

**KENAI FJORDS NATIONAL PARK  
VASCULAR PLANT INVENTORY  
FINAL TECHNICAL REPORT**



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KENAI FJORDS NATIONAL PARK VASCULAR PLANT INVENTORY

**ABSTRACT**

In 2003 the Alaska Natural Heritage Program (AKNHP) conducted vascular plant field inventories in Kenai Fjords National Park in accordance with a cooperative agreement with the National Park Service. The primary goal was to document greater than 90% of the vascular plant species expected to occur within the Park and significantly improve our understanding of current species distributions. The inventory targeted diverse habitat types and poorly-sampled areas. The AKNHP staff visited the primary ecogeographic regions and sampled intensively within these regions from early July to early August, 2003. A total of 561 specimens were collected, recorded, and pressed. Duplicate or triplicate sheets are present for many of the specimens. Three hundred twelve (312) unique taxa are represented, and 201 are new records for the Park. Prior to 2003, 217 taxa were known from an estimated expected total of 543. Thus, ca. 40% of the expected taxa were previously known. After the 2003 field season, the number of known taxa nearly doubled to 418. This represents 77% of vascular plant taxa expected in the Park. A number of finds were significant range extensions or taxa of conservation concern. Collections were made of four globally or regionally rare species: a rare scurvy grass, *Cochlearia* cf. *sessilifolia* (G1Q-S1); a rare bog orchid, *Platanthera chorisiana* (G3-S3); a rare poppy, *Papaver alboroseum* (G3G4-S3); and two rare sedges, *Carex phaeocephala* (G4-S1S2), and *Carex lenticularis* var. *dolia* (G5T3Q-S3). Twelve minor range extensions were found, representing new records for the Kenai Peninsula. *Cerastium fontanum* (mouse-ear chickweed) and *Poa annua* (annual blue grass) were the only introduced plants collected in the Park.

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## EXECUTIVE SUMMARY

The Inventory and Monitoring Program (I&M) of the National Park Service supported vascular plant inventories to document the occurrence, distribution, and relative abundance of plants occurring in the Southwest Alaska Network. The Southwest Alaska Network (SWAN) includes Lake Clark National Park and Preserve (LACL), Katmai National Park and Preserve (KATM), Alagnak Wild River (ALAG), Aniakchak National Monument and Preserve (ANIA), and Kenai Fjords National Park (KEFJ). The inventory was developed to provide baseline information for future monitoring and management of natural resources within the SWAN. In 2001, 2002, 2003, and 2004 the University of Alaska Anchorage (UAA), Alaska Natural Heritage Program (AKNHP) conducted field inventories in LACL, KATM, ALAG, KEFJ, and ANIA under Cooperative Agreement No. 1443CA991000013, Modifications 10, 13, 17, and 30. The primary goal was to document 90% or more of the vascular plant species expected to occur within the parks and significantly improve our understanding of current species distributions. The inventories targeted diverse habitat types and poorly sampled areas. This report covers inventories in Kenai Fjords National Park. Discussions of inventories in LACL, KATM, ALAG, and ANIA units are covered in separate reports (Lipkin 2002, Carlson et al. 2003, Carlson et al. 2004, Carlson et al. in prep.).

Following an analysis of previous floristic surveys, we noted that nearly all collections were from low elevations in the northeast corner of the Park (Exit Glacier area and Aialik Bay) and the extreme southern end of the Park (Nuka Bay); large ecogeographic areas had not been inventoried. After discussions with National Park Service personnel and the Alaska Plant Inventory Working Group, gaps were identified and floristic sampling areas targeted. Much of KEFJ is glaciated or comprised of nearly vertical rock-faces, limiting possible sampling areas. This information was taken into account when identifying sites to inventory. Collection sites in the southwest region of the Park were concentrated at Nuka Bay and McCarty Fjord. For the central and northeastern portion of the Park, collection sites were located at Paguna, Harris, and Aialik Bays. Last, we chose two high elevation regions (Resurrection River highlands and Upper Nuka River) to focus on alpine and more interior-associated taxa. The location of collection sites covers most geographic regions and plant community types of KEFJ, with the exception of nunataks in the Harding Icefield, which are difficult and expensive to access.

While in remote collection regions, we inventoried by hiking to as many habitat types and geographic areas as possible and collecting specimens that were known to be new records or that were considered significant. Access to coastal collection sites was by the NPS vessel *Serac*. Higher elevation sites at Placer Creek and Nuka River were accessed by helicopter. At each collection site, data were gathered on site characteristics, including latitude and longitude, associated species, soil conditions, etc. Plants were then pressed and dried and catalogued at the Alaska Natural Heritage Program. Final taxonomic determinations and herbarium mounting of specimens were done by staff of the University of Alaska Fairbanks Museum.

A total of 561 specimens were collected, recorded, pressed, and curated by AKNHP in 2003. Duplicate or triplicate sheets exist for many of the specimens. A total of 312 individual taxa are represented and 201 are new records for the Park (an additional 34 are taxa that were previously reported but unverified). Roughly, 40% of taxa expected to occur in the Park were known prior to 2003. Following our fieldwork the percentage of known taxa increased to 77%. Twelve taxa represent records filling in moderate to large gaps in their distributions. Collections were made of a number of globally or regionally restricted species: *Cochlearia* cf. *sessilifolia* (G1Q-S1), *Platanthera chorisiana* (G3-S3), *Papaver alboroseum* (G3G4-S3), *Carex phaeocephala* (G4-

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S1S2), and *Carex lenticularis* var. *dolia* (G5T3Q-S3). Additionally, collections were made of two introduced species in Alaska (*Cerastium fontanum* and *Poa annua*).

*Key Words* –

Kenai Fjords National Park, inventory, vascular plants, rare plants, non-native plants



## INTRODUCTION

An Inventory and Monitoring (I&M) Program for the National Park Service (NPS) was established by the US Congress in 1992. The goal of NPS and the I&M program is to establish baseline information on, and monitor long-term trends in, natural resources in the parks. Biological inventories were conducted to establish data to be used in future monitoring programs, make management decisions, conduct research, and educate the public. To meet these objectives, NPS established three program goals:

- Document at least 90 percent of the species of vertebrates and vascular plants expected to occur in the park,
- Describe the distribution and abundance of species of special concern (e.g., rare or invasive species), and
- Provide information necessary to establish a monitoring strategy, with special reference to particular threats and resource issues within each park.

