. LCM 1769 - 370 m, 12 Aug. 1984.

Draba alpina L.

Alpine Rockcress. Native perennial. Rare (?). Dry grave
alpine slope. Vouchers: LCM 2111a - 1300-1400 m, 19 July 1985.
Comments: Specimens found were soboliferous. Observed at only on
location.

Draba aurea Vahl ex Hornem.

Golden Rockcress. Native perennial. Frequent. Gravelly
rock outcrops, roadcuts. Vouchers: WmM 92B4 (AES) - 2 Sept. 1964
SLW 4191 - 18 June 1965. WmM 620B17 (AES) - 20 June 1965. WmM 62
(AES) - 20 June 1965. MW 968 - 24 June 1965. LCM 596 - 400 m, 6

. LCM 631 - 270 m, 13 June 1983. LCM 718 - 620 m, 20 June 1983. 1383 - 260 m, 18 May 1984. LCM 1397a - 400-560 m, 19 May 1984. LCM - 290 m, 2 June 1984. LCM 1468 - 400-600 m, 2 June 1984. LCM 1569 00 m, 2 July 1984. LCM 1683 - 300-460 m, 18 July 1984. LCM 1750 - m, 12 Aug. 1984.

aba borealis DC.

Northern Rockcress. Native perennial. Occasional. Rock utcrops, open slopes. Var. borealis. Vouchers: LCM 1928 - 500 m, 1 une 1985. 2022 - 430 m, 3 July 1985. Var. maxima (Hulten) Welsh. ynonym: D. maxima Hult. Vouchers: SLW 4185 - 18 June 1965. LCM 583, CM 592 - 400 m, 6 June 1983. LCM 1378 - 400 m, 12 May 1984. LCM 395 - 00-560 m, 19 May 1984. LCM 1432 - 430-460 m, 26 May 1984. LCM 1444 - m, 26 May 1984. LCM 2079b - 1050-1150 m, 19 June 1985. Comment: presence of var. borealis in Eklutna Valley is an apparent range tension from its nearest distribution on Kodiak Island.

aba lactea Adams

Native perennial. Occasional. Alpine tundra, rock outcrops. ers: SLW 4199 - 18 June 1965. LCM 622b - 400 m, 6 June 1983. LCM , LCM 909 - 1070 m, 11 July 1983. LCM 913 - 1130 m, 11 July 1983. mment: An apparent range extension from its nearest distribution in e Alaska Range.

nivalis Lilj.

Native perennial. Frequent. Alpine tundra and heath, rock tcrops. Var. kamtschatica (Ledeb.) Pohle. Synonym: D. kamtschatica edeb.) N. Busch. Vouchers: SLW 4192 - 18 June 1965. MW 1590 - 24 ne 1966. AS 1301 - 25 June 1968. LCM 604 - 400 m, 6 June 1983. LCM 2a - 400 m, 6 June 1983. LCM 762 - 940 m, 20 June 1983. LCM 1422 -

370-430 m, 26 May 1984. LCM 1469 - 500-600 m, 2 June 1984. LCM 18
1400-1600 m, 21 Aug. 1984. LCM 1981 - 80 m, 29 June 1985. LCM 199
80 m, 29 June 1985. LCM 2067 - 820 m, 19 July 1985. Var. nivalis.
Vouchers: LCM 2104 - 1300-1400 m, 19 July 1985.

Draba stenoloba Ledeb. var. stenoloba

Native annual to short lived perennial. Occasional. Alpin
tundra and heath. Vouchers: LCM 713 - 620 m, 20 June 1983. LCM 7
820 m, 20 June 1983. LCM 733 - 820 m, 20 June 1983. LCM 957 - 100
18 July 1983. LCM 988 - 1240 m, 18 July 1983. LCM 2068 - 820 m, 1
July 1985. LCM 2089 - 1150-1300 m, 19 July 1985. LCM 2132 - 1150-
m, 19 July 1985. LCM 2151 - 1220 m, 6 Aug. 1985.

Draba stenopetala Trautv.

Native perennial. Occasional. Alpine talus slopes. Vouch
LCM 1885 - 1400-1600 m, 21 Aug. 1984. LCM 2111b - 1300-1400 m, 19
1985. LCM 2139 - 1130 m, 6 Aug 1985. Comments: An apparent range
extension from its nearest distribution in the Alaska Range. At o
time, this unusual plant was considered to be rare.

Erysimum chieranthoides L.

Wormseed. Native (?) annual. Occasional. Disturbed site
Vouchers: LCM 1001 - 380 m, 3 Jul. 1985. LCM 2018 - 370 m, 3 Ju
1985.

Erysimum inconspicuum (Wats.) MacM.

Prairie Violet. Native biennial to short-lived perennial.
Occasional. Open woods, dry meadows, roadsides. Vouchers: MW 97
June 1965. WmM 92B7 (AES) - 27 Aug. 1965. WmM 827B7 (AES) - 2 Se
1965. LCM 721 - 620 m, 20 June 1983. LCM 1389 - 400 m, 19 May 19
LCM 1564 - 400 m, 2 July 1984.

Lesquerella arctica (Wormskj.) S. Wats.

Arctic Bladderpod. Native perennial. Rare. Rocky dry hillside. Voucher: LCM 1992 - 80 m, 29 June 1985. Comments: This specimen was in fruit, so the variety could not be determined. Observed at only one location, it is an apparent range extension from its nearest distribution in the Alaska Range and in the Chugach Mountains.

Lepidium densiflorum Schrad. var. macrocarpum Mulligan

Common Peppergrass. Native annual. Occasional. Disturbed sites. Voucher: LCM 1583 - 270 m, 2 July 1984.

Rorippa islandica (Oed.) Borbas

Marsh Yellowcress. Native annual or biennial. Frequent. Disturbed sites, mud flats, roadsides. Var. barbariifolia (DC.) Welsh. Synonym: R. hispida (Desv.) Britt. var. barbareaefolia (DC.) Hulten. Vouchers: LCM 1000 - 380 m, 31 July 1983. LCM 1561 - 400 m, 2 July 1984. Var. hispida (Desv.) Butters & Abbe. Vouchers: AS 1412 - 25 June 1970. LCM 854 - 250 m, 4 July 1983. LCM 1007 - 380 m, 31 July 1983. LCM 1602 - 255 m, 12 July 1984.

Thlaspi arcticum Porsild

Native perennial. Rare. Loose talus. Voucher: LCM 2135 - 1130 m, 6 Aug. 1985. Comments: The finding of this species in Eklutna Valley is a significant extension of its range from its nearest distribution in southwestern Yukon Territory. My specimen was collected on a dry rocky talus slope on the tongue of a rock glacier below Bold Peak. True to character, this plant was found in a population consisting of only one individual. This specimen was soboliferous.

Murray (1980) recommmended that this Alaska-Yukon endemic be included on the federal listing of threatened species. In late 1980,

the species was still listed for consideration as endangered, but was reduced to threatened in 1983 (Fed. Reg. 1980, 1983).

Thlaspi arvense L.

Penneycress. Introduced annual. Occasional (?). Disturbed soil. Voucher: LCM 1744 - 400 m, 11 July 1984. Comment: I observed this species at only one location, but it must certainly be elsewhere.

CAMPANULACEAE

Campanula lasiocarpa Cham.

Mountain Harebell. Native perennial. Occasional. Alpine tundra and meadow. Vouchers: SLW 4626 - 12 July 1965. LCM 908 - 1070 m, 11 July 1983. LCM 979 - 1080 m, 18 July 1983. LCM 1830 - 1220-1530 m, 14 July 1984.

Campanula rotundifolia L.

Scottish Bluebells. Native perennial. Common. Calcareous bogs, stream banks and terraces, rock outcrops, woods, subalpine meadows. Vouchers: SLW 4621 - 12 July 1965. SLW 4628 - 12 July 1965. LCM 849a - 280 m, 4 July 1983. LCM 877 - 230 m, 4 July 1983. LCM 887 - 760 m, 11 July 1983. LCM 1547 - 400 m, 2 July 1984. LCM 1622 - 275 m, 12 July 1984. LCM 1654 - 270 m, 18 July 1984. LCM 1688 - 300-460 m, 18 July 1984. LCM 1780 - 460 m, 12 Aug. 1984. Comment: Specimen LCM 1547 is a diminutive single flowered plant.

CAPRIFOLIACEAE

Linnaea borealis L. var. longiflora Torr.

Twin-flower. Native subshrub. Common. Woods, alder thickets, meadows, stream banks, tundra. Synonym: L. borealis ssp. americana (Forbes) Hult. Vouchers: LCM 643 - 270 m, 13 June 1983. Comment: This plant is extremely common in spite of the paucity of my collections.

Sambucus racemosa L. ssp. pubescens (Michx.) House var. arborescens (T.& G.) Gray

Red Elderberry. Native deciduous shrub. Frequent. Woods, meadows, thickets. Vouchers: LCM 653 - 350 m, 13 June 1983. LCM 1743 - 460 m, 11 Aug. 1984.

Viburnum edule (Michx.) Raf.

Highbush Cranberry. Native deciduous shrubs. Common. Woods, thickets, subalpine slopes and meadows. Vouchers: LCM 637 - 270 m, 13 June 1983. Comment: This plant is considerably more common than my collections suggest.

CARYOPHYLLACEAE

Arenaria lateriflora L.

Blunt-leaved Sandwort. Native perennial. Common. Open woods, thickets, meadows. Synonym: Moehringia lateriflora (L.) Fenzl. Vouchers: LCM 644 - 270 m, 13 June 1983. LCM 742 - 880 m, 20 June 1983. LCM 802 - 350 m, 3 July 1983. LCM 871 - 250 m, 4 July 1983. LCM 1413, LCM 1414 - 400-560 m, 19 May 1984. LCM 1448 - 300 m, 26 May

1984. LCM 1548 - 400 m, 2 July 1984. LCM 1790a - 460 m, 12 July 1984. LCM 2048 - 350 m, 18 July 1985.

Arenaria macrocarpa Pursh

Long-podded Sandwort. Native perennial. Occasional. Exposed alpine ridges. Synonym: Minuartia macrocarpa (Pursh) Ostenf. Vouchers: LCM 964 - 1100 m, 18 July 1983. LCM 1827 - 1220-1520 m, 14 Aug. 1984. LCM 1883 - 1400-1600 m, 21 Aug. 1984. LCM 2110 - 1300-1400 m, 19 July 1985.

Arenaria rubella (Wahl.) J. E. Smith

Reddish Sandwort. Native perennial. Frequent. Gravelly soils, rock outcrops, exposed alpine ridges. Synonym: Minuartia rubella (Wahlenb.) Graebn. Vouchers: SLW 4197 - 18 June 1965. AS 1302 - 25 June 1968. AS 1420 - 25 June 1970. LCM 606 - 340 m, 6 June 1983. LCM 1421 - 370-430 m, 26 May 1984. LCM 1570 - 400 m, 2 July 1984. LCM 1696 - 300-460 m, 18 July 1984. LCM 1746 - 330 m, 12 Aug. 1984. LCM 1841 - 1220-1520 m, 14 Aug. 1984. LCM 2120a - 1300-1400 m, 19 July 1985. LCM 2141 - 1130 m, 6 Aug. 1985.

Arenaria sajanensis Willd.

Sajan Sandwort. Native perennial. Rare. Gravelly alpine slope. Synonym: Minuartia biflora (L.) Sching & Thell. Voucher: LCM 956 - 1000 m, 18 July 1983. Comment: Observed at only one location.

Cerastium arvense L.

Field Chickweed. Native perennial. Common. Rocky slopes, rock outcrops, dry meadows. Vouchers: SLW 4622 - 12 July 1965. SLW 4643 - 12 July 1965. LCM 716 - 620 m, 20 June 1983. LCM 780 - 940 m, 20 June 1983. LCM 857 - 280 m, 4 July 1983. LCM 935 - 620 m, 18 July 1983. LCM 1405 - 560 m, 19 May 1984. LCM 1449 - 460 m, 26 May 1984. LCM 1467

- 500-600 m, 2 June 1984. LCM 1685 - 300-460 m, 18 July 1984. LCM 1730 - 670 m, 25 July 1984. LCM 1745 - 300 m, 12 Aug. 1984. LCM 1781 - 460 m, 12 Aug. 1984. LCM 1825 - 1220-1530 m, 14 Aug. 1984. Comments: Collection SLW 4622 has characteristics nearing those of C. beeringianum. Specimen could be either a monstrosity or a hybrid.

Cerastium beeringianum Cham. & Schlecht. var. beeringianum

Bering Chickweed. Native perennial. Frequent. Dry gravelly slopes, rock outcrops. Vouchers: SLW 4193 - 18 June 1965. LCM 611 - 400 m, 6 June 1983. LCM 1386 - 260 m, 18 May 1984. LCM 1433 - 430-460 m, 26 May 1984. LCM 1882 - 430-460 m, 21 Aug. 1984. LCM 1970 - 100 m, 22 June 1985. LCM 2109 - 1300-1400 m, 19 July 1985.

Cerastium vulgatum L.

Introduced biennial to perennial. Occasional. Disturbed soils. Synonym: C. fontanum Baumg. ssp. triviale (Link) Jales. Vouchers: LCM 1562 - 400 m, 2 July 1984. LCM 2185 - 870 m, 25 Aug. 1984. Comment: Observed elsewhere.

Lychnis alba L.

Evening Campion. Introduced perennial. Rare. Weedy plant growing near a habitation. Vouchers: LCM 995 - 370 m, 31 July 1983. LCM 1732 - 370 m, 25 July 1984. Comments: This species is new to the Alaskan flora, but it has been collected in at least one other location in Alaska before this occurrence. It was probably introduced with cattle feed mixes shipped into Alaska from the continental United States.

Lychnis apetala L.

Nodding Lychnis. Native perennial. Rare. Gravelly alpine slope. Synonym: Melandrium apetalum (L.) Fenzl. Vouchers: LCM 1881 - 1400-1600 m, 21 Aug. 1984. Comment: Observed at only one location.

Lychnis furcata (Raf.) Fern.

Arctic Lychnis. Native perennial. Rare. Rock outcrop. Synonym: Melandrium affine J. Vahl. Voucher: LCM 1390 - 400-560 m, 19 May 1984. Comments: Observed at only one location. An apparent range extension from its nearest distribution in the Alaska Range and the Kenai Peninsula.

Silene acaulis L. var. exscapa (All.) DC.

Moss Campion. Native perennial. Frequent. Alpine to subalpin rocky outcrops and gravel. Synonym: S. acaulis ssp. acaulis. Vouchers: SLW 4195 - 18 June 1965. LCM 616 - 400 m, 6 June 1983. LC 1948 - 600 m, 8 June 1985. LCM 2116 - 400-430 m, 19 July 1985.

Stellaria calycantha (Ledeb.) Bong.

Native perennial. Occasional. Moist woods, roadside ditches. Var. calycantha. Synonym: A. calycantha ssp. interior Hult. Voucher: LCM 1994 - 210 m, 29 July 1985. Var. sitchana (Steud.) Fern. Synonym: A. sitchana Stued. var. sitchana. Vouchers: LCM 801 - 350 m, 3 July 1983. LCM 1496 - 270-300 m, 23 June 1984.

Stellaria longipes Goldie

Long-stalked Starwort. Native perennial. Open gravelly to sandy soils. Var. altocaulis (Hulten) C. L. Hitchc. Synonym: S. monantha Hult. Vouchers: SLW 4211 - 18 June 1965. LCM 589 - 400 m, June 1983. LCM 1505 - 460-600 m, 23 June 1984. LCM 1982 - 80 m, 29 June 1985. Var. edwardsii (R. Br.) Gray. Synonym: S. edwardsii R. B

Vouchers: LCM 757 - 940 m, 20 June 1983. LCM 895 - 1000 m, 11 July 1983. LCM 961 - 1000 m, 18 July 1983. LCM 1440 - 370 m, 26 May 1984. LCM 1801 - 853 m, 13 Aug. 1984. LCM 2118 - 1300-1400 m, 19 July 1985.

Stellaria media (L.) Cyrill.

Common Chickweed. Introduced annual weed. Occasional. Roadsides, around habitations. Vouchers: LCM 1009 - 380 m, 31 July 1983. Comment: Observed at several other locations.

CHENOPODIACEAE

Chenopodium album L.

Lambs Quarters. Introduced annual weed. Occasional. Roadsides, disturbed sites. Vouchers: LCM 1003 - 380 m, 31 July 1983. LCM 2179 - 870 m, 25 Aug. 1985.

CORNACEAE

Cornus canadensis L.

Bunchberry. Native perennial. Common. Woods, meadows, from low elevations to alpine. Vouchers: LCM 641 - 270 m, 13 June 1983. LCM 1486 - 270-300 m, 23 June 1984. LCM 1580 - 400 m, 2 July 1984. LCM 1628 - 270 m, 12 July 1984. LCM 2054 - 375 m, 18 July 1985.

Cornus stolonifera Michx. var. occidentalis (T. & G.) C. L. Hitchcock

Red-osier Dogwood. Native deciduous shrub. Occasional. Vouchers: LCM 1967 - 100 m, 22 June 1985. Comment: Observed only on the lower end of Eklutna River Canyon.

CRASSULACEAE

Sedum rosea (L.) Scop.

Roseroot. Native perennial. Frequent. Wet sites in alpine tundra. Var. integrifolium (Raf.) Berger. Vouchers: LCM 747, LCM 756 - 880 m, 18 July 1983. LCM 952 - 950 m, 18 July 1983. LCM 1514 - 600-900 m, 23 June 1984. Var. rosea. Voucher: LCM 1513 - 600-900 m, 23 June 1984. Comment: Var. rosea is probably a rare, but reoccurring mutation.

DIAPENSIACEAE

Diapensia lapponica L. var. obovata F. Schmidt.

Diapensia. Native evergreen subshrub. Occasional. Alpine tundra and heath. Synonym: D. lapponica ssp. obovata (F. Schm.) Hult. Vouchers: SLW 4258 - 20 June 1965. LCM 1520 - 600-900 m, 23 June 1984. LCM 1838 - 1220-1520 m, 14 Aug. 1984. LCM 1864 - 300 m, 21 Aug. 1984. LCM 2128 - 1500 m, 19 July 1984.

DROSERACEAE

Drosera rotundifolia L.

Round-leaf Sundew. Native biennial or perennial. Frequent. Bogs and swamps. Vouchers: LCM 840 - 580 m, 4 July 1983. Comment: This species is considerably more common than my collections would suggest.

ELAEAGNACEAE

Shepherdia canadensis (L.) Nutt.

Soapberry. Native deciduous shrub. Common. Woods, thickets, rock outcrops, from low elevations to subalpine. Vouchers: LCM 575 - 290 m, 23 May 1983. LCM 1410 - 560 m, 19 May 1984. LCM 1653 - 880 m, 18 July 1984.

EMPETRACEAE

Empetrum nigrum L.

Crowberry. Native evergreen subshrub. Common. Bogs, swamps, heath, alpine tundra. Vouchers: LCM 574 - 290 m, 23 May 1983. LCM 736 - 820 m, 20 June 1985. LCM 1756 - 370 m, 12 Aug. 1984. LCM 1922 - 360 m, 1 June 1985. Comments: Specimen LCM 1922 is var. nigrum. The varietal status of the other specimens are unknown due to the lack of flowers.