The Alaska Natural Heritage Program (AKNHP) conducted the vascular plant inventory component of the I&M program of the Southwest Alaska Network (SWAN). In 2001 AKNHP botanists inventoried the vascular flora of Lake Clark National Park and Preserve, and in 2002 AKNHP botanists inventoried the floras of Katmai National Park and Preserve and Alagnak Wild River. In 2003, AKNHP botanists and NPS biologists visited specific regions of Kenai Fjords National Park to complete vascular plant inventories. The final SWAN unit was Aniachchak National Monument and Preserve, which was inventoried by AKNHP in 2004. The following report outlines pertinent information from the Kenai Fjords National Park inventory, including the regions inventoried, methods employed, the flora encountered, and a discussion of the importance of those finds.

### Ecological and Geological Background

Kenai Fjords National Park is an extensive, geologically young and dynamic glacial fjord system. It is backed by the Kenai Mountains, possessing the largest ice sheet entirely in Alaska and flanked by the Gulf of Alaska to the south (see Mann 1998 for a discussion of geology and ecological context). The 607,805 million-acre park is one of the most dramatic large-scale glacial retreats in the world, providing unparalleled opportunities for scientific study of ecosystem development.

The Park is dominated by bedrock exposures resulting from tectonic activity and extensive glacial erosion, creating a system of deep, exposed fjords and short, steep rivers (Mann 1998). The region has a strong climatic gradient: warm and wet conditions prevail on the southeast side of the Harding Ice Field and cool and drier climates dominate the northwestern side of the mountains. The region supports a relatively species poor northern Pacific coastal biome. The area does, however, represent the northern range limit for many plant species (Viereck and Little 1972). Coastal coniferous forests of Sitka spruce (*Picea sitchensis*) occur in a discontinuous band throughout the rugged landscape near the northern and western limits of their range. These stands largely lack the presence of western hemlock (*Tsuga heterophylla*) so characteristic of Sitka spruce forests further south and east. Extensive shrub lands of alder and salmonberry dominate the steep side slopes. At higher elevations, grassland and alder mosaics give way to alpine tundra and exposed barrens.

This diversity and dynamism of habitats is reflected in the Park's fauna of 29 terrestrial mammals, 11 marine mammals, over 150 species of birds, and many species of marine fishes. The lands now encompassed in the Park have been important subsistence and village sites of the Unegkurmiut for many centuries (for more discussion, see Crowell and Mann 1998).

## METHODS AND MATERIALS

The AKNHP's vascular plant inventory in Kenai Fjords National Park occurred from 7 July to 1 August, 2003. Compilation of the expected taxa list, site selection, and sampling design preceded field work and was initiated in January of 2002.

### Expected and Known Taxa

To gauge progress toward achieving 90% documentation of the expected flora, an informed list of known and probable taxa was first required. Plant collections from the herbarium of the University of Alaska Museum (ALA) and from the herbaria of the various park units (ANCS+ database) were compiled in a database, along with selected collections from other herbaria, additional observations, and floristic lists from published and unpublished literature. Collections from ALA were verified for both taxonomic identification and geographic location. Collections from ANCS+ were largely unverified by floristic experts for both taxon and geographic location. The records were used by AKNHP to develop lists of taxa known from or expected to occur in the park units. Taxa that were known only from unverified collections or from observations (in particular by NPS biologist Bud Rice) or literature citations were recorded as "Unconfirmed."

Compiling the expected species list for areas that are poorly known is replete with difficulties. We included documented taxa that occurred within 50 km of the park units. This is a very rough approximation of taxa actually present in the Park. Even after revisions were made (based on likely habitats and geography) the list undoubtedly omits taxa in the units and includes taxa that are not present. Taxa known from within 50 km of the Park boundary, or that were expected to occur in the Park for other reasons, were recorded as "Probably Present." Using these criteria we initially determined that the percentage of the total expected flora known to be present in the Park was 41%. This initial analysis did not fully account for taxonomic synonyms in the list.

For hundreds of years botanists have tried to create natural classifications that are stable. However, ideas about taxonomic relationships are continually being reevaluated and often the same biological entity is described by different authors and given different names. Thus, the biological names are in a constant state of flux. This nomenclatural confusion has been identified as a research priority that is fundamental to ecosystem management and biodiversity conservation. This primary need, noted by the White House on Biodiversity and Ecosystem Dynamics Subcommittee, requires improvements in the organization of, and access to, standardized nomenclature. ITIS (originally referred to as the Interagency Taxonomic Information System: <http://www.itis.usda.gov/>) was designed to fulfill these requirements.

We used the standardized nomenclature of ITIS to eliminate all taxa that were recorded more than once. For example, there is one currently accepted name for Sitka alder, *Alnus viridis* ssp. *sinuata*. However, the unaccepted synonyms *A. crispa* ssp. *sinuata* and *A. sinuata* were also present on the list, as well as *A. crispa* (*Alnus crispa* is a synonym for *A. viridis* ssp. *crispa*, a taxon restricted to eastern North America). We reanalyzed the list to remove the large number of synonyms that artificially inflate the diversity in the park. Synonyms were eliminated from the "Probably Present" list if found on the "Unconfirmed" list. If synonyms were found on the

“Present” list, then synonyms were removed from both the “Probably Present” and “Unconfirmed” lists.

After synonym removal, the number of taxa expected to occur in KEFJ dropped from 573 to 543. Of the 543 taxa, 127 were listed as “Present.” A total of 326 were listed as “Probably Present,” and 90 were listed as “Unconfirmed.” This indicates that 40% of the expected flora was documented prior to AKNHP fieldwork. ITIS names are used in this document, with names used in Hultén (1968) included parenthetically for commonly encountered species that NPS personnel may be more familiar with.

### **Floristic History of Kenai Fjords National Park**

The earliest known collections of vascular plants from the Kenai Fjords area are from 1932 (G. W. Gasser and E. Hultén; NPSpecies 2004). More numerous collecting occurred in the Seward to Moose Pass area from 1939 to 1941 by J. P. Anderson (Fig. 1), A. Nelson, and R. A. Nelson. From 1979 on, botanists such as R. H. Day, A. A. Hoover, and M. McNulty began visiting the area that is now included by the Park. In general, collections have been haphazard and opportunistic. NPS biologist, Bud Rice made more extensive collections throughout the Park in the 1980’s and 1990’s. Most of these collections have not been verified. Nearly all species known in the Park were collected in the vicinity of Aialik Bay, West Arm, and Exit Glacier. Figure 2 shows AKNHP collections from 2003 and previous collections in KEFJ and surrounding areas.