ERICACEAE

Andromeda polifolia L.

Bog Rosemary. Native evergreen subshrub. Occasional. Bogs, swamps. Vouchers: LCM 842 - 580 m, 4 July 1983. LCM 1483 - 270-300 m, 23 June 1984. LCM 1851 - 260 m, 15 Aug. 1984.

Arctostaphylos alpina (L.) Spreng.

Alpine Bearberry. Native deciduous subshrub. Frequent. Heath, alpine tundra, moist woods. Var. alpina. Voucher: LCM 977 - 1100 m, 18 July 1983. Var. rubra (Rehd. & Wils.) Bean. Synonym: A. rubra (Rehd. & Wilson) Fern. Vouchers: WmM 910B16 (AES) - 1200 m, 10 Sept.

1965. LCM 577 - 290 m, 23 May 1984. LCM 1627 - 275 m, 12 July 1984. LCM 1908 - 270-300 m, 18 May 1985. LCM 1924 - 300 m, 1 June 1985. Comment: Specimens LCM 577, LCM 1924, and WmM 910B16 lack fruit, so varietal level is tentative.

Arctostaphylos uva-ursi (L.) Spreng.

Kinnickinnick. Native evergreen subshrub. Frequent. Open slopes, heath, from low elevations to subalpine. Vouchers: WmM 910B7 (AES) - 10 Sept. 1965. LCM 1406 - 560 m, 19 May 1984. LCM 1798 - 850 m, 13 Aug. 1984. LCM 1867b - 300 m, 21 Aug. 1984. LCM 1929 - 500 m, 1 June 1985.

Cassiope stelleriana (Pallas) DC.

Alaska Moss Heath. Native evergreen subshrub. Common. Alpine tundra, heath. Vouchers: LCM 920 - 1130 m, 11 July 1983. LCM 1534 - 910-1070 m, 23 June 1984. LCM 1899 - 1200 m, 21 Aug. 1984.

Cassiope tetragona (L.) D. Don var. tetragona

Four-angle Mountain Heather. Native evergreen subshrub. Frequent. Alpine tundra. Synonym: C. tetragona ssp. tetragona. Vouchers: LCM 921 - 1130 m, 11 July 1983. LCM 994 - 330 m, 18 July 1983. LCM 1507 - 610-910 m, 23 June 1984. LCM 2125 - 1500 m, 19 July 1985.

Ledum decumbens (Ait.) Lodd. ex Steud.

Northern Labrador-tea. Native evergreen shrub. Frequent. Bogs, heath. Synonym: L. palustre L. ssp. decumbens (Ait.) Small. Vouchers: LCM 970 - 1100 m, 18 July 1983. LCM 1525 - 610-910 m, 23 June 1984. LCM 1760 - 330 m, 12 Aug. 1984. LCM 2077 - 1050-1150 m, 19 July 1985.

Ledum groenlandicum Oeder

Labrador-tea. Native evergreen shrub. Frequent. Bogs, spruce forest. Synonym: L. palustre L. ssp. groenlandicum (Older) Hult. Vouchers: LCM 704 - 300 m, 20 June 1983. LCM 1850 - 260 m, 15 Aug. 1984.

Loiseleuria procumbens (L.) Desv.

Alpine Azalea. Native evergreen subshrub. Occasional. Alpine tundra. Vouchers: LCM 1512 - 610-910 m, 23 June 1984. Comment: Observed in at least one other location.

Menziesia ferruginea Smith

False Azalea. Native deciduous shrub. Occasional(?). Moist spruce forest. Vouchers: LCM 1501 - 460-610 m, 23 June 1984. Comments: Observed in only one location. However, this habitat type is common, so the plant is likely to be more abundant than my observations indicate.

Oxycoccus microcarpus Turcz. ex Rupr. var. microcarpus

Swamp Cranberry. Native evergreen subshrub. Frequent. Bogs, swamps. Vouchers: LCM 820 - 580 m, 4 July 1983. LCM 1852 - 260 m, 15 Aug. 1984. Comment: This species is actually more common than my collections would suggest.

Vaccinium uliginosum L.

Bog Blueberry. Native deciduous shrub. Common. Moist woods, swamps, heath, alpine tundra. Vouchers: LCM 809 - 350 m, 3 July 1983. LCM 1526 - 610-910 m, 23 June 1984. LCM 1549 - 400 m, 2 July 1984. LCM 1799 - 850 m, 13 Aug. 1984. LCM 1804 - 970 m, 13 Aug, 1984. LCM 1847 - 260 m, 15 Aug. 1984.

Vaccinium vitus-idaea L.

Mountain Cranberry. Native evergreen subshrub. Common. Woods, heath, alpine tundra. Vouchers: LCM 640 - 270 m, 13 June 1984. LCM 1757 - 370 m, 12 Aug. 1984. LCM 1845 - 1220-1520 m, 14 Aug. 1984. LCM 1867a - 300 m, 21 Aug. 1984.

FABACEAE

Astragalus alpinus L.

Alpine Milk-vetch. Native perennial. Common. Gravelly locations from low elevations to subalpine. Vouchers: LCM 633 - 270 m, 13 June 1983. LCM 703 - 300 m, 20 June 1983. LCM 850 - 280 m, 4 July 1983. LCM 987 - 1240 m, 21 Aug. 1984. LCM 1385 - 850 m, 18 May 1984. LCM 1874 - 1200-1400 m, 21 Aug. 1984.

Astragalus harringtonii (Rydb.) Hulten

Harrington Milk-vetch. Native perennial. Frequent. River terraces, floodplains, lakeshores. Synonym: A. robbinsii (Oakes) Gray ssp. harringtonii (Ryb.) Hult. Vouchers: SLW 4188 - 18 June 1965. LCM 617 - 400 m, 6 June 1983. LCM 630 - 270 m, 13 June 1983. LCM 861 - 280 m, 4 July 1983. LCM 879 - 230 m, 4 July 1983. LCM 1383 - 260 m, 18 May 1984. Comments: Specimen LCM 879 is teratological (smut infection). Endemic to coastal southern Alaska.

Astragalus nutzotinensis Rousseau

Nutzotin Milk-vetch. Native perennial. Occasional. Gravel bars along stream and river courses. Vouchers: SLW 4200 - 18 June 1965. SLW 4255 - 20 June 1965. SLW 4618 - 12 July 1965. WmM 620B20 (AES) - 20 June 1965. LCM 603 - 400 m, 6 June 1983. LCM 1441 - 400 m,

1984. LCM 1445 - 270 m, 26 May 1984. Comment: Endemic to the a-Yukon region.

agalus umbellatus Bunge

Tundra Milkvetch. Native perennial. Occasional. Alpine dra. Vouchers: LCM 2087 - 1150-1300 m, 19 July 1985. LCM 2145 - 60 m, 6 Aug. 1985. Comment: This plant's habitat is common, so it uld be more abundant than my collections would suggest.

dysarum alpinum L.

Alpine Sweet-vetch. Native perennial. Rock outcrops, river avel, woods, from low elevations to alpine. Vouchers: SLW 4623 - 12 uly 1965. AS 1413 - 25 June 1970. LCM 719 - 620 m, 20 June 1983. LCM 80 - 230 m, 4 July 1983. LCM 1455 - 400 m, 2 June 1984. 1462 - 290 m, June 1984. LCM 1554 - 400 m, 2 July 1984. LCM 1607 - 275 m, 12 July 984.

upinus nootkatensis Donn ex Sims

Nootka Lupine. Native perennial. Frequent. Open woods, eadows, roadsides, from low elevations to subalpine. Var. fruticosus Sims. Vouchers: SLW 4208 - 18 June 1965. AS 1416 - 25 June 1983. LCM 670a - 430 m, 13 June 1983. LCM 930 - 500 m, 18 July 1983. LCM 1667 - 1000-1500 m, 18 July 1984. Var. nootkatensis. Vouchers: LCM 670 - 430 13 June 1983. LCM 1475 - 500-600 m, 2 June 1984. Comments: These ies were often found growing together in the same populations. rding to Welsh (1974), these varieties are sympatric. My suspicion hat these varieties are the result of some kind of genetic regation, and probably do not warrant varietal status.

Oxytropis campestris (L.) DC. var. varians (Rydb.) Barneby

Field Oxytrope. Native perennial. Occasional. Stream terraces, lake shores, rock outcrops. Vouchers: SLW 4206 - 18 June 1965. SLW 4637 - 12 July 1965. LCM 1543 - 270 m, 18 July 1984. LCM 1662 - 300-460 m, 18 July 1984.

Oxytropis huddlesonii Porsild

Huddleson Oxytrope. Native perennial. Occasional. Exposed alpine tundra and heath. Vouchers: LCM 1828 - 1220-1520 m, 14 Aug. 1984. LCM 1884 - 1400-1600 m, 21 Aug. 1984. Comments: Endemic to the Alaska-Yukon region. This is an apparent range extension from the nearest distribution in the northernmost portion of the Alaska Range. It could be more abundant than my collections suggest because it is easily mistaken for O. nigrescens.

Oxytropis nigrescens (Pallas) Fisch. ex DC. var. nigrescens

Blackish Oxytrope. Native perennial. Occasional. Alpine tundra and heath. Vouchers: SLW 4252 - 20 June 1965. SLW 4631 - 12 July 1965. LCM 610 - 400 m, 6 June 1983. LCM 1431 - 430-460 m, 26 May 1984. LCM 1537 - 910-1070 m, 23 June 1984. LCM 2108 - 1300-1400 m, 19 July 1985.

Trifolium hybridum L.

Alsike Clover. Introduced perennial. Frequent. Disturbed soils, roadsides, habitations. Vouchers: LCM 702 - 300 m, 20 June 1983. LCM 1573 - 400 m, 2 July 1984.

FUMARIACEAE

lis pauciflora (Steph.) Pers.

Few-flowered Corydalis. Native perennial. Occasional. alpine meadows, alpine tundra. Vouchers: LCM 753 - 880 m, 20 June LCM 1503 - 460-610 m, 23 June 1984. Comments: This plant's itat type is common, so it may be more abundant than my observations gest. Because this species tends to grow in dense vegetation, it is en overlooked.

GENTIANACEAE

ntiana glauca Pallas

Glaucous Gentian. Perennial. Frequent. Alpine tundra and ath. Vouchers: WmM 910B2 (AES) - 10 Sept. 1965. LCM 737 - 820 m, 20 e 1983. LCM 963 - 1000 m, 18 July 1983. LCM 971 - 1100 m, 18 July 83. LCM 1814 - 1070 m, 14 Aug. 1984. LCM 2079a - 1050-1150 m, 19 ly 1985.

ntianella amarella (L.) Borner var. acuta (Michx.) Herder

Northern Gentian. Native annual. Rare (?). Open woods, adows. Synonym: Gentiana amarella L. var. acuta (Michx.) Gillett. uchers: LCM 1800 - 850 m, 13 Aug. 19. Comments: Observed at only e location. The species habitat is common, so it could be more undant than my observations indicate.

nella propinqua (Richards.) Gillet var. propinqua

Native annual. Frequent. Alpine tundra, heath, open woods. nym: Gentiana propinqua Richards ssp. propinqua. Vouchers: LCM - 280 m, 4 July 1983. LCM 940 - 620 m, 18 July 1983. LCM 1644 -

270 m, 18 July 1984. LCM 1694 - 300-460 m, 18 July 1984. LCM 1834 - 1220-1520 m, 14 Aug. 1984.

Lomatogonium rotatum (L.) Fries

Marsh Felwort. Native annual. Rare. Bog. Vouchers: LCM 1856 - 260 m, 15 Aug. 1984. Comment: Observed at only one location.

GERANIACEAE

Geranium erianthum DC.

Northern Geranium. Native perennial. Common. Subalpine meadows, open woodland. Vouchers: LCM 655 - 370-430 m, 13 June 1983. LCM 778 - 940 m, 20 June 1983. LCM 1472 - 500-600 m, 2 June 1984.

HALORAGACEAE

Hippuris vulgaris L.

Common Marestail. Native aquatic herb. Rare. Vouchers: LCM 2159 - 280 m, 24 Aug. 1985. LCM 2178 - 270 m, 25 June 1985. Comment: Habitat suitable for this species is very limited in Eklutna Valley.

HYDROPHYLLACEAE

Romanzoffia sitchensis Bong.

Mist Maid. Native perennial. Occasional. Moist sites along streams, in rock outcrops. Vouchers: SLW 4174 - 18 June 1965. SLW 4205 - 18 June 1965. LCM 605 - 400 m, 6 June 1983.

LENTIBULARIACEAE

Pinguicula vulgaris L. var. macroceras (Link) Herder

Common Butterwort. Native perennial. Occasional. Bogs, moist sites. Synonym: P. vulgaris ssp. macroceras (Link) Calder & Taylor. Vouchers: LCM 836 - 580 m, 4 July 1983. LCM 1494 - 270-300 m, 23 June 1984. LCM 1605 - 275 m, 12 July 1984.

ONAGRACEAE

Epilobium alpinum L.

Alpine Willowherb. Native perennial. Occasional (?). Moist alpine tundra and meadows. Var. alpinum. Synonym: E. anagallidifolium Lam. Vouchers: LCM 1813 - 970 m, 13 Aug. 1984. Var. nutans (Hornem.) Hook. Synonym: E. hornemanni Riechb. Vouchers: LCM 732 - 820 m, 20 June 1983. LCM 2069 - 820 m, 19 July 1985. Comment: Var. alpinum was observed at only one location.

ium angustifolium L. var. angustifolium

Fireweed. Native perennial. Common. Open woods, meadows, alpine slopes, alpine meadows. Synonym: E. angustifolium ssp. ustifolium. Vouchers: LCM 792 - 300 m, 3 July 1983. LCM 1791 - 470 12 Aug. 1984.

um ciliatum Raf.

Northern Willowherb. Introduced perennial. Frequent. Moist to soils, streambanks. Synonym: E. adenocaulon Hauskn. Vouchers: 1867 - 250 m, 4 July 1983. LCM 924 - 400 m, 8 July 1983. LCM 1645 - 0 m, 18 July 1984.

Epilobium latifolium L.

Dwarf Fireweed. Native perennial. Gravelled streambanks and slopes, rock outcrops, from low elevations to alpine. Vouchers: SLW 4608 - 12 July 1965. AS 1305 - 25 June 1968. LCM 591 - 400 m, 6 June 1983. LCM 791 - 300 m, 3 July 1983. LCM 968 - 1100 m, 18 July 1983. LCM 1638 - 270 m, 12 July 1984. LCM 1661 - 300-460 m, 18 July 1984. LCM 1779 - 460 m, 12 Aug. 1984.

OROBANCHACEAE

Boschniakia rossica (Cham. & Schlecht.) Fedtsch.

Ground-cone. Native parasitic annual (?). Frequent. Alder thickets. Vouchers: SLW 4619 - 12 July 1965. LCM 804 - 350 m, 3 July 1983. LCM 1768 - 370 m, 12 Aug. 1984. Comment: All specimens collected by myself were found parasitizing Alnus roots.

PAPAVERACEAE

Papaver alboroseum Hulten

Pale Poppy. Native perennial. Occasional. Alpine talus and rock outcrops. Vouchers: SLW 4178 - 18 June 1965. SLW 4644 - 12 July 1965. LCM 1699 - 300-460 m, 18 July 1984. LCM 1879 - 1400-1600 m, 21 Aug. 1984. Comments: This plant was at one time recommended for threatened status by Murray (1980). With his recommendation, he predicted that it would be found more abundant than the collections indicated at the time. It was dropped from consideration in 1983 (Fed. Reg.).

Papaver alaskanum Hulten

Alaska Poppy. Native perennial. Rare. Exposed alpine ridge. Voucher: LCM 2114 - 1300-1400 m, 19 July 1985. Comments: Observed at only one location. Endemic to the Alaska-Yukon region and the islands of the Bering Sea.

Papaver nudicaule L.

Iceland Poppy. Introduced perennial. Rare. Roadside gravel. Vouchers: None. Comments: A single specimen with orange petals was observed about halfway up the east side of the lake. A specimen was not collected. That plant has since been destroyed by all-terrain vehicles. There is a strong possibility that this plant may be established elsewhere in the valley.

PLANTAGINACEAE

Plantago major L.

Common Plantain. Native or introduced perennial. Occasional. Roadsides, waste places. Vouchers: LCM 1011 - 140 m, 31 July 1983. Comment: Weedy plants along the roadsides (as was this one) are likely to be the introduced phase of this species.

POLEMONIACEAE

Polemonium boreale Adams

Northern Jacobs-ladder. Native perennial. Rare (?). Alpine talus slopes. Voucher: LCM 1869 - 1200-1400 m, 21 Aug. 1984. Comment: This plant's habitat type is common, so it could be more abundant than my observations indicate.

Polemonium caeruleum L. ssp. villosum (Rud.) Brand

Blue Jacobs-ladder. Native perennial. Frequent. Alpine meadows, woods, stream courses. Synonym: P. acutiflorum Willd. Vouchers: SLW 4210 - 18 June 1965. LCM 884 - 760 m, 11 July 1983. LCM 902 - 1070 m, 11 July 1983. LCM 1485 - 270-300 m, 23 June 1984. LCM 1729 - 670 m, 25 July 1984. LCM 1762 - 330 m, 12 Aug. 1984.

Polemonium pulcherrimum Hook.

Pretty Jacobs-ladder. Native perennial. Frequent. Gravelly soil along roadsides, in woods. Vouchers: WmM 620B14 (AES) - 20 June 1965. WmM 1393 (AES) - 17 July 1964. LCM 568 - 290 m, 23 May 1983. LCM 609 - 400 m, 6 June 1983. LCM 1686 - 300-460 m, 18 July 1984. LCM 1751 - 330 m, 12 Aug. 1984. LCM 1939 - 550-600 m, 8 June 1985. LCM 1984, LCM 1985 - 80 m, 29 June 1985. Comment: Specimen LCM 1985 is an unusual white flowered plant.

POLYGONACEAE

Oxyria digynia (L.) Hill

Mountain Sorrel. Native perennial. Occasional. Alpine tundra and rock outcrops. Vouchers: SLW 4627 - 12 July 1965. LCM 1532 - 610-910 m, 23 June 1984. LCM 1689 - 300-470 m, 18 July 1984. LCM 1820 - 1220-1520 m, 14 Aug. 1984.

Polygonum aviculare L.

Knotweed. Introduced annual. Occasional. Weedy plant along roadsides, around habitatations. Voucher: LCM 1010 - 380 m, 31 July 1983. Comment: Observed at a couple of other locations along the roadsides.

2num bistorta L. ssp. plumosum (Small) Hulten

Meadow Bistort. Native perennial. Rare (?). Alpine tundra. ıer: LCM 1523 - 610-910 m, 23 June 1984. Comments: Observed at one location. This species' habitat type is common, so it could be abundant than my observations indicate.

gonum caurianum Robins.

Alaska Knotweed. Native annual. Rare. Mud flats. Vouchers: 2218 - 25 June 1968. LCM 1601 - 255 m, 12 July 1984. Comment: erved at only one location.

ygonum lapathifolium L. var. prostratum Wimm.

Willow Weed. Native (?) annual. Wet sand on lake shore. m: P. pensylvanicum L. ssp oneillii (Brenckle) Hult. Vouchers: - 870 m, 25 Aug. 1985. Comment: Observed at only one

viviperum L.

Alpine Bistort. Native perennial. Frequent. Moist places in ne tundra, rock outcrops. Vouchers: SLW 4257 - 20 June 1965. SLW - 12 July 1965. LCM 831 - 580 m, 4 July 1983. LCM 980 - 1080 m, 1983. LCM 1617 - 275 m, 12 July 1984. LCM 1701 - 300-460 m, 18 4.

PORTULACACEAE

ntia sarmentosa (C. A. Mey.) Robins.

Alaska Spring Beauty. Native perennial. Occasional. Alpine ndra. Synonym: Claytonia sarmentosa C. A. Mey. Vouchers: LCM 731 - 0 m, 20 June 1983. LCM 915 - 1130 m, 11 July 1983. LCM 992 - 1240 m,

18 July 1983. LCM 1518 - 610-910 m, 23 June 1983. LCM 1807 - 970 m, 13 Aug. 1984.

PRIMULACEAE

Androsace *alaskana* Cov. & Standl. ex Hulten

Native annual or biennial. Rare. Alpine talus and rock outcrops. Vouchers: LCM 593 - 400 m, 6 June 1983. LCM 1870 - 370-430 m, 21 Aug. 1984. LCM 2095 - 400-430 m, 19 July 1985. Comment: Endemic to the Alaska-Yukon region.

Androsace *septentrionalis* L.

Native annual. Occasional. Moist locations along streams, on rock outcrops. Vouchers: WmM 1398 - 17 July 1964. LCM 1391 - 400-560 m, 19 May 1984. LCM 1790b - 460 m, 12 Aug. 1984. LCM 1930 - 500 m, 1 June 1985. LCM 2020 - 430 m, 3 July 1985.

Primula *cuneifolia* Ledeb. var. *saxifragifolia* (Lehm.) Pax ex Engler

Wedge-leaf Primrose. Native perennial. Occasional. Alpine tundra. Synonym: *P. cuneifolia* ssp. *saxifragifolia* (Schm.) Small & Forest. Vouchers: LCM 917 - 1070 m, 11 July 1983. LCM 1539 - 910-1070 m, 23 June 1984. Comment: Observed at one other location.

Primula *egaliksensis* Wormsk.

Greenland Primrose. Native perennial. Rare. Boggy calcareous soil along streamlet. Vouchers: LCM 2011 - 300 m, 3 July 1985. Comments: Observed at only one location. An apparent range extension from its nearest distribution in the Alaska Range.

Trientalis europaea L.

Arctic Starflower. Native perennial. Common. Moist woods, thickets, meadows. Vouchers: LCM 636 - 270 m, 13 June 1983. LCM 693 - 760 m, 13 June 1983. Comment: This plant is much more common than my collections would suggest.

PYROLACEAE

Moneses uniflora L.

Wax-flower. Native perennial. Frequent. Moist woods. Vouchers: LCM 710 - 450 m, 20 June 1983. LCM 805 - 350 m, 3 July 1983. LCM 1631 - 270 m, 12 July 1984. LCM 1767 - 370 m, 12 Aug. 1984.

Pyrola asarifolia Michx.

Liverleaf Wintergreen. Native perennial. Rare (?). Muskeg. Voucher: LCM 1615 - 275 m, 12 July 1984. Comments: This plant could be more common than my observations indicate. Seen at only one site.

Pyrola grandiflora Radius

Large-flowered Wintergreen. Native perennial. Frequent. Heath, woods. Vouchers: SLW 4203 - 18 June 1965. LCM 642 - 270 m, 13 June 1983. LCM 1459 - 335 m, 2 June 1984. LCM 1778 - 460 m, 12 Aug. 1984. LCM 2045 - 350 m, 18 July 1985.

Pyrola secunda L. var. secunda

One-sided Wintergreen. Native perennial. Frequent. Open woodland. Synonym: P. secunda ssp. secunda. Vouchers: WmM 1407 - 17 Aug. 1964. SLW 4612 - 12 July 1965. LCM 851 - 280 m, 4 July 1983. LCM 1629 - 270 m, 12 July 1984. LCM 1777 - 460 m, 12 Aug. 1984.

Pyrola virens Schweigg. ex Schweigg. & Koerte

Native perennial. Frequent. Open woodland. Synonym: P. chlorantha Sw. Vouchers: LCM 2044 - 350 m, 18 July 1985. LCM 2056 - 280 m, 18 July 1985. Comment: Probably more abundant than my collections would suggest.

RANUNCULACEAE

Aconitum delphinifolium DC. var. delphinifolium

Monkshood. Native perennial. Frequent. Alpine tundra, heath, woods. Synonym: A. delphinifolium ssp. delphinifolium. Vouchers: SLW 4613 - 12 July 1965. LCM 772 - 940 m, 20 June 1983. LCM 886 - 760 m, 11 July 1983. LCM 1691 - 300-460 m, 18 July 1984. LCM 1785 - 460 m, 12 Aug. 1984. LCM 1815 - 1070 m, 14 Aug. 1984. LCM 1868 - 1200-1400 m, 21 Aug. 1984.

Actaea rubra (Ait.) Willd.

Baneberry. Native perennial. Occasional. Moist woods, streambanks. Vouchers: LCM 655 - 350 m, 13 June 1983. LCM 1461 - 300 m, 2 June 1984. LCM 1764 - 370 m, 12 Aug. 1984.

Anemone multifida Poir. ex Lam var. multifida

Cut-leaf Anemone. Native perennial. Frequent. Dry meadows, from low elevations to subalpine. Vouchers: LCM 688 - 370-430 m, 13 June 1983. LCM 700 - 760 m, 13 June 1983. LCM 723 - 620 m, 20 June 1983. LCM 1450 - 500-600 m, 2 June 1984.

Anemone narcissiflora L. var. monantha Schlecht.

Native perennial. Frequent. Alpine tundra, subalpine meadows, woods. Vouchers: SLW 4254 - 20 June 1965. LCM 663, LCM 668b - 370-430

m, 13 June 1983. LCM 683 - 520-760 m, 13 June 1983. LCM 734 - 820 m, 20 June 1983. LCM 955 - 950 m, 18 July 1983. LCM 1454 - 460 m, 26 May 1984. LCM 1476 - 700-750 m, 2 June 1984. LCM 1506 - 460-610 m, 23 June 1984. LCM 1822 - 1220-1520 m, 14 Aug. 1984. LCM 1896 - 1200 m, 21 Aug. 1984.

Anemone parviflora Michx.

Northern Anemone. Native perennial. Frequent. Alpine tundra, heath, woods. Vouchers: LCM 570 - 290 m, 23 May 1983. LCM 588 - 400 m, 6 June 1983. LCM 681 - 520-760 m, 13 June 1983. LCM 748 - 880 m, 20 June 1983. LCM 869 - 250 m, 4 July 1983. LCM 1412 - 300 m, 19 May 1984. LCM 1457 - 400 m, 2 June 1984. LCM 1892 - 1200 m, 21 Aug. 1984. LCM 1907 - 270-300 m, 18 May 1985. LCM 1941 - 550-600 m, 8 June 1985. LCM 1969 - 100 m, 22 June 1985. Comment: Specimen LCM 1969 is a soboliferous plant growing in talus.

Anemone richardsonii Hook.

Yellow Anemone. Native perennial. Frequent. Moist woods. Vouchers: SLW 4207 - 18 June 1965. LCM 740, LCM 752a - 880 m, 20 June 1983. LCM 906 - 1070 m, 11 July 1983. LCM 991 - 1240 m, 18 July 1983. LCM 1492 - 270-300 m, 23 June 1984.

Aquilegia brevistyla Hook.

Small-flower Columbine. Native perennial. Occasional. Open woods, rock outcrops. Vouchers: LCM 671 - 430 m, 3 July 1983. LCM 1670b - 300-460 m, 18 July 1984. LCM 2023 - 430 m, 3 July 1985. Comment: Specimen LCM 1670b shows strong evidence of hybridization with A. formosa.

Aquilegia formosa Fisch. ex DC.

Western Columbine. Native perennial. Rare. Rock outcrop. Vouchers: SLW 4630 - 12 July 1965. LCM 1670a - 300-460 m, 18 July 1984. Comments: I observed this species at only one location.

Delphinium glaucum Wats.

Glaucous Larkspur. Native perennial. Frequent. Subalpine meadows, streambanks, open woods. Vouchers: SLW 4614 - 12 July 1965. LCM 672 - 430 m, 13 June 1983. LCM 945 - 680 m, 18 July 1983. LCM 1581 - 400 m, 2 July 1984. LCM 1690 - 300-460 m, 18 July 1984. LCM 1784 - 460 m, 12 Aug. 1984.

Ranunculus abortivus L.

Smooth-leaf Crowfoot. Introduced (?) biennial or short-lived perennial. Rare. Moist disturbed sites. Voucher: LCM 843 - 280 m, 4 July 1983. Comment: Observed at only one location.

Ranunculus cymbalaria Pursh var. cymbalaria

Native perennial. Rare. Drying mud. Voucher: LCM 2006 - 270 m, 2 July 1985. Comment: Observed at only one location.

Ranunculus eschscholtzii Schlecht. var. eschscholtzii

Eschscholtz Buttercup. Native perennial. Frequent. Alpine tundra, talus slopes, subalpine meadows. Vouchers: LCM 752, LCM 754 - 880 m, 20 June 1983. LCM 912b - 1130 m, 1 July 1983. LCM 1460 - 330 m, 2 June 1984. LCM 1806, LCM 1809 - 970 m, 13 Aug. 1984. LCM 1866 - 300 m, 21 Aug. 1984. LCM 1959 - 1050 m, 16 June 1985. LCM 2064 - 820 m, 19 July 1985. Comment: A highly variable entity.

Ranunculus gelidus Kar. & Kir.

Native perennial. Occasional. High alpine gravelled ridges. Voucher: LCM 2097 - 1300-1400 m, 19 July 1985. Comments: Observed at

one other location. An apparent range extension from the plant's nearest distribution in the Alaska Range.

Ranunculus gmelinii DC.

Native perennial. Rare. Shallow pond. Vouchers: LCM 2167 - 280 m, 24 Aug. 1985. Comments: The potential habitat for this species is very limited in Eklutna Valley. Observed at only one location.

Ranunculus hyperboreus Rottb.

Arctic Buttercup. Native perennial. Rare. Shallow ponds, ditches. Vouchers: LCM 1655a - 270 m, 18 July 1984. LCM 2161 - 280 m, 24 Aug. 1985. Comments: The potential habitat for this species is very limited in Eklutna Valley. Observed at only one location.

Ranunculus lapponicus L.

Lapland Buttercup. Native perennial. Rare (?). Black Spruce bog. Voucher: LCM 834 - 580 m, 4 July 1983. Comments: This plant is probably more abundant than my observations indicate, as its habitat type is common. Observed at only one location.

Ranunculus nivalis L.

Snow Buttercup. Native perennial. Occasional. Moist alpine meadows. Vouchers: LCM 912a - 1130 m, 1 July 1983. LCM 1516 - 610-910 m, 23 June 1984. LCM 2153 - 270 m, 6 Aug. 1985.

Ranunculus occidentalis Nutt. ex T. & G. var. brevistylus Greene

Western Buttercup. Native perennial. Occasional. Moist alpine meadows. Vouchers: LCM 2075 - 900-1050 m, 19 July 1985. LCM 2152 - 1220 m, 6 Aug. 1985. Comment: This species is probably more abundant than my observations indicate, as its habitat type is common.

Ranunculus pygmaeus Wahl.

Pygmy Buttercup. Native perennial. Frequent. Alpine tundra. Vouchers: LCM 958 - 1000 m, 18 July 1983. LCM 1808 - 970 m, 13 July 1984. Comment: This species is more common than my collections would suggest.

Thalictrum alpinum L. var. alpinum

Arctic Meadowrue. Native perennial. Calcareous bogs, alpine meadows. Vouchers: LCM 1619 - 275 m, 12 July 1984. LCM 2083 - 1050-1150 m, 19 July 1985. Comment: Observed at only two locations.

Thalictrum sparsiflorum Turcz. ex Fisch. & Mey. var. richardsonii (Gray) B. Boi.

Few-flowered Meadowrue. Native perennial. Occasional. Moist woods, brooks. Voucher: LCM 873 - 250 m, 4 July 1983. Comment: Observed at one other location.

ROSACEAE

Amelanchier alnifolia (Nutt.) Nutt.

Northern Serviceberry. Native deciduous shrub. Frequent. Open woods, dry slopes from low elevations to subalpine. Vouchers: SLW 4211b - 18 June 1965. LCM 664 - 1200-1400 m, 13 June 1983. LCM 1396 - 400-560 m, 19 May 1984.

Dryas drummondii Richards. ex Hook.

Yellow Dryas. Native evergreen subshrub. Frequent. Gravelly soils on alluvium, terraces, floodplains. Vouchers: SLW 4611 - 12 July 1965. LCM 876 - 300-460 m, 18 July 1984.

Dryas integrifolia Vahl var. sylvatica Hulten

Native evergreen subshrub. Occasional. Alpine tundra, heath, moist woods. Synonym: D. integrifolia ssp. sylvatica (Hult.) Hult. Vouchers: MW 974 - 24 June 1965. LCM 828 - 530 m, 23 June 1983. LCM 1427 - 270-300 m, 23 June 1984.

Dryas octopetala L. var. octopetala

Native evergreen subshrub. Frequent. Alpine tundra, heath, moist woods. Vouchers: SLW 4189 - 18 June 1965. WmM 620B12 (AES) - 20 June 1965. LCM 586 - 400 m, 6 June 1984. LCM 1429 - 370-420 m, 26 May 1984. LCM 1524 - 610-910 m, 23 June 1984. LCM 1821 - 1220-1520 m, 14 Aug. 1984. LCM 1875 - 1200-1400 m, 21 Aug. 1984. LCM 2126 - 1500 m, 19 July 1985. Comment: Specimen LCM 1429 has neither hairy processes nor glands; however, it best fits var. octopetala.

Geum macrophyllum Willd. var. macrophyllum

Large-leaf Avens. Native perennial. Frequent. Roadsides, wet meadows. Synonym: G. macrophyllum ssp. macrophyllum. Vouchers: AS 1410 - 25 June 1970. LCM 844 - 280 m, 4 July 1983. LCM 1572 - 400 m, 2 July 1984. Comment: Specimen LCM 844 has extra deep lobing on the basal leaves, a characteristic nearing that of var. perincisum (Rydb.) Raup.

Geum rossii (R. Br.) Ser. ex DC.

Ross Avens. Native perennial. Frequent. Alpine tundra and heath. Vouchers: LCM 907 - 1070 m, 11 July 1983. LCM 1437 - 370 m, 26 May 1984. LCM 1533 - 610-910 m, 23 June 1984. LCM 2124 - 1500 m, 19 July 1985.

Leutkea pectinata (Pursh.) Kuntze

Leutkea. Native perennial or subshrub. Frequent. Alpine meadows. Vouchers: LCM 899 - 1000 m, 11 July 1983. LCM 1812 - 970 m, 13 Aug. 1984. Comment: This plant is more abundant than my collections suggest.

Potentilla arguta Pursh

Glandular Cinquefoil. Native perennial. Occasional. Dry areas in open woods, rock outcrops. Vouchers: LCM 2024 - 430 m, 3 July 1985. Comment: Observed at only one other location, but likely to be found elsewhere.

Potentilla diversifolia Lehm. var. diversifolia

Native perennial. Occasional. Alpine meadows. Vouchers: LCM 1836 - 1220-1520 m, 14 Aug. 1984. LCM 1898 - 1200 m, 21 Aug. 1984. LCM 2086 - 1150-1300 m, 19 July 1985.

Potentilla fruticosa L.

Tundra Rose. Native deciduous shrub. Frequent. Woods, heath, alpine tundra. Vouchers: SLW 4620 - 12 July 1965. LCM 595 - 400 m, 6 June 1983. LCM 786 - 300 m, 3 July 1983. LCM 1747 - 330 m, 12 Aug. 1984.

Potentilla hookeriana Lehm.

Hooker Cinquefoil. Native perennial. Frequent. Rocky slopes, from low elevations to subalpine. Vouchers: LCM 927 - 400 m, 18 July 1983. LCM 1392 - 400-560 m, 19 May 1984. LCM 1450 - 460 m, 16 June 1984. LCM 1947 - 620 m, 16 June 1985. Comment: An apparent range extension from its nearest distribution in the Alaska Range.

Potentilla hyparctica Malte

Arctic Cinquefoil. Native perennial. Rare. Exposed alpine ridge. Voucher: LCM 1876b - 1200-1400 m, 21 Aug. 1984. Comment: A possible hybrid with P. villosa, which also happens to be in the same community. Observed at only one location.

Potentilla norvegica L.

Rough Cinquefoil. Native (?) annuals or biennials. Occasional. Disturbed soils, roadsides. Voucher: LCM 1544 - 270 m, 23 June 1984. Comment: Observed in several other locations.

Potentilla palustris (L.) Scop.

Marsh Cinquefoil. Native perennial. Rare. Boggy lake margin. Voucher: LCM 806 - 350 m, 3 July 1983. Comments: The potential habitat for this species is limited in Eklutna Valley. Observed at only one location.

Potentilla pensylvanica L. var. pensylvanica

Pennsylvania Cinquefoil. Native perennial. Disturbed soils, talus slopes. Vouchers: LCM 1651 - 270 m, 18 July 1984. LCM 1748 - 330 m, 12 Aug. 1984. LCM 2019 - 430 m, 3 July 1985. Comments: Specimen LCM 1748 approaches var. virgulata (A. Nels.) Wolf. A similar specimen, LCM 1846 (not cited), was found outside the valley mouth on a freeway exit island.

Potentilla villosa Pallas ex Pursh

Villous Cinquefoil. Native perennial. Rocky outcrops, dry gravelly slopes. Vouchers: SLW 4176 - 18 June 1965. WmM 620B11 (AES) - 20 June 1965. LCM 587 - 400 m, 6 June 1983. LCM 972 - 1080 m, 18 July 1983. LCM 1430 - 430-460 m, 26 May 1984. LCM 1876a - 1200-1400 m,

21 Aug. 1984. LCM 1987 - 80 m, 29 June 1985. LCM 2091 - 1300-1400 m, 19 July 1985.

Rosa acicularis Lindl. var. bourgeauiana Crepin

Prickly Rose. Native deciduous shrub. Common. Woods, dry meadows, roadsides. Voucher: LCM 1753 - 330 m, 12 Aug. 1984. Comment: Considerably more common than my collections would suggest.

Rubus arcticus L.

Nagoon Berry. Native perennial. Occasional. Alpine tundra, heath. Voucher: LCM 799 - 350 m, 3 July 1983. Comment: Observed in at least two other locations.