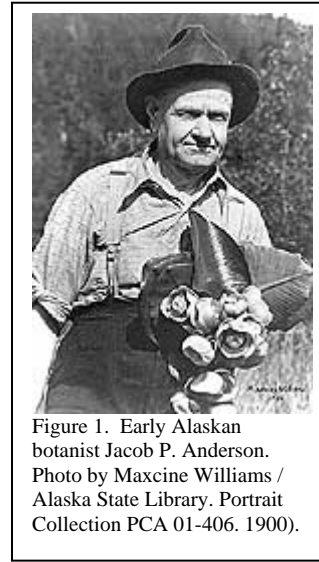
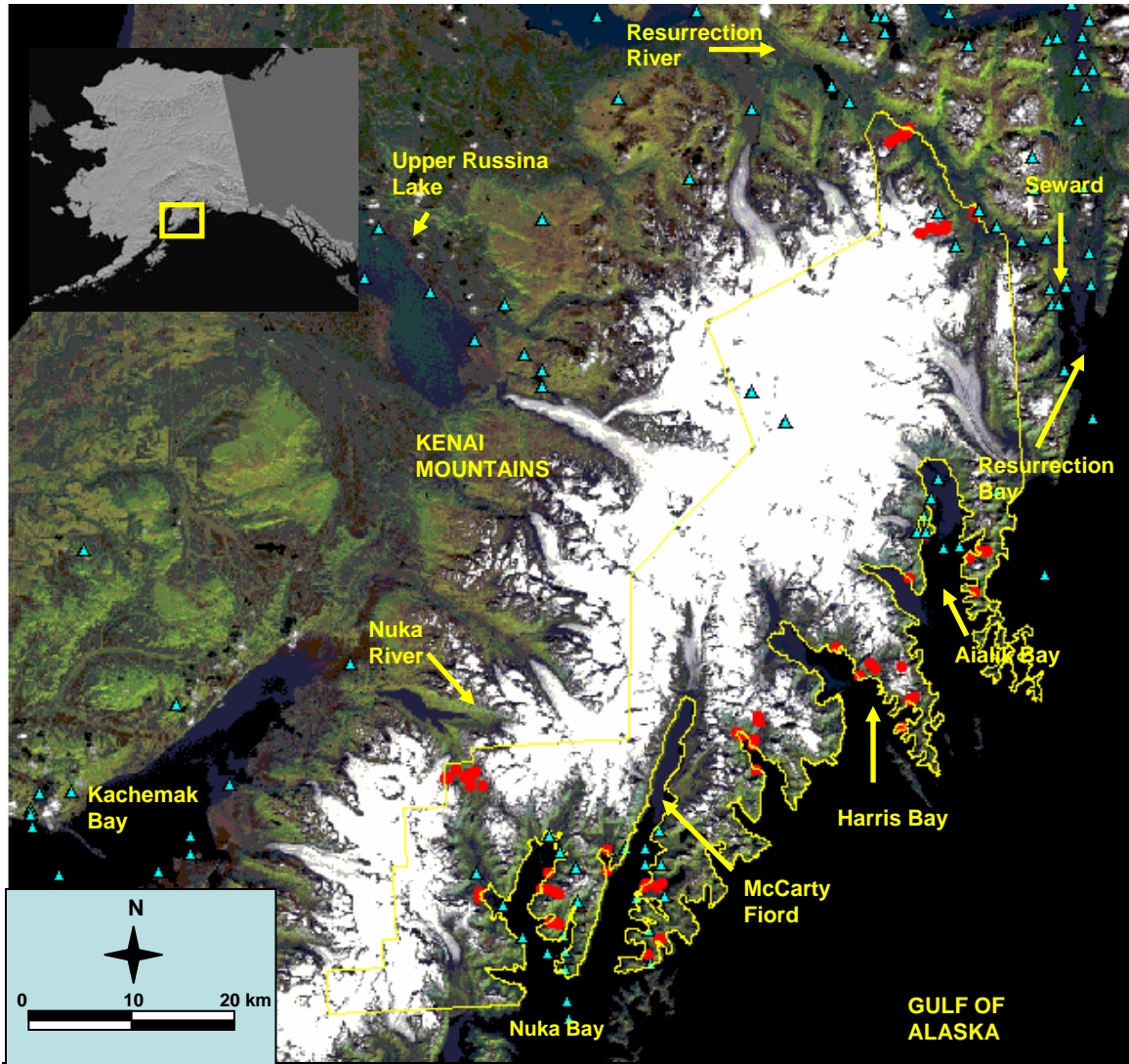


Figure 1. Early Alaskan botanist Jacob P. Anderson. Photo by Maxcine Williams / Alaska State Library. Portrait Collection PCA 01-406. 1900).

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Figure 2. Kenai Fjords National Park. Plant collection locations by AKNHP botanists in 2003 are shown as circles; approximate locations of previous collections in and adjacent to KEFJ are shown as triangles; KEFJ boundary is displayed as a yellow line. Inset map shows KEFJ relative to Alaska.



### Sampling Design

In order to attain the goal of documenting 90% of the expected flora, we used the reconnaissance method of floristic survey. This method was recommended as the best approach for plant inventories in all Alaska parks by the wide group of botanists at the Alaska Plant Inventory Working Group September 2000 meeting; the general methodology is also supported by Catling and Reznicek (2003). The reconnaissance method involves identifying survey areas within landscape units via spatial analysis using the following key criteria:

- regionally unique geological or geomorphologic features
- communities or habitats of biological concern
- likely habitats of expected species, as indicated by regional floras and Park collections
- under-represented plant communities in existing inventories

- logistical feasibility (e.g., access, cost)
- potential of certain types of sites to maximize species and communities encountered (e.g., ecotones, high environmental gradient areas)