Rubus chamaemorus L.

Cloudberry. Native perennial. Frequent. Moist alpine tundra, heath. Vouchers: WmM 910B12 - 10 Sept. 1965. LCM 739 - 820 m, 20 June 1983. LCM 800 - 350 m, 3 July 1983.

Rubus idaeus L. ssp. melanolasius (Liech.) Fache

Raspberry. Native deciduous subshrubs. Common. Open woods, dry meadows, roadsides. Voucher: LCM 648 - 950 m, 13 June 1983. Comments: The cultivated raspberry, ssp. idaeus, may be present as escapes around habitations. Considerably more abundant than my collections suggest.

Rubus pedatus J. E. Smith

Five-leaf Bramble. Native perennial. Occasional. Subalpine or alpine meadows. Voucher: LCM 1943 - 600 m, 8 June 1985. Comment: Observed at one other location.

Rubus stellatus J. E. Smith

Nagoon Berry. Native perennial. Occasional. Alpine tundra, heath. Synonym: R. arcticus L. ssp. stellatus (Sm.) Boiv. emend. Hult.

Voucher: LCM 738 - 820 m, 20 June 1983. Comment: Observed in at least two other locations.

Sanguisorba stipulata Raf.

Sitka Burnet. Native perennial. Frequent. Subalpine meadows, moist sites in woods, near streams. Vouchers: LCM 883 - 760 m, 11 July 1983. LCM 891 - 910 m, 11 July 1983. LCM 1660 - 300-460 m, 18 July 1984.

Sibbaldia procumbens L.

Sibbaldia. Native perennial. Occasional. Alpine meadows, heath, open woods. Vouchers: LCM 1682 - 300-460 m, 18 July 1984. LCM 1837 - 1220-1520 m, 14 Aug. 1984.

Sorbus scopulina Greene

Western Mountain-ash. Native deciduous shrub. Occasional. Woods, thickets, subalpine meadows. Voucher: LCM 666 - 360-430 m, 13 June 1983. Comment: Observed in several other locations.

Spiraea beauverdiana Schneid.

Beauverd Spiraea. Native deciduous shrubs. Frequent. Subalpine meadows, woods, along streams. Vouchers: LCM 689 - 760 m, 13 June 1983. LCM 803 - 350 m, 3 July 1983. LCM 969 - 1100 m, 18 July 1983. LCM 1759 - 330 m, 12 Aug. 1984.

RUBIACEAE

Galium boreale L.

Northern Bedstraw. Native perennial. Frequent. Woods, subalpine meadows, calcareous bogs. Vouchers: WmM 1393 (AES) - 17

July 1964. LCM 777 - 940 m, 20 June 1983. LCM 870 - 250 m, 4 July 1983. LCM 941 - 620 m, 18 July 1983. LCM 1609 - 275 m, 12 July 1984.

Galium trifidum L. var. trifidum

Small Bedstraw. Native perennial. Occasional (?). Pond margins, wet places. Vouchers: LCM 2051 - 350 m, 18 July 1985. LCM LCM 2177b - 270 m, 25 Aug. 1985. Comments: Observed at only two locations. Possibly more abundant than my observations indicate.

Galium triflorum Michx.

Sweet-scented Bedstraw. Native perennial. Occasional. Woods. Vouchers: LCM 870 - 250 m, 4 July 1983. LCM 931 - 500 m, 18 July 1983. LCM 1776 - 370 m, 12 Aug. 1984.

SALICACEAE

Populus balsamifera L.

Balsam Poplar. Native deciduous trees. Common. Margins of lakes, streams, mixed forest. Vouchers: LCM 929 - 400 m, 18 July 1983. LCM 1652 - 270 m, 18 July 1984. Comment: This species is considerably more abundant than my collections would suggest.

Populus tremuloides Michx.

Quaking Aspen. Native deciduous trees. Common. In woods. Vouchers: LCM 933 - 500 m, 18 July 1983. LCM 1954 - 270 m, 8 June 1985. Comment: This species is considerably more common than my collections would suggest.

Populus trichocarpa T. & G.

Black Cottonwood. Native deciduous trees. Common. Moist sites along streams, on old burns, dry river channels. Synonym: P.

balsamifera ssp. trichocarpa (Torr. & Gray) Hult. Vouchers: SLW 4201 - 18 June 1965. LCM 1659 - 270 m, 18 July 1984. LCM 1766 - 370 m, 12 Aug. 1984. LCM 1858 - 460 m, 16 Aug. 1984. LCM 1927 - 380 m, 1 June 1985.

Note: Salix collections with an asterisk have had duplicates verified by George Argus. Others were identified using Argus (1973).

Salix alaxensis (Anderss.) Cov.

Alaska Willow. Native deciduous shrub or small trees. Frequent. Stream margins, alpine meadows. Var. alaxensis. Synonym: S. alaxensis ssp. alaxensis. Vouchers: * LCM 781 - 940 m, 20 June 1983. Var. longistylis (Rydb.) Schneid. Synonym: S. alaxensis ssp. longistylis (Rydb.) Hult. Vouchers: SLW 4250 - 20 June 1965. *LCM 1427 - 370-430 m, 26 May 1984. LCM 1932a, LCM 1932b - 270 m, 1 June 1985. LCM 1951 - 270 m, 8 June 1985. LCM 1968 - 100 m, 22 June 1985.

Salix arctica Pallas

Arctic Willow. Native deciduous subshrub. Frequent. Alpine tundra, rock outcrops. Vouchers: SLW 4196 - 18 June 1965. WmM 910B8 (AES) - 10 Sept. 1965. LCM 973 - 1100 m, 18 July 1983. LCM 1424a - 370-430 m, 26 May 1984. * LCM 1540 - 910-1070 m, 23 June 1984. LCM 1819 - 1220-1520 m, 14 Aug. 1984. LCM 2119 - 1300-1400 m, 19 July 1985. Comment: Collection SLW 4196 is an unusually shrubby specimen for a species usually characterized as a subshrub.

Salix barclayi Anderss.

Barclay Willow. Native deciduous shrub. Frequent. Muskeg, subalpine meadows, alpine tundra. Vouchers: LCM 581b - 290 m, 26 May 1983. LCM 760, LCM 763, LCM 764, * LCM 765, LCM 766, LCM 767 - 940 m, 20 June 1983. * LCM 1425 - 370-430 m, 26 May 1984. * LCM 1511 -

610-910 m, 23 June 1984. LCM 2085a - 1050-1150 m, 19 July 1985.

Salix bebbiana Sarg.

Bebb Willow. Native deciduous shrub or small tree. Frequent. Woods, along streams and rivers. Synonym: S. depressa L. ssp. rostrata (Anders.) Hiitonen. Vouchers: * LCM 629 - 270 m, 13 June 1983. * LCM 783, * LCM 785 - 300 m, 3 July 1983. * LCM 1409 - 560 m, 19 May 1984. LCM 1451 - 460 m, 26 May 1984. * LCM 1477 - 700-750 m, 2 June 1984. * LCM 1555 - 400 m, 2 July 1984. LCM 1949a, LCM 1949b - 270 m, 8 June 1985. LCM 1986 - 80 m, 29 June 1985.

Salix brachycarpa Nutt. ssp. niphoclada (Rydb.) Argus

Native deciduous shrub. Rare (?). Limestone outcrop. Vouchers: SLW 4186 - 18 June 1965. * LCM 618 - 90 m, 6 June 1983. LCM 1666 - 300-460 m, 18 July 1984. Comments: The identification of LCM 1666 is uncertain. George Argus looked at a duplicate of this collection and said that he wasn't sure what it was, but that it had "some resemblance to S. brachycarpa niphoclada," which also happens to have been collected in the same vicinity. The presence of ssp. niphoclada appears to be a range extension from its nearest distribution in the Alaska Range.

Salix glauca L. var. glauca

Diamond Willow. Native deciduous shrub. Occasional. Alpine or subalpine meadows. Synonym: S. glauca ssp. acutifolia (Hook.) Hult. at least in part. Vouchers: * LCM 1423 - 370-430 m, 26 May 1984. * LCM 1508 - 610-910 m, 23 June 1984.

Salix lanata L. ssp. richardsonii (Hook.) A. Skv.

Lanate Willow. Native deciduous shrub. Frequent. Along streams, especially in subalpine to alpine. Vouchers: LCM 580 - 290 m,

23 May 1983. * LCM 784 - 300 m, 3 July 1983. * LCM 818 - 580 m, 4 July 1983. * LCM 911b - 1070 m, 11 July 1983. LCM 1935a, LCM 1935b - 400 m, 8 June 1985. LCM 2085 - 1050-1150 m, 19 July 1985.

Salix myrtillifolia Anderss.

Native deciduous shrub. Frequent. Muskegs, spruce swamps, bogs. Vouchers: * LCM 578, * LCM 579, * LCM 581 - 290 m, 23 June 1983. * LCM 787 - 300 m, 3 July 1983. * LCM 1510 - 260 m, 15 Aug. 1984. 1853 - 260 m, 15 Aug. 1984. LCM 1950 - 270 m, 8 June 1985.

Salix planifolia Pursh ssp. pulchra (Cham.) Argus var. pulchra

Native deciduous shrub. Occasional. Along streams, muskegs. Synonym: S. pulchra Cham. Vouchers: * LCM 691 - 760 m, 13 June 1983. LCM 911a - 1070 m, 11 July 1983. * LCM 1509 - 400 m, 16 June 1985.

Salix reticulata L. ssp. reticulata

Netted Willow. Native deciduous subshrub. Frequent. Alpine tundra, muskeg. Vouchers: LCM 759, LCM 768, * LCM 769, LCM 782 - 949 m, 20 June 1983. LCM 825 - 580 m, 4 July 1983. LCM 982 - 580 m, 18 July 1983. LCM 1529 - 610-910 m, 23 June 1984. * LCM 1536 - 910-1070 m, 23 June 1984. LCM 1849 - 260 m, 15 Aug. 1984.

Salix rotundifolia Trautv. ssp. rotundifolia

Native deciduous subshrub. Occasional (?). Alpine tundra, rock outcrops. Vouchers: LCM 1380 - 400 m, 12 May 1984. LCM 1817 - 1220-1524 m, 14 Aug. 1984. Comment: Because of this plant's small size, and its tendency to blend into the tundra, it is likely to have been overlooked.

Salix scouleriana Barc. ex Hook.

Scouler Willow. Native deciduous shrub to medium tree. Common. Woods, along streams, subalpine meadows. Vouchers: * LCM 1792 - 760 m,

13 Aug. 1984. LCM 1926 - 380 m, 1 June 1985. LCM 1934 - 680 m, 1 June 1985.

Salix stolonifera Cov.

Stoloniferous Willow. Native deciduous subshrub. Occasional. Alpine tundra, rock outcrops. Vouchers: * LCM 910 - 1070 m, 11 July 1983. * LCM 1424 (CAN) - 360-430 m, 26 May 1984. Comment: An Alaska-Yukon endemic.

SANTALACEAE

Geocaulon lividum (Richards.) Fern.

Native root parasite. Common. Woods, calcareous bogs, swamps. Vouchers: LCM 564 - 290 m, 23 May 1983. LCM 639 - 270 m, 13 June 1983. LCM 1613 - 275 m, 12 July 1984.

SAXIFRAGACEAE

Chrysosplenium tetandrum (Lund) Fries

Northern Water-carpet. Native perennial. Occasional. Margins of brooks, pools, seeps. Vouchers: LCM 651 - 290 m, 13 June 1983. LCM 1491 - 270-300 m, 23 June 1984. LCM 1770 - 370 m, 12 Aug. 1984.

Heuchera glabra Willd. ex R. & S.

Alpine Heuchera. Native perennial. Occasional. Streambanks, moist rock outcrops. Vouchers: SLW 4639 - 12 July 1965. LCM 1667 - 300-460 m, 18 July 1984. LCM 1738 - 460 m, 12 Aug. 1984.

Parnassia kotzebuei Cham. ex Spreng.

Kotzebue Grass-of-Parnassus. Native perennial. Occasional. Alpine tundra, swamps. Vouchers: LCM 1578 - 400 m, 2 July 1984. LCM LCM 2088 - 1150-1300 m, 19 July 1985. LCM 2140a - 1130 m, 6 Aug. 1985.

Parnassia palustris L.

Northern Grass-of-Parnassus. Native perennial. Frequent. Moist places in woods, subalpine meadows. Vouchers: LCM 815, LCM 833 - 350 m, 3 July 1983. LCM 848 - 280 m, 4 July 1983. LCM 925 - 400 m, 18 July 1983. LCM 1636 - 270 m, 12 July 1984.

Ribes glandulosum Grauer

Skunk Currant. Native deciduous shrub. Occasional (?). Woodland. Vouchers: LCM 647 - 950 m, 13 June 1983. LCM 656 - 350 m, 13 June 1983. Comment: Seen in at least two other locations.

Ribes hudsonianum Richards.

Northern Black Currant. Native deciduous shrub. Occasional. Alder thickets. Vouchers: LCM 1942 - 620 m, 8 June 1985. LCM 1976 - 100 m, 22 June 1985. Comment: Seen in at least two other locations.

Ribes lacustre (Pers.) Poir. ex Lam.

Swamp Gooseberry. Native deciduous shrub. Occasional (?). Moist woodland. Vouchers: LCM 645 - 290 m, 13 June 1983. LCM 1582 - 400 m, 2 July 1984. Comment: Observed in only two locations.

Ribes triste Pallas

American Red Currant. Native deciduous shrub. Common. Woodland. Vouchers: LCM 646 - 290 m, 13 June 1983. LCM 1377 - 300 m, 12 May 1984. LCM 1379 - 400 m, 12 May 1984. LCM 1411 - 460 m, 19 May 1984.

Saxifraga adscendens L. var. oregonensis (Raf.) Breit.

Wedge-leaf Saxifrage. Native perennial. Rare. Crevices an soil pockets in rock outcrops. Synonym: S. adscendans ssp. oregone (Raf.) Bacigalupi. Vouchers: SLW 4183 - 18 June 1965. WmM 623B16 (AES) - 20 June 1965. LCM 1835 - 1220-1520 m, 14 Aug. 1984. Comment I have observed this species in only one location.

Saxifraga bronchialis L. var. purpureo-maculata Hulten

Spotted Saxifrage. Native perennial. Common. Rock outcrops Talus slopes, woods, alpine tundra. Synonym: S. bronchialis ssp. funstonii (Small) Hult. Vouchers: SLW 4625 - 12 July 1965. WmM 910 - 10 Sept. 1965. LCM 896 - 1000 m, 11 July 1983. LCM 1664 - 300-460 18 July 1984. LCM 1829 - 1220-1520 m, 14 Aug. 1984.

Saxifraga caespitosa L.

Tufted Saxifrage. Native perennial. Frequent. Gravelly soi on ridges, talus slopes, rock outcrops. Vouchers: SLW 4181 - 18 Jun 1965. MW 1586 - 24 June 1966. WmM 620B23 (AES) - 20 June 1965. LCM 607 - 400 m, 6 June 1983. LCM 1381 - 400 m, 12 May 1984. LCM 1442 - 370 m, 26 May 1984. LCM 1456 - 400 m, 2 June 1984. LCM 1978 - 110 m 22 June 1985. LCM 2107 - 1300-1400 m, 19 July 1985.

Saxifraga cernua L.

Nodding Saxifrage. Native perennial. Occasional. Moist sit on rock outcrops, alpine to subalpine. Vouchers: LCM 1687 - 300-460 18 July 1984. LCM 1789 - 460 m, 12 Aug. 1984. LCM 1975 - 100 m, 22 June 1985. LCM 2096 - 1300-1400 m, 19 July 1985.

Saxifraga davurica Willd. var. grandipetala (Engler & Irmsher) B. Boi.

Native perennial. Rare. Alpine tundra. Synonym: S. davurica ssp. grandipetala (Engler & Irmsch.) Hult. Voucher: LCM 735 - 820 m, 20 June 1983. Comment: Observed at only one location.

Saxifraga eschscholtzii Sternb.

Ciliate Saxifrage. Native perennial. Occasional. Crevices and soil pockets in alpine rock outcrops. Vouchers: LCM 1832 - 1220-1520 m, 14 Aug. 1984. LCM 2107 - 1300-1400 m, 19 July 1985. LCM 2137 - 1130 m, 6 Aug. 1985.

Saxifraga lyallii Engler var. hultenii Calder & Savile

Red-stem Saxifrage. Native perennial. Occasional. Alpine tundra. Synonym: S. lyallii ssp. hultenii (Calder & Saville) Calder & Saville. Vouchers: LCM 1895 - 1400-1600 m, 21 Aug. 1984. LCM 2062 - 820 m, 19 July 1985. LCM 2073 - 900-1050 m, 19 July 1985. LCM 2134 - 1040 m, 6 Aug. 1985.

Saxifraga nivalis L.

Alpine Saxifrage. Native perennial. Occasional. Alpine tundra, woods. Vouchers: SLW 4180 - 18 June 1965. SLW 4202 - 18 June 1965. SLW 4251 - 20 June 1965. WmM 620B21 (AES) - 20 June 1965. LCM 1692 - 300-460 m, 18 July 1984. LCM 2105 - 1300-1400 m, 19 July 1985.

Saxifraga oppositifolia L.

Purple Mountain Saxifrage. Native perennial. Frequent. Alpine tundra, heath, rock outcrops. Vouchers: LCM 615 - 400 m, 6 June 1983. LCM 1383 - 400 m, 12 May 1984. LCM 1535 - 910-1070 m, 23 June 1984. LCM 1891 - 1400-1600 m, 21 Aug. 1984. LCM 1974 - 100 m, 22 Aug. 1984.

Saxifraga punctata L.

Brook Saxifrage. Native perennial. Frequent. Alpine tundra, rock outcrops. Var. pacifica (Hulten) Welsh. Synonym: S. punctata ssp. pacifica Hult. Vouchers: LCM 735a - 820 m, 20 June 1983. LCM 749 - 680 m, 20 June 1983. LCM 1517 - 610-910 m, 23 June 1984. LCM 1758 - 330 m, 12 Aug. 1984. LCM 1810 - 970 m, 13 Aug. 1984. LCM 1894 - 1200 m, 21 Aug. 1984. LCM 2063 - 820 m, 19 July 1985. Var. porsildiana (Calder & Saville) B. Boi. Synonym: S. punctata ssp. porsildiana Calder & Seville. Vouchers: LCM 735a - 820 m, 20 June 1983. LCM 2133 - 1040 m, 6 Aug. 1985.

Saxifraga rivularis L. var. rivularis

Brook Saxifrage. Native perennial. Occasional. Rock outcrops. Alpine tundra. Vouchers: LCM 960 - 1000 m, 18 July 1983. LCM 1435 - 370 m, 26 June 1984. LCM 2066 - 820 m, 19 July 1985. LCM 2136 - 1130 m, 6 Aug. 1985.

Saxifraga serpyllifolia Pursh

Thyme-leaf Saxifrage. Native perennial. Occasional. Alpine sandy-gravelly soils. Vouchers: LCM 1844 - 1220-1520 m, 14 Aug. 1984. 2100 - 400-430 m, 19 July 1985. LCM 2138 - 1130 m, 6 Aug. 1985.

Saxifraga tricuspidata Rottb.

Three-tooth Saxifrage. Native perennial. Common. Cliffs, talus, gravelly slopes, rock outcrops. Vouchers: LCM 582, LCM 598 - 620 m, 6 June 1983. LCM 715 - 620 m, 20 June 1983. LCM 1665 - 300-460 m, 18 July 1984. LCM 1727 - 610 m, 25 July 1984.

SCROPHULARIACEAE

Castilleja unalaschcensis (Cham. & Schlecht.) Malte

Unalaska Indian Paintbrush. Native perennial. Common. Subalpine meadows, dry slopes, open woods. Vouchers: LCM 669 - 370-430 m, 13 June 1983. Comments: Considerably more common than my collections would suggest. Endemic to the Alaska-Yukon region.

Euphrasia arctica Lange ex Rostrup var. disjuncta (Fern. & Wieg) Cronq.

Arctic Eyebright. Native annual. Rare (?). Dry subalpine meadow. Synonym: E. disjuncta Fern. & Wieg. Voucher: LCM 1862 - 800 m, 21 Aug. 1984. Comments: Observed at only one site. This plant's habitat is common, so it may be more abundant than my observations indicate.

Pedicularis capitata Adams

Capitate Lousewort. Native perennial. Common. Alpine tundra and heath. Vouchers: LCM 990 - 1240 m, 18 July 1983. LCM 1522 - 610-910 m, 23 June 1984. LCM 1816 - 1220-1520 m, 14 Aug. 1984. LCM 2122 - 1500 m, 19 July 1985. Comment: This plant is very common in dry alpine tundra and heath, but it is seldom seen flowering except around snow melts.

Pedicularis labradorica Wirsing

Labrador Lousewort. Native annual or biennial. Frequent. Alpine tundra and heath, woods. Vouchers: LCM 829 - 530 m, 4 July1984. LCM 1560 - 400 m, 2 July 1984. LCM 1865 - 1000 m, 21 Aug. 1984. LCM 2078 - 1050-1150 m, 19 July 1985.

Pedicularis langsdorfii Fisch. ex Steven

Langsdorf Lousewort. Native perennial. Rare. Dry alpine tundra. Vouchers: LCM 1839 - 1220-1520 m, 14 Aug. 1984. LCM 2123 - 1500 m, 19 July 1985. Comment: Observed at only two locations.

Rhinanthus crista-galli L.

Rattlebox. Native annual. Occasional. Subalpine meadows, open woods, roadsides. Synonym: R. minor L. Vouchers: LCM 889 - 11 July 1983. LCM 1656 - 270 m, 18 July 1984. LCM 1684 - 300-460 m, 18 July 1984.

Veronica wormskjoldii Roem. & Schult.

Alpine Speedwell. Native perennial. Frequent. Alpine tundra, subalpine meadows. Var. stelleri (Pallas) Welsh. Synonym: V. stellari Pall. Vouchers: LCM 904 - 1070 m, 11 July 1983. LCM 1893 - 1200 m, 21 June 1984. Var. wormskjoldii. Vouchers: LCM 954 - 950 m, 18 July 1983. LCM 967 - 1100 m, 18 July 1983. LCM 2081, LCM 2082 - 1050-1150 m, 19 July 1985. Comments: Collection LCM 2081 is from a population of white flowered plants. For var. stelleri, this appears to be a range extension from it's nearest distribution on the Kenai Peninsula.

URTICACEAE

Urtica dioca L. var. lyallii (Wats.) C.L.Hitchc.

Stinging Nettle. Native (?) perennial. Rare (?). Moist sites along roadside, open woods. Vouchers: LCM 944 - 680 m, 18 July 1985. LCM 2017 - 370 m, 3 July 1985. Comment: Observed at only two locations.

VALERIANACEAE

Valeriana capitata Pallas ex Link

Capitate Valerian. Native perennial. Rare. Alpine meadows. Voucher: LCM 745 - 880 m, 20 June 1983. Comment: Observed at only one location.

Valeriana sitchensis Bong.

Sitka Valerian. Native perennial. Frequent. Subalpine to alpine meadows. Vouchers: LCM 746 - 880 m, 20 June 1983. LCM 893 - 910 m, 11 July 1983. LCM 1803 - 850 m, 13 Aug. 1984.

VIOLACEAE

Viola palustris L.

Marsh Violet. Native perennial. Occasional. Moist woods, streambanks. Synonym: V. epipsila Ledeb. Vouchers: LCM 1973 - 100 m, 22 June 1985. LCM 2050 - 350 m, 18 July 1985. LCM 2061 - 820 m, 19 July 1985.

Viola langsdorfii (Reg.) Fisch. ex DC.

Alaska Violet. Native perennial. Frequent. Alpine to subalpine meadows. Vouchers: LCM 699 - 370-430 m, 13 June 1983. LCM 761 - 940 m, 20 June 1983. LCM 1408 - 560 m, 18 May 1984. LCM 1519 - 610-910 m, 23 June 1984. LCM 2080 - 1050-1150 m, 19 July 1985.

Viola renifolia Gray var. brainerdii (Greene) Fern.

White Violet. Native perennial. Common. Moist woods. Vouchers: LCM 563 - 290 m, 23 May 1983. LCM 758 - 940 m, 20 June 1983. LCM 989 - 1240 m, 18 July 1983. LCM 1387 - 340 m, 19 May 1984. LCM 1407 - 560 m, 19 May 1984.

CLASS LILIOPSIDA

CYPERACEAE

Note: For many of the Carex species, I was unable to give a reasonably firm abundance rating. This is because many of them are difficult, if not impossible, to recognize on sight in the field.

Carex aquatilis Wahl. ssp. aquatilis

Water Sedge. Native perennial. Occasional. Wet gravel and mud on lake shores. Vouchers: LCM 627 - 270 m, 13 June 1983. LCM 797 - 300 m, 3 July 1983. Comments: Observed in several places along the shore of Eklutna Lake. Not seen anywhere else.

Carex bicolor All. var. androgyna (Olney) Welsh

Two-color Sedge. Native perennial. Occasional (?). Calcareous swamp, wet places. Synonym: C. aurea Nutt. Vouchers: LCM 627 - 270 m, 13 June 1983. LCM 797 - 900 m, 6 Aug. 1985. An apparent range extension from its nearest distribution in the Alaska Range.

Carex bigelovii Torr.

Bigelow Sedge. Native perennial. Occasional (?). Muskeg, swamp. Vouchers: LCM 2163b, LCM 2164 - 280 m, 24 Aug. 1985. Comments: This species is probably common throughout the black spruce swamps on the valley bottom. Specimen LCM 2161b has only one or two perigynia per spike, while the spikes of LCM 2164 are completely staminate.

Carex capillaris L.

Hairlike Sedge. Native perennial. Occasional. Lake margins, muskeg. Vouchers: MW 967 - 24 June 1965. LCM 1484 - 270-300 m, 23 June 1984. LCM 1504 - 460-610 m, 23 June 1984. LCM 1618 - 275 m, 12 July 1984. LCM 2013 - 300 m, 3 July 1985.

Carex concinna R. Br. ex Richards.

Low Northern Sedge. Native perennial. Common. Moist areas, woods. Vouchers: LCM 572 - 290 m, 23 May 1983. LCM 1446 - 300 m, 26 May 1984. LCM 1925 - 300 m, 1 June 1985. LCM 1953 - 270 m, 8 June 1985.

Carex dioica L. ssp. gynocrates (Wormsk.) Hult.

Northern Bog Sedge. Native perennial. Occasional (?). Calcareous swamp. Vouchers: LCM 2156 - 270 m, 6 Aug. 1985. Comment: This population is unusual, in that the plants have androgynous spikes.

Carex diandra Schrank

Native perennial. Occasional (?). Lake margins, wet areas. Vouchers: LCM 812 - 350 m, 3 July 1983. LCM 2046 - 350 m, 18 July 1985.

Carex laeviculmis Meinsch.

Smooth-stem Sedge. Native perennial. Occasional (?). Muskeg, lake and pond margins. Vouchers: LCM 808 - 350 m, 3 July 1983. LCM 2165 - 280 m, 24 Aug. 1985.

Carex leptalea Wahl.

Bristle-stalk Sedge. Native perennial. Occasional (?). Muskeg. Vouchers: LCM 810 - 350 m, 3 July 1983. LCM 2049a - 350 m, 18 July 1985. Comment: Observed in at least one other location.

Carex loliacea L.

Native perennial. Rare (?). Muskeg, lake margins. Vouchers: LCM 813 - 350 m, 3 July 1983. LCM 2047, LCM 2049b - 350 m, 18 July 1985.

Carex macloviana d'Urville

Thick-head Sedge. Native perennial. Rare (?). Subalpine alder and poplar thickets. Vouchers: LCM 1728 - 670 m, 25 June 1984. Comment: This plant was observed at only one location.

Carex media R. Br. ex Richards.

Native perennial. Occasional. Muskeg, lake margins, moist sites. Vouchers: LCM 794 - 300 m, 3 July 1983. LCM 811 - 350 m, 3 July 1983. LCM 1488 - 270-300 m, 23 June 1984. LCM 1963 - 120 m, 22 June 1985. LCM 2163a, LCM 2166 - 280 m, 24 Aug. 1985.

Carex membranacea Hook.

Fragile Sedge. Native perennial. Rare (?). Muskeg, spruce bog. Voucher: LCM 826 - 580 m, 4 July 1983.

Carex mertensii Prescott ex Bong.

Mertens Sedge. Native perennial. Occasional (?). Subalpine slope. Voucher: LCM 1793 - 760 m, 13 Aug. 1984. Comment: Observed at one other location.

Carex petasata Dewey

Native perennial. Rare (?). Muskeg. Voucher: LCM 1575 - 400 m, 2 July 1984. Comments: An apparent range extension from its nearest distribution in southwest Yukon Territory. The presence of this plant in Alaska probably represents a new state record. However, it is already treated in the Alaska floras because of its presence in Yukon.

Carex phaeocephala Piper

Native perennial. Occasional (?). Wet subalpine meadows. Vouchers: LCM 687 - 520-760 m, 13 June 1983. LCM 697 - 760 m, 13 June 1983. Comment: A slight range extension from its nearest distribution on the Kenai Peninsula.

Carex podocarpa R. Br. ex Richards.

Short-stalk Sedge. Native perennial. Occasional (?). Alpine tundra, muskeg. Vouchers: LCM 750 - 880 m, 20 June 1983. LCM 897 - 1000 m, 11 July 1983. LCM 2098 - 1300-1400 m, 19 July 1985. LCM 2147 - 1160 m, 6 Aug. 1985.

Carex pyrenaica Wahl. ssp. micropoda (C. A. Mey.) Hulten

Native perennial. Occasional. Alpine ridges, subalpine meadows. Vouchers: LCM 1826 - 1220-1520 m, 14 Aug. 1984. LCM 2060 - 680 m, 18 July 1985.

Carex saxitilis L.

Native perennial. Occasional. Muskegs, alpine tundra. Vouchers: LCM 1528 - 610-910 m, 23 June 1984. LCM 1848 - 260 m, 15 Aug. 1984.

Carex scirpoidea Michx.

Native perennial. Frequent. Rock outcrops, woods, alpine tundra, muskeg. Vouchers: SLW 4184 - 18 June 1965. LCM 602 - 6 June 1983. LCM 1428 - 370-430 m, 26 May 1984. LCM 1438 - 370 m, 26 May 1984. LCM 1625 - 275 m, 12 July 1985. LCM 2084 - 1050-1150 m, 19 July 1985.

Carex spectabilis Dewey

Showy Sedge. Native perennial. Rare (?). Alpine tundra. Voucher: LCM 2130 - 1150-1300 m, 19 July 1985.

Carex sprengelii Dewey

Sprengell's Sedge. Native perennial. Rare (?). Stabilized talus on rocky cliff face. Vouchers: LCM 1398 - 400-560 m, 19 May 1984. LCM 2158 - 460 m, 6 Aug. 1985. Comments: A new state record.

The nearest distributions of this species appears to be in central British Columbia and northern Alberta (Scoggan 1978).

Eriophorum angustifolium Honck.

Tall Cottongrass. Native perennial. Occasional (?). Muskeg, bogs. Vouchers: LCM 1634 - 270 m, 12 July 1984. LCM 2015 - 300 m, 3 July 1985. Comment: Observed at only two locations.

Eriophorum brachyantherum Trautv. & Mey.

Native perennial. Frequent. Bogs. Vouchers: MW 978 - 24 June 1965. LCM 798 - 300 m, 3 July 1983. LCM 1952a - 270 m, 8 June 1985.

Eriophorum scheuchzeri Hoppe

White Cottongrass. Native perennial. Frequent. Muskegs, bogs. Vouchers: LCM 628 - 270 m, 13 June 1983. LCM 821, LCM 823 - 580 m, 4 July 1983. LCM 1606 - 175 m, 12 July 1984. LCM 1952b - 270 m, 8 June 1984.

Kobresia myosuroides (Vill.) Fiori. & Paol.

Native perennial. Occasional. Dry tundra, rock outcrops. Vouchers: LCM 1910 - 500 m, 18 May 1985. LCM 2012 - 300 m, 3 July 1985. Comment: An apparent range extension from its nearest distribution in the Alaska Range.

Kobresia simpliciuscula (Wahl.) Mack.

Native perennial. Occasional. Muskegs, bogs. Vouchers: LCM 1623 - 275 m, 12 July 1984. LCM 2157 - 270 m, 6 Aug. 1985. Comment: An apparent range extension from its nearest distribution in the Alaska Range.

JUNCACEAE

Juncus alpinus Vill.

Alpine Rush. Native perennial. Occasional. Moist sites, near streams, lake shores. Vouchers: LCM 1542 - 270 m, 23 June 1984. LCM 1648 - 270 m, 18 July 1984. Comment: Observed in at least two other locations.

Juncus arcticus Willd. var. alaskanus (Hulten) Welsh

Arctic Rush. Native perennial. Rare. A wet place. Synonym: J. arcticus ssp. alaskanus Hult. Vouchers: LCM 1464 - 290 m, 2 June 1984. Comment: Observed in only one location.

Juncus bufonius L.

Toad Rush. Native annual. Rare (?). Wet sand. Voucher: LCM 2181 - 870 m, 25 Aug. 1985. Comments: Where this species was found at the lower end of Eklutna Lake, it was quite common. However, it hasn't been found elsewhere.

Juncus castaneus J. E. Smith

Chestnut Rush. Native perennial. Frequent. Moist meadows, bogs, wet places. Vouchers: AS 607 - 24 June 1965. LCM 864 - 280 m, 4 July 1983. LCM 1614 - 280 m, 12 July 1984. LCM 1635 - 270 m, 12 July 1984. LCM 1962 - 120 m, 22 June 1985.

Juncus triglumis L. var. albescens Lange

Native perennial. Occasional. Bogs, muskeg. Voucher: LCM 824 - 580 m, 4 July 1983. Comment: Observed in at least two other locations.

Luzula arcuata (Wahl.) Wahl. var. unalaschkensis Buch.

Alpine Woodrush. Native perennial. Frequent. Alpine tundra. Vouchers: LCM 1763 - 330 m, 12 Aug. 1984. LCM 2065 - 820 m, 19 July

1985. LCM 2094 - 1300-1400 m, 19 July 1985. LCM 2146 - 1160 m, 6 Aug. 1985.

Luzula confusa Lindeb.

Northern Woodrush. Native perennial. Rare (?). Alpine tundra (?). Vouchers: WmM 910B4 (AES) - 10 Sept. 1965. Comments: This specimen has only been tentatively identified. Assuming that this specimen is identified correctly, it represents an extension of the species' range from its nearest distribution in the Alaska Range. I have not observed the presence of this species in Eklutna Valley.

Luzula parviflora (Ehrh.) Desv.

Small-flowered Woodrush. Native perennial. Frequent. Alpine tundra, subalpine meadows, open woods. Vouchers: LCM 696 - 2500 ft, 13 June 1983. LCM 1498 - 460-610 m, 23 June 1984. LCM 1775 - 370 m, 12 Aug. 1985. LCM 2074 - 900-1050 m, 19 July 1985.

Luzula wahlenbergia Rupr.

Native perennial. Rare (?). Alpine tundra. Vouchers: WmM 910B5 (AES) - 10 Sept. 1965. Comments: The identification on this specimen is only tentative. This could be a specimen of L. parviflora, a species similar in appearance.

JUNCAGINACEAE

Triglochin palustris L.

Marsh Arrowgrass. Native perennial. Occasional. Calcareous bogs, seeps. Vouchers: LCM 865 - 280 m, 4 Jy 1983. LCM 866 - 250 m, 4 July 1983. LCM 1611 - 275 m, 12 July 1984.

LILIACEAE

Allium schoenoprasum L. var. sibericum (L.) Hartm.

Chive. Native biennial or short-lived perennial. Rare. Subalpine meadow, heath. Voucher: LCM 776 - 940 m, 20 June 1983. Comment: Observed at only one location.

Fritillaria camtchatcensis (L.) Ker

Chocolate Lilly. Native perennial. Occasional. Subalpine meadows, open woods. Vouchers: LCM 694 - 760 m, 13 June 1983. LCM 1453 - 460 m, 26 May 1984. Comment: Observed at several other locations.

Lloydia serotina (L.) Wats.

Alp Lilly. Native perennial. Occasional. Alpine tundra. Vouchers: LCM 914 - 1130 m, 11 July 1983. LCM 993 - 1240 m, 18 July 1983. LCM 1482 - 700-750 m, 2 June 1984. LCM 1833 - 1220-1520 m, 14 Aug. 1984. LCM 2121 - 1500 m, 19 July 1985.

Smilacina stellata (L.) Desf.

Native perennial. Frequent. Subalpine meadows, open woods. Vouchers: WmM 1404 (AES) - 17 Aug. 1964. LCM 654 - 460 m, 25 July 1984. LCM 1724 - 460 m, 1 June 1985.

Streptopus amplexifolius (L.) DC.

Watermelon Berry. Native perennial. Frequent. Woods, subalpine meadows. Vouchers: LCM 775 - 940 m, 20 June 1983. LCM 1782 - 469 m, 12 Aug. 1984. Comment: More common than my collections would suggest.

Tofieldia coccinea Richards.

Northern Asphodel. Native perennial. Occasional. Alpine tundra, muskeg. Vouchers: SLW 4256 - 20 June 1965. WmM 620B13 (AES) -

20 June 1965. LCM 1478 - 700-750 m, 2 June 1984. LCM 1988 - 80 m, 29 June 1985.

Tofieldia glutinosa (Michx.) Pers.

Native perennial. Rare. Muskeg. Voucher: LCM 2154 - 270 m, 6 Aug. 1985. Comments: Observed at only one location. Possibly overlooked due to its similarity to the other two species of Tofieldia in their vegetative states.

Tofieldia pusilla (Michx.) Pers.