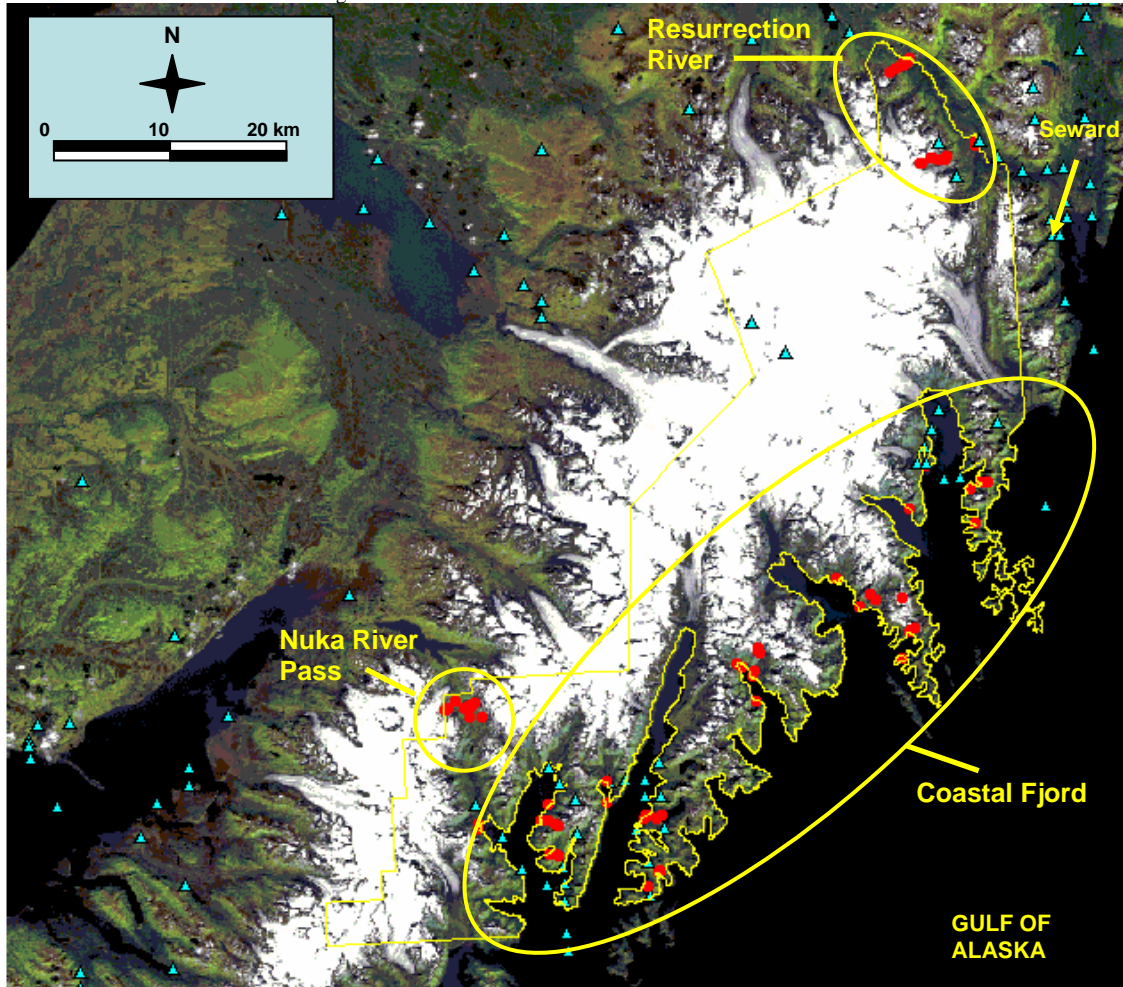
We selected collection sites to represent the range in variability of ecoregional subsections (Tande and Michaelson 2001), landcover types, wetlands, plant associations, and vascular plant species diversity within KEFJ. Collection sites were explored by covering the region by foot and by carefully examining all the plant species to identify those that were new or noteworthy. Greater time and effort was expended in high diversity and high environmental gradient areas.

This targeted, judgment-based approach is an efficient way to locate populations of species of special concern based on known habitat preferences and patterns of distribution. As surveys progressed, the list of species of special concern was refined, as well as knowledge of species' habitat and geography.

### Site Descriptions

Based on the sampling design criteria, we concentrated our inventory on the KEFJ coastline, Nuka River Pass, and the Resurrection River (Fig. 3).

Figure 3. Landsat image of KEFJ, showing regions (yellow outlined polygons) and specific collection sites by AKNHP (circles). Previous collections are shown as triangles.

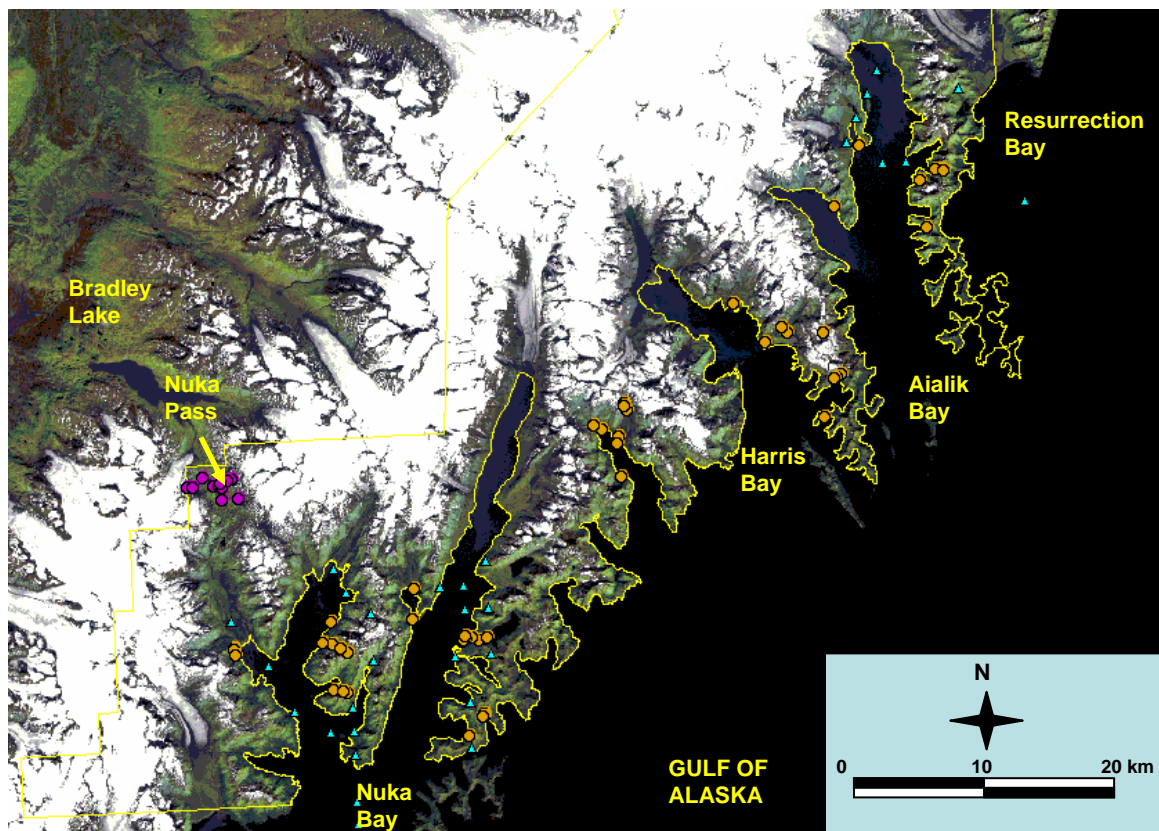


It is impractical to discuss each of the nearly 120 collection sites from 2003, so we discuss collections associated with particular habitat types for the Coastal Fjord, Nuka River Pass, and Resurrection River sampling regions.