Scottish Asphodel. Native perennial. Occasional. Alpine tundra, calcareous bogs. Vouchers: LCM 819 - 580 m, 4 July 1983. LCM 1531 - 610-910 m, 23 June 1984. LCM 1616 - 275 m, 12 July 1984. LCM 2010 - 300 m, 3 July 1985.

Veratrum eschscholtzii Gray

False Hellebore. Native perennial. Occasional. Moist alpine to subalpine meadows. Voucher: LCM 948 - 950 m, 18 July 1983. Comment: More common than my collections would suggest.

Zigadenus elegans Pursh

Elegant Death Camas. Native perennial. Common. Woods, dry hillsides, subalpine meadows. Vouchers: LCM 667 - 370-430 m, 13 June 1983. LCM 774 - 940 m, 20 June 1983. LCM 839 - 580 m, 4 July 1983. LCM 946 - 680 m, 18 July 1983. LCM 1612 - 275 m, 12 July 1984. LCM 1693 - 300-460 m, 18 July 1984.

ORCHIDACEAE

Calypso bulbosa (L.) Oakes ex Thompson

Fairy Slipper. Native perennial. Rare. Woods. Voucher: LCM 562 - 290 m, 23 May 1983. Comment: Observed at only one location.

Corallorhiza trifida Chat.

Early Coral-root. Native perennial. Common. Woods. Vouchers: SLW 4204 - 18 June 1965. LCM 660 - 350 m, 13 June 1983. LCM 1447 - 350 m, 13 June 1983. Comment: This species is considerably more common than these collections would suggest.

Cypripedium passerinum Richards.

Northern Lady's-slipper. Native perennial. Occasional. Calcareous bogs, heath, moist woods. Vouchers: LCM 1620 - 275 m, 12 July 1984. LCM 1633 - 270 m, 12 July 1985.

Goodyera repens (L). Br. ex Ait. var. ophioides Fern.

Lessor Rattlesnake Plantain. Native perennial. Rare (?). Moist coniferous forest. Voucher: LCM 2168 - 350 m, 24 Aug. 1985. Comments: This plant was common in the area in which I collected it, but I haven't seen it anywhere else. It could be common throughout the moist valley bottoms.

Habenaria dilatata (Pursh) Hook.

White bog-orchid. Native perennial. Occasional. Muskegs, swamps. Synonym: Platanthera dilatata (Pursh) Lindl. Vouchers: LCM 773 - 940 m, 20 June 1983. LCM 2071 - 100 m, 25 Aug. 1985. Comment: Observed at several other locations.

Habenaria hyperborea (L.) R. Br. ex Ait.

Northern Bog-orchid. Native perennial. Frequent. Bogs, muskegs, wet coniferous forest. Var. hyperborea. Synonym: Platanthera

hyperborea (L.) Lindl. Vouchers: LCM 872 - 250 m, 4 July 1983. LCM 1576 - 400 m, 2 July 1984. LCM 1610b - 275 m, 12 July 1984. Var. viridiflora Cham. Vouchers: LCM 830 - 580 m, 4 July 1983. LCM 1610a - 275 m, 12 July 1984.

Habenaria obtusata (Banks) Richards.

Small Bog-orchid. Native perennial. Occasional. Wet coniferous forest, muskeg. Synonym: Platanthera obtusata (Pursh) Lindl. Vouchers: LCM 817 - 350 m, 3 July 1983. LCM 1493 - 270-300 m, 23 June 1984. LCM 2003 - 270 m, 2 July 1985. LCM 2055 - 375 m, 18 July 1985.

Habenaria viridis (L.) R. Br. var. bracteata (Muhl.) Gray

Long-bracted Bog-orchid. Native perennial. Frequent. Bogs, muskegs. Synonym: Coeloglossum viride (L.) Hartm. ssp. bracteatum (Muhl.) Hult. Vouchers: LCM 673 - 460 m, 13 June 1983. LCM 1855 - 260 m, 15 Aug. 1984. LCM 1867 - 300 m, 21 Aug. 1984. LCM 2075 - 900-1050 m, 19 July 1985.

Listera borealis Morong

Northern Twayblade. Native perennial. Frequent. Wet coniferous forest, muskeg. Vouchers: MW 2221 - 25 June 1968. LCM 1490 - 270-300 m, 23 June 1984. LCM 1961 - 120 m, 22 June 1985. LCM 2004 - 270 m, 2 July 1985.

Listera cordata (L.) R. Br. ex Ait.

Heart-leaved Twayblade. Native perennial. Frequent. Moist coniferous forest. Vouchers: LCM 890 - 760 m, 11 July 1983. LCM 1485 - 270-300 m, 25 June 1984. Comment: Observed elsewhere.

Orchis rotundifolia Banks ex Pursh

Round-leaved Orchis. Native perennial. Frequent. Moist places, wet coniferous forest. Synonym: Amerorchis rotundifolia (Banks) Hult. Vouchers: MW 973 - 24 June 1965. LCM 832, LCM 841 - 580 m, 4 July 1983. LCM 1604 - 275 m, 12 July 1984. LCM 1632 - 270 m, 12 July 1984. LCM 2005 - 270 m, 2 July 1985.

Spiranthes romanzoffiana Cham.

Hooded Ladies Tresses. Native perennial. Rare. Muskegs. Voucher: LCM 1854 - 260 m, 15 Aug. 1984. Comment: Observed at only one location.

POACEAE

Agropyron boreale (Turcz.) Drobov. ssp. hyperarcticum (Polunin) Welsh

Northern Wheatgrass. Native perennial. Occasional. Disturbed sites. Vouchers: LCM 859, LCM 862 - 280 m, 4 July 1983. LCM 1557 - 400 m, 2 July 1984.

Agropyron caninum (L.) Beauv.

Native Perennial. Frequent. Disturbed sites along streams, cliffs, roadsides. Var. andinum (Scribn. & Smith) Pease & Moore. Voucher: HJH 34 (AES) - ? July 1952. Var. hornemannii (Koch) Pease & Moore. Voucher: LCM 2184b - 270 m, 24 Aug. 1985. Var. latiglume (Scribn. & Smith) Pease & Moore. Vouchers: JGD I-57 (AES), JGD I-62 (AES) - 28 July 1957. LCM 837 - 580 m, 4 July 1983. LCM 1668 - 300-460 m, 18 July 1984. LCM 2170a, LCM 2170b - 100 m, 25 Aug. 1985. LCM 2183, LCM 2184a - 270 m, 25 Aug. 1985. Var. mitchellii Welsh. Voucher: SLW 4616 (Holotype) - 12 July 1965. Var. unilaterale Vasey. Voucher: LCM

2182 - 270 m, 25 Aug. 1985. Comments: The A. caninum complex in Eklutna Valley is in need of further study. The unusually large number of varieties in the valley is surely suspect. It is possible that some may be introduced from elsewhere and that some hybridization has also occurred since then. Three of these varieties were found growing together in the same community near the lower end of Eklutna Lake.

The type locality for var. mitchellii is described as "Betula, Populus, Salix woodland" at Eklutna Lake (Welsh 1974). In a conversation with Dr. Welsh (1984), he said that the variety was "growing all over the place." In the three seasons in which I collected at Eklutna, I was unable to relocate this population. I have, however, discovered numerous specimens that could be interpreted as intermediates between var. mitchellii and var. latiglume, from which I believe it was probably derived. The collection that comes most near to var. mitchellii, LCM 837, has light purple glumes with wide white margins and prominant nerves, strigulose lemmas with very short, bent awns, and leaf blades sparsely pubescent, on the upper surface, with mixed long and short hairs. Var. mitchellii matches the same description, but instead has long geniculate awns, and is densely pubescent with long and short hairs. Most of the other specimens of var. latiglume in the valley have bright green glumes and lemmas lacking awns (collection LCM 1668 being typical).

Agrostis scabra Willd.

Ticklegrass. Native (?) perennial. Occasional. Disturbed sites. Voucher: LCM 1649 - 270 m., 18 July 1984. Comment: Observed in at least two other locations.

Arctagrostis latifolia (R. Br.) Griseb.

Polargrass. Native perennial. Frequent. Woods, roadsides. Vouchers: SLW 4617 - 12 July 1965. LCM 816 - 350 m, 3 July 1983. Comment: Observed in several other locations.

Bromus pumpellianus Scribn. ssp. pumpellianus

Arctic Brome. Native perennial. Common. Subalpine meadows, dry slopes, open woods. Synonym: B. pumpellianus var. pumpellianus. Vouchers: SLW 4621 - 28 July 1957. JGD M57-1 (AES), JGD M57-1a (AES), JGD M57-2 (AES) - 6 June 1957. LCM 608 - 400 m, 6 June 1983. LCM 717 - 620 m, 20 June 1983. LCM 942 - 620 m, 18 July 1983. LCM 997 - 380 m, 31 July 1983. LCM 1669 - 300-460 m., 18 July 1984.

Calamagrostis canadensis (Michx.) Beauv. var. langsdorfii (Link) Inman

Bluejoint. Native perennial. Common. Woods, subalpine meadows, dry slopes. Vouchers: LCM 662 - 366 m, 13 June 1983. LCM 816 - 350 m, 13 June 1983. LCM 845 - 280 m, 3 July 1983. LCM 1640 - 270 m, 12 July 1983. LCM 774 - 370 m, 12 Aug 1984. LCM 2162 - 280 m, 24 Aug. 1985.

Calamagrostis lapponica (Wahl.) Hartm.

Lapland Reedgrass. Native perennial. Rare (?). Dry disturbed sites. Voucher: LCM 1551b - 400 m, 2 July 1984. Comment: Observed at only one location.

Calamagrostis purpurascens R. Br. ex Richards

Purple Reedgrass. Native perennial. Occasional. Disturbed sites, talus, cliff faces. Vouchers: SLW 4610 - 12 July 1965. LCM 793 - 300 m, 3 July 1983. LCM 975 - 1100 m, 18 July 1983. LCM 1983 - 1400-1600 m, 21 Aug. 1984. LCM 2058 - 640 m, 18 July 1985. Comment:

An apparent range extension from its nearest distribution in the Wrangell Mountains and the Alaska Range.

Cinna latifolia (Trev.) Griseb. ex Ledeb.

Woodreed. Native perennial. Occasional (?). Moist woods, meadows. Voucher: JGD I37-63 (AES) - 28 July 1957. WmM 728D33 (AES) - 28 July 1957. WmM 824B15 (AES) - 24 Aug. 1958. Comments: I have not seen this species in Eklutna Valley. The specimens cited were, in all probability, collected just outside the rim of the hung valley mouth. I have chosen to include these specimens because I believe that the species very likely exists inside the valley as well.

Deschampsia beringensis Hulten

Bering Hairgrass. Native perennial. Frequent. Sandy lake shores, roadsides, dry slopes. Vouchers: LCM 688 - 760 m, 13 June 1983. LCM 838 - 580 m, 4 July 1983. LCM 2172 - 100 m, 25 Aug. 1985. LCM 2186a - 270 m, 25 Aug. 1985. Comments: The D. beringensis in this area grade very close to D. caespitosa. The ranges of the two species overlap in this area, so the populations here may represent either hybrids or the middle portion of a cline. I have found these two entities, and a range of intermediates, growing together in the same community. This leads me to believe that it might be better to combine this as a variety under D. caespitosa.

Deschampsia caespitosa (L.) Beauv.

Tufted Hairgrass. Native perennial. Occasional. Sandy lake beaches, roadsides, dry slopes. Vouchers: LCM 686 - 550-760 m, 13 June 1983. LCM 2186b, LCM 2186c - 270 m, 25 Aug. 1985. Comment: See D. beringensis.

Elymus sibiricus L.

Siberian Wild Rye. Introduced annual. Occasional. Waste places, roadsides. Vouchers: LCM 858 - 280 m, 4 July 1983. LCM 1860 - 270 m, 16 Aug. 1984. Comment: Observed in several places along Eklutna Valley Road.

Festuca altaica Trin. ex Ledeb.

Native perennial. Common. Subalpine meadows, rock outcrops, alpine ridges, streambanks, woods, roadsides. Vouchers: LJK 824 - 6 Aug. 1958. JGD I57-61 (AES) - 28 July 1957. WmM 728D5 (AES), WmM 4017 (AES) - 28 July 1957. LCM 573 - 290 m, 23 May 1983. LCM 584, LCM 597, LCM 612 - 400 m, 6 June 1983. LCM 684 - 520-850 m, 13 June 1983. LCM 712 - 620 m, 20 June 1983. LCM 983 - 1080 m, 18 July 1983. LCM 1443 - 370 m, 26 May 1984. LCM 1452 - 460 m, 26 May 1984. LCM 1481 - 700-750 m, 2 June 1984. LCM 1624 - 275 m, 12 July 1984. LCM 1824 - 1220-1520 m, 14 Aug. 1984.

Festuca ovina L.

Sheep Fescue. Native perennial. Occasional. Alpine ridges, rock outcrops, dry slopes. Var. brevifolia (R. Br.) Wats. Synonym: F. brachyphylla Schult. Vouchers: SLW 4179 - 18 June 1965. LCM 600 - 400 m, 6 June 1983. LCM 1676 - 300-460 m, 18 July 1984. Var. rydbergii St.-Yves. Synonym: F. saximontana Rydb. Voucher: LCM 1890 - 1400-1600 m, 21 Aug. 1984. Comments: Specimen LCM 1671 is a viviperous specimen and is not keyable to variety. However, it was growing in a population of var. brevifolia. The specimen of var. rydbergii was found at an abnormally high elevation. It might just be an odd specimen of var. brevifolia. If this is indeed correctly identified, then it represents

a range extension from its main distribution in east-central A
a minor distribution on the Kenai Peninsula.

Festuca rubra L.

Red Fescue. Native perennial. Occasional (?). Moist
sites. Vouchers: JGD I37-59 (AES) - 28 July 1957. LCM 1553,
- 400 m, 2 July 1984.

Hierochloe alpina (Swartz) Roem. & Schult.

Alpine Holygrass. Native perennial. Frequent. Alpine
subalpine meadows, woods. Vouchers: LCM 685 - 550-760 m, 13 J
LCM 711 - 620 m, 20 June 1983. LCM 985 - 1080 m, 18 July 1983.
1480 - 700-750 m, 2 June 1984. LCM 1527 - 610-910 m, 23 June
1823 - 1220-1520 m, 14 Aug. 1984.

Hierochloe odorata (L.) Beauv.

Vanilla Grass. Native perennial. Rare. Dry subalpine
Voucher: LCM 1473 - 500-600 m, 2 June 1984. Comment: Observe
one location.

Hordeum jubatum L.

Foxtail Barley. Native perennial. Frequent. Disturbe
Voucher: LCM 998 - 380 m, 31 July 1983. Comment: Much more a
than my collections would suggest.

Phleum alpinum L.

Alpine Timothy. Native perennial. Occasional. Rock c
subalpine meadows. Synonym: P. commutatum Ganduger var. ameri
(Fourn.) Hult. Vouchers: LCM 727 - 680 m, 20 June 1983. LCM
300-460 m, 18 July 1984. Comment: Observed elsewhere.

Phleum pratense L.

Timothy. Introduced perennial. Occasional. Disturbed sites. Vouchers: LCM 996 - 380 m, 31 July 1983. LCM 1556 - 400 m, 2 July 1984. Comment: Observed in several other locations.

Poa abbreviata R. Br.

Low Speargrass. Native perennial. Rare. Dry rocky alpine tundra. Synonym: P. pseudoabbreviata Roschev. Voucher: LCM 981 - 1080 m, 18 July 1983. Comment: An apparent range extension from its nearest distribution in the Alaska Range.

Poa alpina L.

Alpine Bluegrass. Native perennial. Frequent. Rocky, gravelly areas, from low elevations to alpine. Vouchers: JGD I57-57 (AES) - 28 July 1957. SLW 4173, SLW 4175 - 12 July 1965. AS 613 - 24 June 1965. SLW 4633 - 12 July 1965. LCM 594, LCM 601 - 400 m, 6 June 1983. LCM 728 - 680 m, 20 June 1983. LCM 1465b - 290 m, 2 June 1984. LCM 1642 - 270 m, 18 July 1984.

Poa arctica R. Br.

Arctic Bluegrass. Native perennial. Frequent. Alpine tundra, subalpine meadows. Vouchers: LCM 885 - 280 m, 4 July 1983. LCM 1463, LCM 1465 - 290 m, 2 June 1984. LCM 1530 - 610-910 m, 23 June 1984. LCM 1811 - 970 m, 13 Aug. 1984. LCM 1880a, LCM 1880b - 1400-1600 m, 21 Aug. 1984. LCM 2099 - 1300-1400 m, 19 July 1985. LCM 2148 - 1160 m, 6 Aug. 1985.

Poa glauca Vahl

Glaucous Bluegrass. Native perennial. Common. Dry subalpine slopes, woods, streambanks and gravel bars, rock outcrops, roadsides. Vouchers: WmM 1063 (AES) - 2 Sept. 1963. WmM 1394 (AES) - 17 July

1964. SLW 4181, SLW 4187 - 18 June 1964. SLW 4615 - 12 July 1965. 590, LCM 599, LCM 624 - 400 m, 6 June 1983. LCM 788, LCM 789 - 30 3 July 1983. LCM 860 - 280 m, 4 July 1983. LCM 899 - 380 m, 31 Ju 1983. LCM 1552, LCM 1558b - 400 m, 2 July 1984. LCM 1643, LCM 164 270 m, 18 July 1984. LCM 1955 - 270 m, 8 June 1985. LCM 1964 - 1 22 June 1985. LCM 1977 - 100 m, 22 June 1985. LCM 1989 - 80 m, 29 1985. LCM 2059 - 640 m, 18 July 1985. Comments: This plant is co in the valley, but it is over-represented in my collections.

Poa leptocoma Trin.

Bog Bluegrass. Native perennial. Rare. Moist alpine mead Synonym: P. paucispicula Scribn. & Merr. Voucher: LCM 2149 - 116 6 Aug. 1985. Comment: Observed at only one location.

Poa macrocalyx Trautv. & Mey.

Large-glume Bluegrass. Native perennial. Rare. Rock outc Synonym: P. lanata Scribn. & Merr. Voucher: SLW 4177 - 18 June 1 Comment: I personally did not observe this species in the valley.

Poa palustris L.

Fowl Meadow-grass. Introduced perennial. Occasional. Disturbed sites. Vouchers: LCM-725 - 680 m, 20 June 1983. LCM 21 100 m, 25 Aug. 1985.

Poa pratensis L.

Kentucky Bluegrass. Native or introduced perennial. Occasional. Disturbed sites, sandy lake shores. Synonym: P. alp Fries for the native phase. Vouchers: JGD I57-56 (AES) - 28 July LCM 1551a, LCM 1558a - 400 m, 2 July 1984. LCM 1673 - 300-460 m, July 1984. Comments: Both the native and introduced phases of th

species are likely to occur in this area. It is uncertain which of the phases these belong to. No attempt has been made to correlate the collected specimens to any of the four taxa that Hulten has divided out of this polymorphic species. Also observed at other sites.

Poa stenantha Trin.

Native perennial. Rare. Rock outcrop. Vouchers: SLW 4624 - 12 July 1965. LCM 1675 - 300-460 m, 18 July 1984. Comment: Observed at only one location.

Trisetum spicatum (L.) Richter

Downy Oatgrass. Native perennial. Common. Alpine tundra, subalpine meadows, rock outcrops, roadsides. Vouchers: JGD I57-60a (AES) - 28 July 1957. WmM 1410 (AES) - 17 July 1964. SLW 4171 - 18 June 1965. AS 1421 - 25 June 1970. LCM 614 - 400 m, 6 June 1983. LCM 634 - 270 m, 13 June 1983. LCM 726 - 680 m, 20 June 1983. LCM 835 - 580 m, 4 July 1983. LCM 923 - 400 m, 18 July 1983. LCM 974 - 1100 m, 18 July 1983. LCM 984 - 1080 m, 18 July 1983. LCM 1550 - 400 m, 2 July 1984. LCM 1697 - 300-460 m, 18 July 1984. LCM 1980 - 120 m, 29 June 1985.

POTAMOGETONACEAE

Potamogeton alpinus Balbis var. tenuifolius (Raf.) Ogden

Northern Pondweed. Native aquatic herb. Rare. Shallow pond. Voucher: LCM 2175 - 270 m, 25 Aug. 1985. Comment: Habitat for this species is very limited in Eklutna Valley.

Potamogeton berchtoldii Fieb.

Berchtold Pondweed. Native aquatic herb. Rare. Shallow pond. Voucher: LCM 2174 - 270 m, 25 Aug. 1985. Comment: The potential habitat for this species is very limited in Eklutna Valley.

Potamogeton filiformis Pers.

Filiform Pondweed. Native aquatic herb. Rare. Shallow pond. Voucher: LCM 2176 - 270 m, 25 Aug. 1985. Comment: The potential habitat for this species, in Eklutna Valley, is very limited.

Potamogeton vaginatus Turcz.

Sheathed Pondweed. Native aquatic herb. Rare. Along shore of shallow lake. Vouchers: LCM 807 - 350 m, 3 July 1983. LCM 2053 - 350 m, 18 July 1985. Comment: The habitat for this species is very limited in Eklutna Valley.

SPARGANIACEAE

Sparganium angustifolium Michx.

Narrow-leaved Burreed. Native aquatic herb. Rare. Shallow pond. Voucher: LCM 2177a - 270 m, 25 Aug. 1985. Comments: The habitat for this species is very limited in the valley. An unidentified specimen of Sparganium was discovered at another location, but due to the lack of fruit or flowering parts, the species was not determinable.

DISCUSSION

The Eklutna Valley comprises only one-fifth of one percent of the 800,000 square miles covered by the Alaskan flora, as treated by Welsh (1974). The valley has 372 species, or 390 entities when counting infraspecific taxa. Including these infraspecific taxa, Eklutna Valley has 27% of Alaska's flora of 1470 taxa (1365 species). In addition, two other species, not included in the floras of either Welsh or Hulten, are present in the valley. One of these, Lychnis alba, had been collected elswhere in Alaska before being collected in Eklutna Valley. The other species, Carex sprengellii, is a new state record. Carex petasata, according to Hulten (1968), had been collected as far north as southwestern Yukon, but was not known from the Alaskan side of the border. Thus, its presence here represents a new state record, as well as a significant range extension.

Range extensions from among my collections total twenty-seven. Only five of these I would classify as "major", with the nearest distributions previously known from as close as southwest Yukon or interior Alaska. The "minor" extensions have distributions in such places as the Alaska Range, the eastern end of the Chugach Mountains, and the Kenai Peninsula.

Of the plants collected, two species are presently under consideration for federal listing as threatened or endangered. These entities are Thlaspi arcticum and Taraxacum carneocoloratum. A third

species, Papaver alboroseum, had been under consideration for listing as late as 1980, but has now been dropped because it was found to be more abundant than once thought (U.S.D.I. 1983).

Ten species, or 3% of the valley's flora, are regarded as endemics to the Alaskan-Yukon Region. As a whole, endemics also comprise 3% of the total Alaskan flora. Thirty percent were endemic to North America and 14% of the species are circumboreal (25% if including plants with disjunctly circumboreal distributions). Only 4% of the Eklutna flora consisted of introduced species, whereas, for the Alaskan flora, it comprised a 12% portion (I attribute this low percentage of introductions to the relatively pristine condition of the valley).

Fifty-nine families, 163 genera, and 372 species are represented in Eklutna Valley. The largest families include Asteraceae at 37 species, Poaceae at 30, Cyperaceae, 27; Rosaceae, 26; and Brassicaceae, Ranunculaceae, and Saxifragaceae at 21 species. The largest genera include Carex at 22 species, Salix and Saxifraga at 13, Ranunculus, 10; Potentilla and Poa, 9; and Draba at 7 species (A tabulation of families, genera, and species can be found in table 5 of appendix A).

Only 7% of the species in the Eklutna flora consist of annuals. According to Daubenmire (1978), annuals tend to be lacking in arctic and subarctic areas due to the shortness of the growing season. They are frequently unable to accumulate enough energy to set seed before the end of the short season. The frequent occurrence of late spring and early fall frosts could also result in the complete decimation of the following year's populations.

Of the perennials, 83% are herbaceous. The large number of herbaceous perennials might be due to the disadvantage of maintaining large amounts of woody tissue in an energy poor environment. In Eklutna Valley, these factors are less critical at lower elevations, where forest vegetation is common. Of the 17% with permanant woody, or persistent above ground parts, 38% have evergreen adaptations. Daubenmire says that the evergreen habit can be advantageous, because they can photosythesize on warm days in the spring before the others have leafed out, or in the fall, after the others have already shed their leaves (Longevity adaptations are tabulated in table 2).

Table 2. Plant Longevity Adaptations. Plants of annual or biennial habit are included together, because they theoretically set seed only once during the life of a plant. Plants (including some "biennials") that set seed for two or more years are considered as perennials.

	ANNUALS	PERENNIALS			TOTALS
		HERB.	DECID.	EVERG.	
INTRODUCED	8	9	0	0	16
NATIVE	20	271	40	25	356
BOTH	27	279	40	25	372

APPENDIX A

Table 3. Type Specimens from the Cook Inlet Region.

Table 4. Previous Collections.

Table 5. Family, Genus, and Species Tabulations.

Table 3. Type Specimens from the Cook Inlet Region.

Agropyron caninum (L.) Beauv. var. mitchellii Welsh.
Welsh (1974), pg. 456. Eklutna Lake, in Betula, Populus, Salix woodland. Welsh 4616 (BRY) 11 July, 1965.

Artemesia campestris L. ssp. borealis (Pallas) H. & C. var. strutziae Welsh
Welsh (1974), pg. 125. Along Turnagain Arm, South Anchorage. Aline Strutz 1967-1. Paratype (BRY).

Betula kenaica Evans
Bot. Gaz. 27 (1899): 481. Sunrise, Kenai Peninsula. Walpole 1136-1138 (US).

Erigeron hultenii Spongburg
Rhodora vol. 75: 801,(1973), pg. 116-119. Cambell Creek Valley, eleven miles north of Anchorage. Strutz s.n. (S), 6 Aug. 1965.

Taraxacum chlorostephen Hagl.
Sv. Bot. Tidskr. 42 (1948): 302. Eklutna, Alaska. Dutilly, Lepage, O'Neill 20083.

Taraxacum hypcheoropsis Hagl.
Sv. Bot. Tidskr. 46 (1949): 110. Anchorage, Alaska. Lepage 23411.

Taraxacum paralium Hagl.
Sv. Bot. Tidskr. 42 (1948): 319. Anchorage, Alaska. Dutilly, Lepage, and O'Neill 20070.

Table 4. Previous Collections.

COLLECTORS	DATES	NUMBERS
J. G. Dickson	28 July 1957	8
H. J. Hodgeson	? June 1962	1
L. J. Klebsedel	6 Aug. 1958	1
W. M. Mitchell	28 July 1957	2
	24 Aug. 1958	1
	12 July 1962	1
	2 Sept. 1963	1
	17 July 1964	6
	20 June 1965	12
	2 Sept. 1965	1
	10 Sept. 1965	12
	24 Aug. 1966	1
A. Strutz	24 June 1965	2
	12 July 1965	1
	1 Aug. 1965	3
	25 June 1968	5
	25 June 1970	6
S. L. Welsh	18 June 1965	37
	20 June 1965	8
	12 July 1965	34
M. Williams	20 June 1965	1
	24 June 1965	6
	24 June 1966	3
	25 June 1968	3

Table 5. Family, Genus, and Species Tabulations.

FAMILY	GEN.	SPP.
DIVISION LYCOPODIOPHYTA		
Lycopodiaceae	1	4
Sellaginellaceae	1	1
DIVISION EQUISETOPHYTA		
Equisetaceae	1	5
DIVISION FILICOPHYTA		
Ophioglossaceae	1	2
Polypodiaceae	5	7
DIVISION PINOPHYTA		
Cupressaceae	1	1
Pinaceae	1	2
DIVISION MAGNOLIOPHYTA		
CLASS MAGNOLIOPSIDA		
Adoxaceae	1	1
Araliaceae	1	1
Apiaceae	3	3
Asteraceae	13	37
Betulaceae	2	3
Boraginaceae	2	2
Brassicaceae	9	21
Campanulaceae	1	2
Caprifoliaceae	3	3
Caryophyllaceae	5	14
Chenopodiaceae	1	1
Cornaceae	1	2
Crassulaceae	1	1
Diapensiaceae	1	1
Droseraceae	1	1
Eleagnaceae	1	1
Empetraceae	1	1
Ericaceae	8	12
Fabaceae	5	10
Fumariaceae	1	1
Gentianaceae	3	4
Geraniaceae	1	1
Haloragaceae	1	1
Hydrophyllaceae	1	1
Lentibulariaceae	1	1
Onagraceae	1	4
Orobanchaceae	1	1
Papaveraceae	1	3
Plantaginaceae	1	1
Polemoniaceae	1	3
Polygonaceae	2	6
Portulacaceae	1	1
Primulaceae	3	5
Pyrolaceae	2	5
Ranunculaceae	7	21
Rosaceae	11	26
Rubiaceae	1	3
Salicaceae	2	16
Santalaceae	1	1
Saxifragaceae	5	21
Scrophulariaceae	5	7
Urticaceae	1	1
Valerianaceae	1	2
Violaceae	1	3
CLASS LILIOPSIDA		
Cyperaceae	3	27
Juncaceae	2	9
Juncaginaceae	1	1
Liliaceae	8	10
Orchidaceae	7	12
Poaceae	13	30
Potamogetonaceae	1	4
Sparganiaceae	1	1
Totals 59	163	372

APPENDIX B

A List of Eklutna Plant Distributions

A LIST OF EKLUTNA PLANT DISTRIBUTIONS

This is a list of the Eklutna Valley flora categorized according to present day distribution patterns. In some respects, the patterns have been modeled after Hulten's (1937). However, they are not intended to duplicate his data, which were intended to demonstrate migration patterns.

Aleutian-Beringian Plant Distributions

Plant Distributions Lining the Northern Pacific Arc: Deschampsia beringensis, Fritillaria camschatcensis, Geranium erianthum, Hieracium triste, Poa macrocalyx, Viola langsdorfii (Figure 10a).

Plant Distributions Divided by the Aleutians: Cassiope stelleriana, Papaver alboroseum, Rubus pedatus, Sanguisorba stipulata (w/ some Rockies)(Figure 10b).

Plants with Beringian Distributions: Angelica lucida, Arabis lyrata (w/ some Rockies), Campanula lasiocarpa, Draba borealis, Geum rossii, Potentilla villosa (w/ extension to coastal Washington), Primula cuneifolia, Rubus stellatus, Salix rotundifolia (Figure 10c).

The Aleutians and the Alaska Peninsula: Androsace alaskana, Castelleja unalaschcensis, Lupinus nootkatensis, Papaver alaskanum, Salix stolonifera (Figure 11a).

Plants along the Southwest Coast: Arnica diversifolia (w/ some Rockies), Aquilegia formosa (w/ some Rockies), Astragalus harringtonii, Carex laeviculmis, Carex mertensii, Carex spectabilis (w/ most of Aleutians), Heuchera glabra, Oplopanax horridum, Menziesia ferruginea, Poa stenantha (w/ most of Aleutians), Populus trichocarpa (w/ some Rockies), Ranunculus occidentalis, Romanzoffia sitchensis (Figure 11b).

Rocky Mountain Distributions

Distributions Limited to the Rocky Mountains: Arnica amplexicaulis, A. latifolia, Carex petasata, Carex macloviana, C. phaeocephala, C. sprengellii, Draba stenoloba, Luetkea pectinata, Polemonium pulcherrimum, Potentilla diversifolia, Salix barclayi, Saxifraga adscendans, S. lyallii, Senecio triangularis, Sorbus scopulina (Figure 12a).

Figure 10. Aleutian-Beringian Plant Distributions.

a. Plant Distributions Lining the Northern Pacific Arc.

b. Plant Distributions Divided by the Aleutians.

c. Plants with Beringian Distributions.

Figure 11. Aleutian-Beringian Distributions, cont'd.

a. The Aleutians and the Alaska Peninsula.

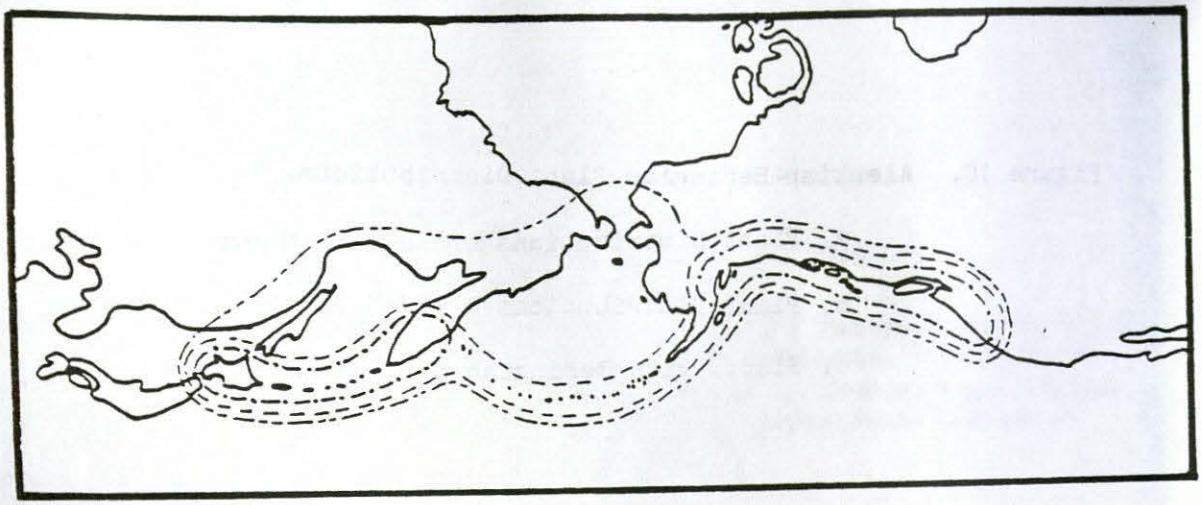
b. Plant Distributions along the Southwest Coast.

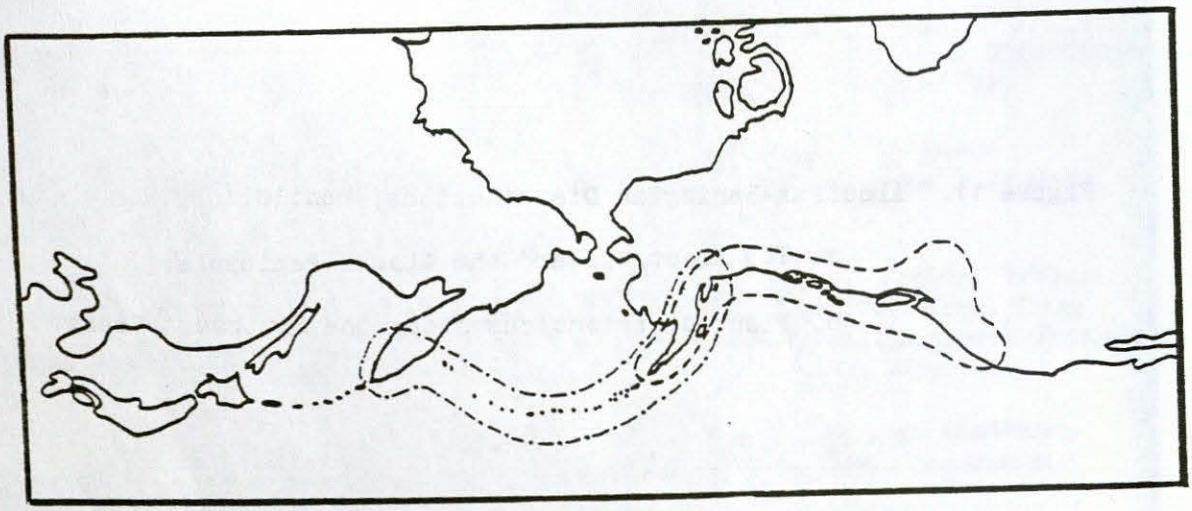
Figure 12. Rocky Mountain Plant Distributions.

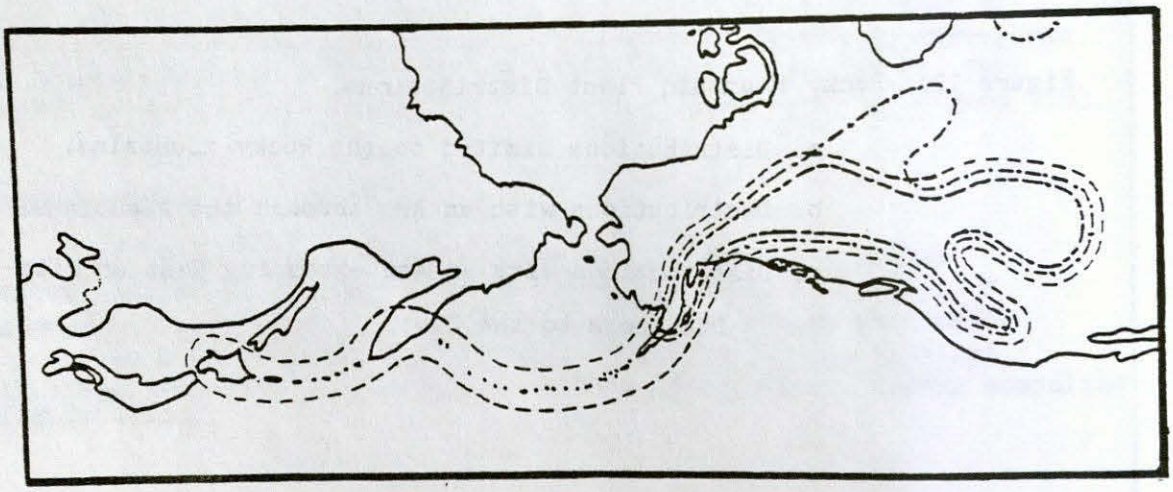
a. Distributions Limited to the Rocky Mountains.

b. Distributions with an Arm through the Aleutians.

c. Distributions with an Arm extending East or with Disjuncts to the East.