### *Coastal Fjord Region*

Areas from the southwesterly Park border at the West Arm of Nuka Bay to the northeast border of the Park at Resurrection Bay were inventoried between 7 July and 22 July 2003 by six NPS and AKNHP botanists and ecologists. A few collections were known from the southerly and northerly portions of this region prior to 2003. We collected specimens from nearly 50 sites throughout the unit. Figure 4 shows the region covered and specific locations of all collection sites, which were accessed by the NPS vessel *Serac* and by foot. The primary habitat types encountered at low elevations were beach and halophytic-sedge meadows, exposed bedrock cliffs, coastal headlands, spruce forests, wet sedge meadows and fens, and alder-salmonberry thickets. At higher elevations alder-salmonberry thickets, wet sedge meadows and fens, and ericaceous shrub/forb meadows were common. At the highest elevations (500 to 700 m), herbaceous-dwarf shrub tundra and exposed scree slopes were dominant.

Figure 4. 2003 collection sites in the Coastal Fjord Region (orange circles) and Nuka River Pass (violet circles). Approximate locations of previous collections are shown as blue triangles.



The geology and physiography of the Coastal Fjord Region is an intricate system of fjords, drowned cirques and rugged mountains. Holocene granites and granodiorites are the dominant parent material, except the outer Aialik, Harris, and McCarty Peninsulas, where undifferentiated Cretaceous sedimentary rocks are found (Tande and Michaelson 2001). The up-bay granitic areas of the coastal region are more heavily shaped by glacial action and erosion. Quaternary deposit features such as tidal flats and marshes, beaches, sand and gravel floodplains, and river deltas are only found in protected areas (Tande and Michaelson 2001).

In the Coastal Fjord Region we made 379 collections from the following habitats:

- Intertidal and supratidal zone (elev. 0-12 m) – Many of specimens were collected from mud flats and shingle beaches across the west side of the Park. We also made collections in supratidal halophytic grass/forb meadows from numerous sites. The mud flats and shingle beaches were primarily fine silt or cobble beaches dominated by open stands of beach rye and seabeach sandwort. Dominants included *Puccinellia nutkaensis*, *Honckenya peploides*, *Argentina egedii* (= *Potentilla egedii*), and *Plantago maritima* (Fig. 5). *Honckenya peploides* and *Leymus mollis* (= *Elymus arenarius*) were abundant in the upper tidal zone. In supratidal meadows *Leymus mollis*, *Carex lyngbyei*, *Phleum alpinum*, *Ligusticum scoticum*, *Angelica lucida*, and *Lathyrus maritimus* were common. Numerous collections were made in brackish estuaries from McCarty Fjord to Aialik Bay (Fig. 6).



Figure 5. Intertidal and supratidal zones along a high energy beach of the Coastal Region. *Honckenya peploides*, *Leymus mollis*, and *Lathyrus maritimus* are the dominant species along the upper strand. *Alnus viridis* and *Picea sitchensis* are the primary woody species above the tidal communities.



Figure 6. Supratidal estuary at Pedersen Lagoon. A diversity of salt tolerant graminoid and forb species are present in this habitat on the back side of the beach ridge.

- Sitka spruce-hemlock and alder forests (elev. 9-45 m) – Just above the supratidal zone, a band of Sitka spruce forest was dominant in many areas of the park. This zone generally transitioned into alder at higher elevations. Soils were moist and organic with a substantial layer of mosses. Species diversity was generally low. The dominant species associated with the habitat were *Picea sitchensis*, *Alnus viridis*, *Vaccinium ovalifolium*, *Rubus pedatus*, *Oplopanax horridus* (= *Echinopanax horridum*), *Moneses uniflora*, *Prenanthes alata* (Fig. 7).
- Peat lands (elev. 35-180 m) – Mid-elevation peat lands, including rich *Sphagnum* fens and steep “hanging” fens were sampled in the North Arm of Nuka Bay, Chance Cove, McCarty Fjord, and Northwestern Lagoon, and dominated by *Carex pauciflora*, *Nephrophyllidium crista-galli* (= *Fauria crista-galli*), *Drosera rotundifolia*, *Gentiana douglasii*, *Eriophorum angustifolium*, *Trichophorum caespitosum*, and *Vaccinium uliginosum*.



Figure 7. Mid-elevation, well developed spruce and mountain hemlock forest, with a strong shrub and moss component in Paguna Arm.



Figure 8. Side slope meadows in alder, rocky outcrop mosaic, Paguna Arm.

- Side slope meadows (elev. 20-300 m) – habitats in spruce forests and alder shrub lands occurred in avalanche chutes, mid-elevation stream margins, and lush subalpine meadows (Fig. 8). Over 100 specimens were collected from this habitat type. Slopes ranged from 5° to 25°. Soils were generally moist. In the wettest sites the dominant vascular plants were *Nephrophyllidium crista-galli*, *Iris setosa*, and *Sanguisorba stipulata*. *Alnus viridis* ssp. *sinuata*, *Rhodiola integrifolia*, *Carex macrochaeta*, *Heuchera glabra*, and *Saxifraga bronchialis* were associated with moist talus sites.
- Aquatic habitats (elev. 0-400 m) – We paid special attention to ponds and streams throughout the Park. Substrates were generally fine silt and mud in ponds, ranging to coarser sands and gravels in streams. Species richness was generally low, and the species collected was often dominant (e.g., *Equisetum fluviatile* at Delight Lake).
- Alpine heath-meadows and low-elevation tundra (elev. 350-470 m) – High elevation alpine slopes and tundra habitats were encountered throughout the coastal portions of KEFJ. These sites were generally steep, mesic ericaceous tundra composed of species of heather: *Harrimanella stelleriana* (= *Cassiope stellariana*), *Cassiope mertensiana*; and various forbs and graminoids such as *Luetkea pectinata*, *Nephrophyllidium crista-galli*, *Geum calthifolium*, *Carex macrochaeta*, *Saxifraga lyalii*, and *Luzula* spp. (Fig. 9). One lower elevation (60 m) site was an open rocky ericaceous tundra habitat, dominated by *Erigeron peregrinus*, *Loiseleuria procumbens*, and *Vaccinium uliginosum*.



Figure 9. Alpine heath-meadows, talus, and rocky outcrops, McMullen Cove, 430 m elevation.

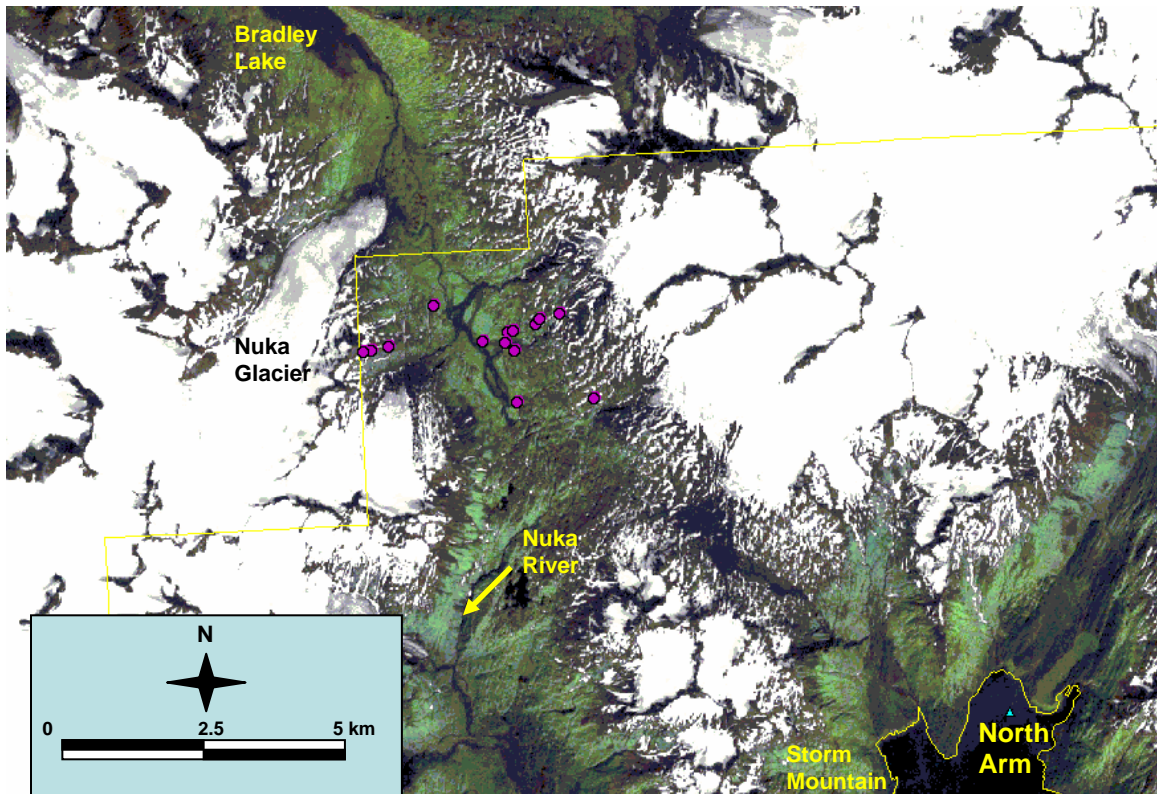


***Nuka River Pass Region***

In the southwest portion of KEFJ the Nuka River connects the coastal region with the interior of the Kenai Peninsula in a broad pass. This alpine pass appears to have opened recently due to the retreat of Nuka Glacier. It is the only ice-free corridor south of Resurrection River connecting the coastal region with the rest of the Kenai Peninsula, and is heavily used by moose, bears, and other mammals (M. Carlson, personal observation). The Nuka River drains south across a broad, gently sloping pass before dropping into Beauty Bay. This pass is 375 m in elevation at the base of the Nuka Glacier, with steep surrounding peaks rising to over 1,000 m. Hanging glaciers are common east and west of the river. Surficial rocks are primarily silt stones, with glacial-fluvial deposits in valley bottoms.

The region was inventoried on 28 to 31 July 2003. Figure 10 shows the region and the specific locations of the collection site. The primary habitat types encountered were moist forb-graminoid meadows, herbaceous-dwarf shrub tundra, and barren slopes (including gravel bars, scree slopes, and rocky outcrops).

Figure 10. 2003 collection sites in the Nuka River Pass Region (violet circles). Approximate locations of previous collections are shown as a blue triangle.



- Moist forb-graminoid meadows (elev. 400-800 m) – Commonly associated species within these sedge, grass, and forb-dominated meadows (Fig. 11) were *Geranium erianthum*, *Erigeron peregrinus*, *Castilleja unalaschensis*, *Artemisia arctica*, *Aconitum delphiniifolium*, *Achillea borealis*, *Carex macrochaeta*, *Carex nigricans*, *Vahlodea atropurpurea*, *Geum calthifolium*, *Gentiana platypetala*. Scattered shrubs were also found in this habitat type and included *Luetkea pectinata*, *Empetrum nigrum*, *Salix barclayi*, and *S. rotundifolia*. Soils ranged from saturated to moist and had a well developed organic layer. Slopes were generally less than 15°.



Figure 11. Moist forb-graminoid meadow along Nuka River.

- Dwarf shrub-forb tundra (elev. 400-980 m) – At mid- to higher elevations we encountered alpine tundra with a greater shrub component. These sites were often dominated by the ericaceous shrubs bog blueberry (*Vaccinium uliginosum*) and crowberry (*Empetrum nigrum*), along with *Artemisia arctica*, *Bistorta vivipara*, *Geum calthifolium*, *Dryas integrifolia*, *Festuca altaica*, *Hierochloa alpina*, *Lloydia serotina*, *Oxytropis nigrescens*, and *Salix rotundifolia* (Fig. 12). We made a few collections in dwarf shrub tundra snowbeds. These sites were wet, cool, and lacked a southern exposure. They were dominated by *Luetkea pectinata*, *Phyllodoce aleutica*, and *Carex macrochaeta*. Soils were moist and acidic with a thick organic layer.
- Open barrens (elev. 375-795 m) – Numerous collections were made in a diversity of open, sparsely vegetated terrain. This included gravel bars along Nuka River and its tributaries, steep crumbling slopes of fine grained soil, scree slopes, and rocky outcrops (Fig. 13). Associated species were varied, but often included two dwarf willows: *Salix arctica* and *S. reticulata*, as well as *Artemisia arctica*, *Bistorta vivipara*, *Saxifraga bronchialis*, and *Silene acaulis*. Soils were nearly devoid of organics and ranged in texture from fine silt to large river cobbles and rocky outcrops. Slopes ranged from negligible on gravel bars, to over 35° on scree slopes, of both east and west aspects.