Distributions with an Arm Extending East or with Disjuncts to the East: Antennaria parvifolia, Amelanchier alnifolia, Arabis divaricarpa, A. hoeboellii, Arnica chamissonis, Draba aurea, Dryas drummondii, Erigeron lonchophyllus, Osmorhiza depauperata, Salix scouleriana, Senecio indecorus, Valeriana sitchensis, Veratrum ecshscholtzii, Woodsia scopulina (Figure 12c).

Distributions with an Arm through the Aleutians: Arnica chammisonis, Cardamine oligosperma, Carex pyrenaica, Erigeron peregrinus, Ranunculus eschscholtzii, Veronica wormskjoldii (Figure 12b).

North American Boreal Plant Distributions

Coast to Coast Plant Distributions: Actaea rubra, Agropyron caninum, Agrostis scabra, Anemone multifida (disjunct), Anemone parviflora, Aquilegia brevistyla, Betula papyrifera, Carex concinna, C. leptalea, Carex membranacea, Cornus canadensis, C. stolonifera, Cypripedium passerinum (disjunct), Epilobium ciliatum, Erysimum inconspicuum, Geocaulon lividum, Habenaria hyperborea, H. obtusata, Ledum groenlandicum, Lipidium densiflorum, Listera boreale, Orchis rotundifolia, Picea glauca, P. mariana, Populus balsamifera, P. tremuloides, Potentilla arguta, P. pensylvanica (disjunct to Europe), Ranunculus abortivus, Ribes glandulosum, R. hudsonianum, R. lacustre, Salix bebbiana, S. myrtillifolia, Senecio pauperculus, Shepherdia canadensis, Smilacina stellata, Tofieldia glutinosa (disjunct), Viburnum edule, Viola renifolia, Zigadenus elegans (Figure 13a).

Plants Limited to N.W. North America: Delphinium glaucum, Senecio lugens (Figure 13b).

Distributions with an Arm through the Aleutians: Arabis lyrata, Euphrasia arctica, Geum macrophyllum, Habenaria dilatata, Heracleum lanatum, Solidago multiradiata, Spiranthes romanzoffiana, Streptopus amplexifolius (disjunct to Europe)(Figure 13c).

North American Arctic Plant Distributions

Coast to Coast Plant Distributions: Carex scirpoidea, Dryas integrifolia, Erigeron humilis, Gentianella propinqua, Lesquerella arctica, Parnassia kotzebuei, Pedicularis capitata, Primula egaliksensis, Salix brachycarpa (disjunct), Saxifraga tricuspidata (Figure 13a).

Plants Limited to N.W. North America: Arnica lessengii, Astragalus nutzotinensis, Erigeron purpuratus, Montia sarmentosa, Oxytropis huddlesonii, Taraxacum carneocoloratum, Thlaspi arcticum (Figure 13b).

Distributions with an Arm through the Aleutians: Antennaria monocephala, A. umbrinella, Parnassia kotzebuei (Figure 13c).

Combined North American Arctic-Boreal Plant Distributions.

a. Coast-to-Coast Plant Distributions.

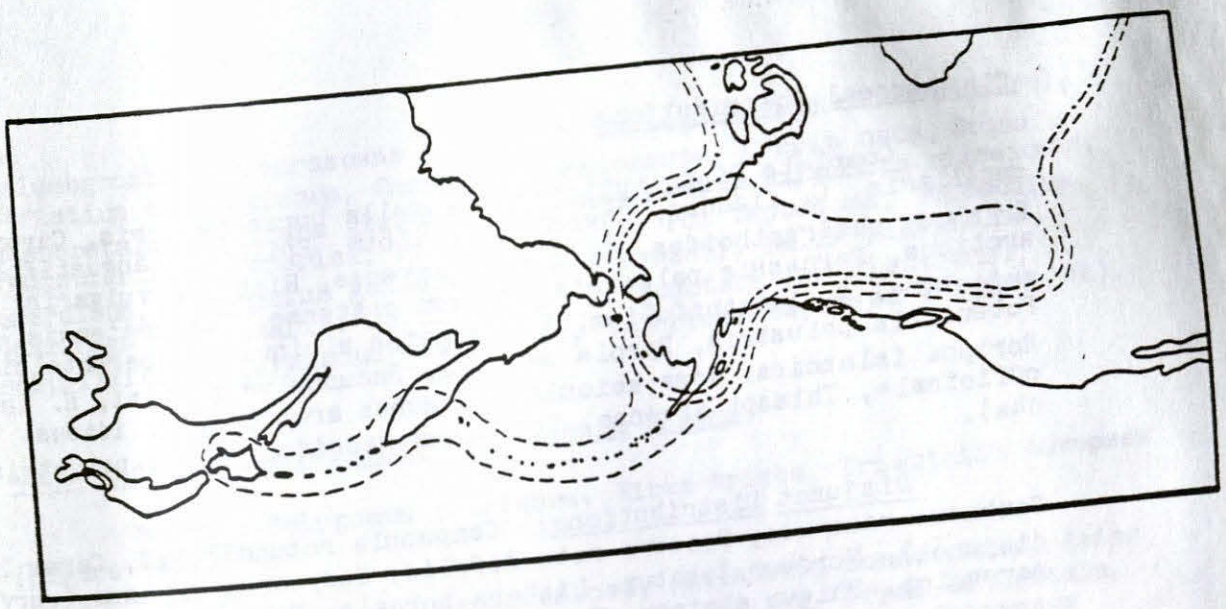
b. Plants Limited to N.W. North America.

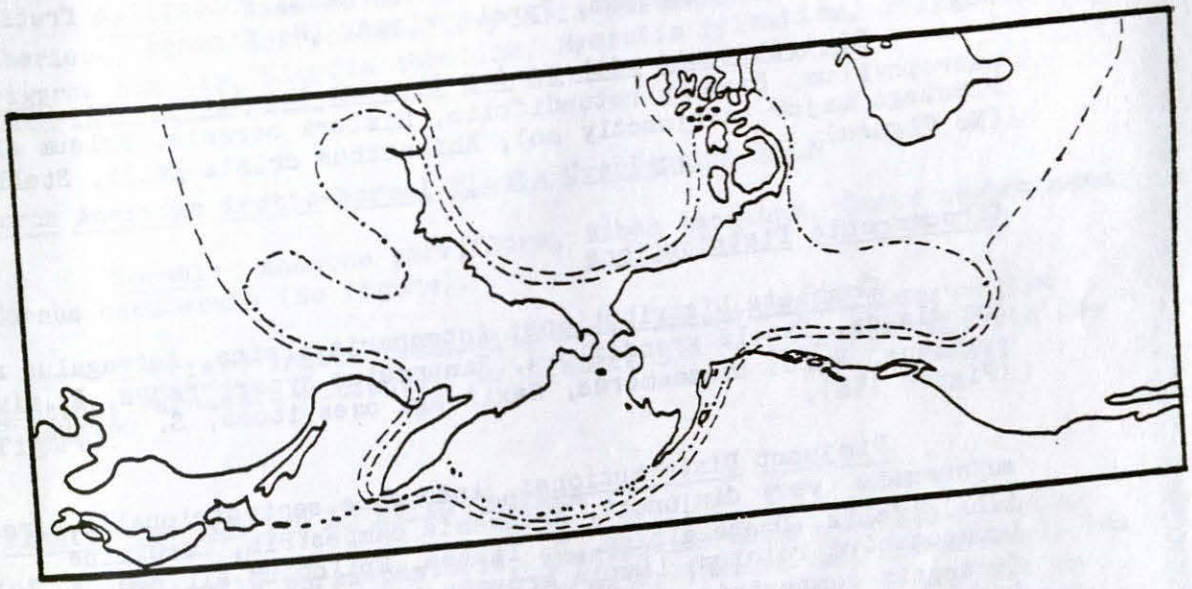
c. Distributions with an Arm through the Aleutians.

Combined Arctic-Boreal Distributions with Ranges Divided by Strait.

a. Combined Circumarctic-Boreal Distributions.

b. Arctic-Boreal Plants Centrally Distributed from the Strait.





Circumboreal Distributions

Complete Distributions: Capsella bursa-pastoris, Carex capillaris, C. diandra, Chenopodium album, Epilobium angustifolium, Erysimum cheiranthoides, Equisetum arvense, Hippuris vulgaris, Juncus arcticus, Parnassia palustris, Phleum pratense, Poa pratensis, Polygonum aviculare, P. lapathifolium, Potamogeton alpinus, P. berchtoldii, Potentilla palustris, Pyrola secunda, Ranunculus gmelini, R. lapponicus, Rorippa islandica, Rosa acicularis, Rubus arcticus, R. idaeus, Taraxacum officinale, Thlaspi arvense, Trifolium hybridum, Viola palustris (Figure 14a).

Disjunct Distributions: Campanula rotundifolia, Carex loliacea, Sambucus racemosa, Drosera rotundifolia, Hedysarum alpinum (very disjunct), Hordeum jubatum, Listera boreale, Potentilla fruticosa, P. norvegica, Phleum alpinum, Pyrola virans (No figure).

Distributions with an Arm through the Aleutians: Geum macrophyllum, Drosera rotundifolia, Listera boreale, Phleum alpinum, Plantago major (disjunctly so), Rhinanthus crista-galli, Stellaria media (No figure).

Circumarctic Distributions

Complete Distributions: Antennaria alpina, Astragalus alpinus, Poa glauca, Pyrola grandiflora, Ranunculus hyperboreous, R. nivalis, R. pygmaeus, Rubus chamaemorus, Saxifraga caespitosa, S. cernua, S. nivalis (Figure 14a).

Disjunct Distributions: Androsace septentrionalis, Arenaria sajenensis (very disjunct), Artemesia campestris, Cardamine bellidifolia, Draba alpina, D. lactea, Epilobium alpinum, E. latifolium, Lomatogonium rotatum, Luzula arcuata (very disjunct), Juncus triglumis, Oxytropis campestris, Polemonium boreale (very disjunct), Potentilla hookeriana, S. oppositifolia, Sedum rosea, Sibbaldia procumbens (very disjunct), Thalictrum alpinum, Tofeildia coccinea (No figure).

Distributions with an Arm through the Aleutians: Chrysosplenium tetandrum, Epilobium alpinum, E. latifolium, Lomatogonium rotatum, Luzula arcuata, Potentilla hyparctica, Sibbaldia procumbens, Taraxacum ceratophorum, Tofieldia coccinea (No figure).

Arctic-Boreal Plants Centrally Distributed from the Strait

Boreal Plants: Aconitum delphinifolium, Alnus crispa, Anemone richardsonii, Arnica lessengii, Artemesia furcata, Boschniakia rossica, Carex podacarpa, Festuca altaica, Gentianella amarella, Salix alaxensis, Spiraea beauverdiana, Thalictrum sparsiflorum, Viola palustris (Figure 14b).

Arctic Plants: Arenaria macrocarpa, Arnica loiuseana, Artemesia norvegica, A. telesii, Astragalus umbellatus, Bromus pumpellianus,

Calamogrostis purpurascens (disjunct through Northern Pacific Arc), Cerastium beeringianum, Campanula lasiocarpa, Crepis nana, Draba stenopetala, Gentiana glauca, Ledum decumbens, Oxytropis nigrescens, Pedicularis labradorica, P. langsdorfii, Poa leptocoma, Polemonium caeruleum, Ranunculus gelidus (very disjunct), Salix planifolia, Saxifraga bronchialis, S. davurica, S. punctata (w/ Aleutians), S. serpyllifolia, Taraxacum eriophorum, Valeriana capitata (Figure 14b).

Asian Arctic-Boreal Plants Overlapping Alaska

Boreal: Polygonum caurianum, Ribes triste, Trientalis europaea (Figure 14b).

Arctic: Anemone narcissiflora, Antennaria monocephala, Aster sibericus, Carex scirpoidea, Corydalis pauciflora, Dryas octopetala, Erigeron humilis, Lloydia serotina, Myosotis sylvatica, Polygonum bistorta (Figure 14b).

North American Arctic-Boreal Plants Overlapping Asia

Boreal: Anemone parviflora, Ribes lacustre, Carex membranacea, Cornus canadensis (No figure).

Arctic: Arnica lessingii, Dryas integrifolia, Lesquerella arctica, Parnassia kotzebuei (w/ Aleutians), Pedicularis capitata (No figure).

Plants Cosmopolitan in North America

Capsella bursa-pastoris, Chenopodium album, Juncus bufonius (native), Phleum pratense, Plantago major (native and introduced), Poa pratensis (introduced phase), Polygonum aviculare, P. lapathifolium (Native and introduced), Potamogeton berchtoldii (native), Rorrippa islandica, Stellaria media, Taraxacum officianale, Thlaspi arvense, Trifolium hybridum (No figure).

APPENDIX C

A List of Plants According to Hulten.

A LIST OF PLANTS ACCORDING TO HULTEN

This section itemizes most of the species mentioned by Hulten (1937) that pertains to the plant migrational patterns of the flora in Eklutna Valley. It must be understood that there is some error involved in the attempt to translate the species concepts and taxanomic ranks of the species cited. In addition, plant ranges were not as completely known as they are now, so some of these species may have been applied incorrectly to demonstrate a particular pattern.

Northern Beringian Radiants -- North American

Radiating from the Yukon Valley: Cypripedium passerinum, Euphrasia arctica, Primula egaliksensis, Salix lanata ssp. richardsonii.

Radiating from Northern Beringia: Arnica louiseana var. frigida, Astragalus umbellatus, Dryas integrifolia, Polemonium caeruleum, Saxifraga tricuspidata.

Bi-lateral Northern Beringian Radiants

Arctic Circumpolar Plants Radiating from Northern Beringia: Draba stenopetala, Lesquerella arctica, Pyrola grandiflora.

Arctic Circumpolar Plants Radiating from Northern Beringia, including along the Pacific Coast: Aconitum delphinifolium, Anemone richardsonii, Antennaria monocephala, Arctostaphylos alpina, Arnica lessingii, Erigeron peregrinus, Botrychium boreale, Carex bicolor, Carex saxitilis, Cassiope tetragona, Draba alpina, Draba lactea, Dryopteris fragrans, Juncus castaneus, Ledum decumbens, Luzula wahlenbergii, Montia sarmentosa, Poa abbreviata, Ranunculus nivalis, Salix arctica, Salix planifolia var. pulchra, Saxifraga bronchialis, Saxifraga eschscholtzii, Tofieldia coccinea.

West American Coast Radiants

Plants Radiating from the Coastal Refugia to as far as the Bering Sea: Castelleja unalaschcensis, Heuchera glabra, Lupinus nootkatensis, Cornus canadensis, Potentilla villosa, Salix stolonifera, Viola langsdorfii.

West American Continental Radiants

Western American Plants: Agropyron caninum var. andinum, Amelanchier alnifolia, Antennaria parviflora, Arnica diversifolia, Carex concinna, Carex petasata, Erigeron purpuratus, Listera borealis, Polemonium pulcherrimum, Populus trichocarpa, Rubus pedatus, Salix myrtillifolia.

Boreal American Plants extending from Coast to Coast: Arabis hoelboellii (disjunct), Betula glandulosa, Betula papyrifera, Carex bicolor var. androgyna, Dryas drummondii (disjunct), Ledum groenlandicum, Populus tremuloides, Ribes lacustre, Senecio pauciflora (somewhat disjunct), Urtica dioica var. gracilis.

Boreal American Plants overlapping into Eastern Asia: Boschniakia rossica, Campanula lasiocarpa, Gentianella propinqua, Gentiana glauca, Geranium erianthum, Geum rossii, Habenaria obtusata, Hordium jubatum, Potentilla pensylvanica, Pyrola asarifolia, Ranunculus abortivus, Ribes triste, Salix bebbiana, Senecio lugens, Spiraea beauverdiana, Thalictrum sparsiflorum, Zygadenus elegans.

Arctic-Montane Plants

Circumpolar Arctic-Montane Plants not occurring in the Southern Rockies: Arctogrostis latifolia, Arenaria macrocarpa, Diapensia lapponica, Draba alpina, Dryopteris fragrans, Festuca altaica, Heirochloe alpina, Juncus arcticus, Loiseleuria procumbens, Lychnis furcata, Salix arctica, Salix gluaca, Salix reticulata, Salix rotundifolia, Saxifraga davurica.

Western American Arctic-Montane Plants (with main distributions in Asia): Artemesia norvegica, Myosotis sylvatica, Polemonium pulcherrimum, Ranunculus gelidus, Saxifraga bronchialis, Saxifraga punctata, Saxifraga serpyllifolia, Valeriana capitata.

Extreme Northern Circumpolar Arctic-Montane Plants: Agropyron caninum var. latiglume, Artemesia telesii, Cassiope tetragona, Dryas octopetala, Luzula arcuata, Gentianella tenella, Lychnis apetala, Pedicularis capitata, Poa arctica.

Circumpolar Arctic-Montane Plants extending as far south as the Gulf of St. Lawrence: Anemone parviflora, Artemesia campestris, Artemesia frigida, Astragalus alpinus, Calamogrostis purpurascens, Cardamine bellidifolia, Carex capillaris, Carex macloviana, Carex saxitilis, Carex scirpoidea, Epilobium alpinum, Epilobium latifolium, Eriophorum scheuchzeri, Juncus castaneus, Juncus triglumis, Lomatogonium rotatum, Luzula parviflora, Oxyria dygynia, Phleum alpinum, Poa alpina, Polygonum viviperum, Ranunculus cymbalaria, Ranunculus hyperboreus, Ranunculus pygmaeus, Salix brachycarpa, Salix planifolia, Saxifraga ceaspitosa, Saxifraga cernua, Saxifraga oppositifolia, Saxifraga rivularis, Sibbaldia procumbens, Silene acaulis, Stellaria calycantha, Stellaria longipes, Streptopus amplexifolius, Taraxacum ceratophorum, Thalictrum alpinum, Trisetum spicatum, Veronica wormskjoldii.

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A FLORISTIC STUDY OF THE EKLUTNA VALLEY CHUGACH STATE PARK, ALASKA

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M.S. Degree, April 1986

ABSTRACT

This paper is the result of a study conducted in the Eklutna Valley of the Southcentral Region in Alaska. Through intensive collection and observation over a period of three summers, from 1983 through 1985, it was learned that the valley has at least 372 species and 18 infraspecific taxa, representing approximately 27% of the total Alaska-Yukon flora. Three percent of the flora consisted of plants regarded as endemic to the the region and 4% were introductions. Approximately 7% were annuals and 93% were woody or herbaceeous perennials. There were 5 major, and 22 minor, range extensions discovered. Of those, Carex petasata and Carex sprengellii represent new state records. Also collected were two species of plants presently under consideration for federal listing, Taraxacum carneocoloratum and Thlaspi arcticum. The largest families were found to be Asteraceae (at 37 species), Poaceae (30), and Cyperaceae (27). In addition to an annotated list of the species collected, this paper also includes discussions of the valley's flora in reference to topography, geology, climate, plant zonation, and migration.

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