Figure 12. High elevation dwarf shrub tundra, dominated by *Empetrum nigrum*, *Arctostaphylos alpina*, *Vaccinium uliginosum*, and *Harrimanella stellariana*.



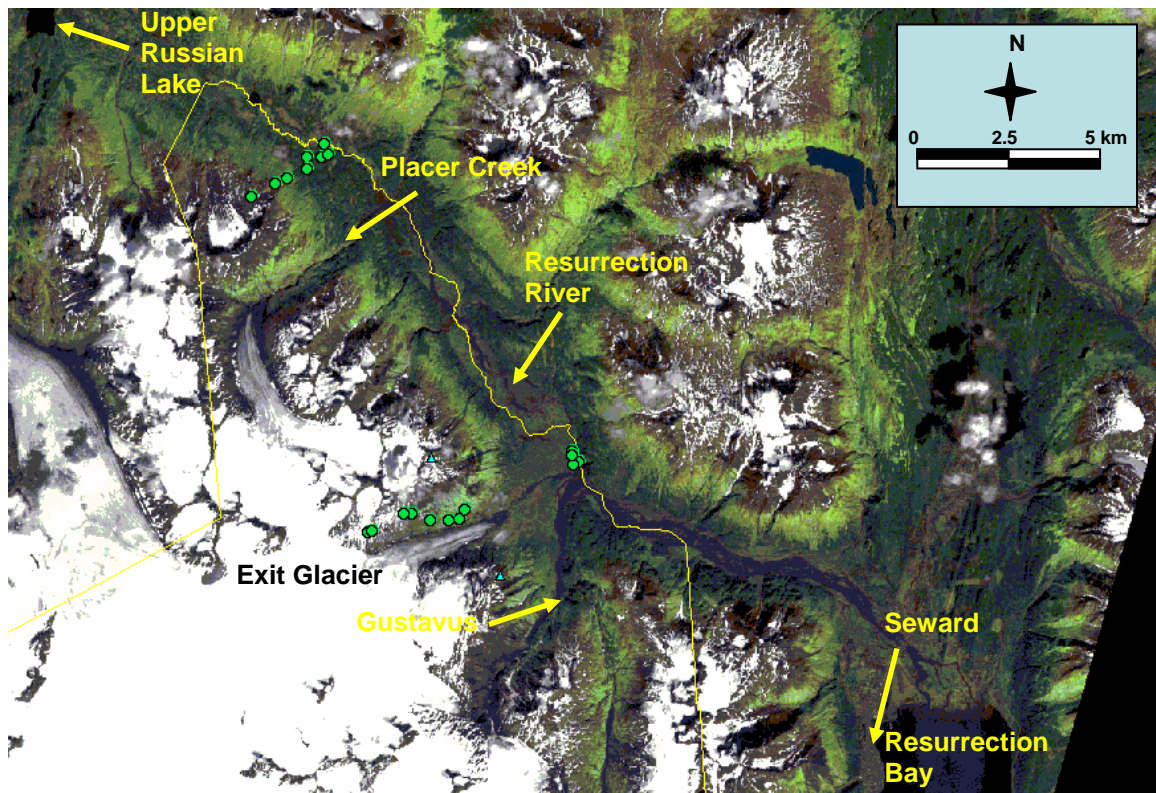
Figure 13. High elevation scree slope (open barrens) habitat in the Nuka River Pass.

***Resurrection River Region***

The Exit Glacier and Placer Creek areas were surveyed in the Resurrection River Valley on 25-27 July and 1, 2 August 2001. Nearly 100 specimens were collected from the region, including low elevation (100 m) as well as high elevation sites (1,100 m). Figure 14 shows the region covered and specific locations of all collection sites. The primary habitat types encountered at low elevations were wetlands and spruce forests. At higher elevations (500 to 1,100 m) we encountered dwarf shrub-forb tundra.

The Resurrection River is a broad river valley, bisecting the Kenai Mountains, east to west. This area has high, steep mountains, rising to over 1,000 m in elevation. The valley itself is lower in elevation than Nuka River Pass and is composed of late seral coniferous forests and peat lands. Wide bands of alder and *Calamagrostis* meadows extend up the mountain slopes to the alpine zone. This area also forms an important corridor, linking the interior with coastal biota.

Figure 14. Resurrection River Region. AKNHP 2003 Collection locations are shown as green circles. Previous collections are shown as blue triangles.



- Wetlands (elev. 100-175 m) – Most of the wetlands we encountered in the Placer Creek and Exit Glacier areas were graminoid dwarf-shrub fens (Fig. 15). These fens were often small, open peat lands in spruce forests that appear to have secondary invasions of shrubs such as dwarf birch (*Betula nana*), crowberry (*Empetrum nigrum*), Labrador tea (*Ledum decumbens* and *L. palustre*), Barclay willow (*Salix barclayi*), cloudberry (*Rubus chamaemorus*), and bog blueberry (*Vaccinium uliginosum*). The commonly encountered graminoid species were *Carex pluriflora*, *C. magellanica*, *C. pauciflora*, and *Eriophorum angustifolium*. Generally there was a thick layer of *Sphagnum* and other moss species, and in some cases water was slowly flowing 3 to 15 cm above the ground.



Figure 15. Mixed shrub and forb wetland in the Resurrection River Valley.

- Spruce forests (elev. 135-205) – We made a number of collections in open Sitka spruce and cottonwood woodlands along the Resurrection River. Additionally, we sampled denser Sitka spruce, devil's club forests (Fig. 16) and along a steep, rocky stream in the forest. Soils ranged from moist, fine textured, and rich in organics in the forest, to coarser with moderate sized cobbles and little organic matter along gravel bars and river cut banks.



Figure 16. Spruce forest community, with an *Oplopanax horridus* understory.

- Dwarf shrub-forb tundra (elev. 400-1100 m) – At mid- to higher elevations at Exit Glacier and Placer Creek we encountered the extensive alpine tundra zone. These sites were generally associated with the low shrubs, *Arctostaphylos alpina*, *Dryas octopetala*, and *Empetrum nigrum*. *Anemone narcissiflora*, *Festuca altaica*, and *F. brachyphylla* (in rocky sites) were the dominant herbaceous species. Soils were generally mesic and moderately acidic. The organic layer was often not well developed. Slopes were moderately steep (15 - 20°) and northeast-facing. This habitat was similar in physiognomy and common species to the dwarf shrub-forb tundra of the Nuka River (see Fig. 12).

## Field Methods

The field personnel consisted of four teams of two to four people. This included four AKNHP botanists: Matt Carlson, Rob Lipkin, Michelle Sturdy, and Bruce Bennett and four NPS ecologists and support staff: Bud Rice, Eric Groth, Lucretia Fairchild, and Evelyn Martin. Transportation in the Coastal Region was by the NPS vessel *Serac*. Helicopters were used to access the Resurrection and Nuka River Pass Regions. Data and specimens were collected during a 26 day field season in the summer of 2003 (8 July to 2 August).

At each region we conducted a complete floristic inventory using the following methods:

- Each region was mapped on an aerial photo or USGS topographic map and a georeferenced point was recorded using GPS. The routes surveyed were also mapped. Representative photos were taken of each region including the plant communities, unusual landforms, and notable plants.
- A description of each region was recorded and significant landforms and plant associations described.
- As new communities were encountered, the following data were recorded: vegetation type, slope, aspect, elevation, topographic position, moisture, soil types, parent material, cover classes of growth forms and bare ground, and dominant species by growth form.
- Additional data were gathered specific to the location, habitat, etc. in which plants were collected (these collection localities are referred to as "collection sites"). The nature of data collected is discussed in the following section.
- Vouchers were collected and curated as discussed below.

Collections were made only if the population was large enough to support removal of individuals following the collecting protocols of Murray and Parker (1990) and Parker and Murray (1992). Rare plant sighting forms with maps were completed for species with an AKNHP state rank of less than 3 ("rare or uncommon," see Appendix IV for discussion of Heritage Program ranks).

### **Vouchers and Curation**

The following data were recorded with each vouchered specimen: date, unique collection number, latitude and longitude (NAD27, decimal degrees, taken from a handheld GPS unit); slope, aspect, elevation, topographic position, associated landforms, associated species, vegetation class, substrate, soil moisture, soil type, drainage, parent material, cover class and frequency class, notes on characters not preserved well, associated photo number, phenology, and ecological observations. Each voucher specimen is referenced to a specific geographic locality, generally less than 1,000 m<sup>2</sup>, having a uniform habitat. Collections at each site ranged from single specimens to over twenty taxa.

The size of the population and area surveyed was included for species of concern. Population is defined here as a group of individuals of the same species (or subspecies) that occupy the same locality separated from other such groups by more than 1 km. This follows from the definition that NatureServe uses to define "element occurrences."

The first set of collection sheets were archived at the Herbarium of the University of Alaska Museum (ALA). A second, duplicate, set was sent to NPS if enough material was present for a second sheet.

Specimens were given conditional names in the field by AKNHP and NPS staff. The plants were later sorted, examined and identified by AKNHP botanists and the collections were then sent to ALA where notable finds and difficult taxa were reviewed by the Museum staff. As needed, specimens were sent out to authorities by ALA for determination. Specimens to be archived at ALA and those to go to Park herbaria were prepared at ALA.

## RESULTS

Significant increases in the number of vascular plant species verified for KEFJ were made in 2003. Prior to our efforts, 40% of the 543 expected taxa were known from KEFJ. Following the 2003 field season, 131 collections were made of taxa considered “Probably Present” but not vouchered, 70 new taxa were collected that were not originally predicted to occur in the Park, and 34 collections represented vouchered collections of previously “Unconfirmed” taxa. Thus, the percentage of documented vascular plant taxa relative to the 2003 expected list rose to 77%. This makes a significant improvement towards the Park’s objectives in documenting greater than 90% of vascular plant taxa in the Park. Because 70 new taxa were collected that were not on the list of 543 expected, this number should be adjusted to 613 expected taxa. The 418 known taxa from KEFJ following the 2003 field season represent 68% of the now “expected flora.” The list of expected species is likely inflated due to the numerous plants that are known from the interior of the Kenai Peninsula, but are unlikely to reach the Park boundaries. Additional, targeted floristic inventories would likely reveal 20-50 new taxa to the Park. The relevance and importance of the finds are discussed in sections following the general discussion of collections.

A list of confirmed and expected taxa in KEFJ prior to 2003 fieldwork is presented in Appendix I. An annotated species list describing all taxa and the basic topographic and habitat attributes is presented in Appendix II. Appendix III gives a list of rare species encountered. AKNHP rare plant ranks are given in Appendix IV and a user’s guide to the GIS product is given in Appendix V.

### Regional Collections

#### *Coastal Fjord Region*

Our efforts were concentrated along the coastal margin of the Park from Beauty Bay in the south to Aialik Bay in the north. A total of 379 specimens, representing 233 separate taxa, were collected from 49 sites at sea-level to the alpine zone. Sixty five taxa were collected that were previously known from KEFJ. Ninety-one taxa were collected that were listed as “Probably Present,” and 50 additional species were collected that were not expected to occur in the Park. The new records are primarily widespread Alaskan species that whose presence is not surprising. Exceptions to this were our collections of three rare Alaskan species: *Cochlearia sessilifolia*, *Platanthera chorisiana*, *Carex lenticularis* var. *dolia*; and three range extensions: *Arnica angustifolia*, *Crassula aquatica*, and *Pedicularis sudetica* ssp. *interioides*. Two non-native species (*Cerastium fontanum* and *Poa annua*) were collected from near sea-level. The new Park records are too numerous to summarize here; they are presented in Appendix II.

#### *Nuka River Pass Region*

Nuka River Pass was botanically rich. We collected 85 specimens in three days, representing 70 individual taxa. Nearly half of these (43) were new records for the Park and 16 were collections of taxa not expected to occur in KEFJ. Two collections were of species previously listed as “Unconfirmed” in the Park. Additionally, seven of the 12 range extensions identified for KEFJ were made in this area (see “Range Extensions” below). New Park records were found in moist forb-graminoid meadows, dwarf shrub-forb tundra, and open barrens. The most floristically interesting site was a steep, eroding slope of fine to course metasediments on the east side of Nuka River, across from Nuka Glacier, approximately 10 km southeast of Bradley Lake. This one collection locality had the range extensions of *Draba glabella*, *Euphrasia disjuncta*,

*Gentianella propinqua* ssp. *aleutica*, *G. tenella*, *M. biflora*, and the rare Alaskan species, *Carex phaeocephala* (discussed below).

### ***Resurrection River Region***

Collection intensity and habitat diversity was high in this region; 96 specimens were collected, representing 84 unique taxa, 65 of which were new Park records. Eight taxa were collected that were previously unconfirmed for KEFJ. A total of 12 taxa were collected that were not expected to occur in KEFJ: *Antennaria friesiana* ssp. *alaskana* (a range extension/filling), *Arabis kamchatica*, *Artemisia tilesii* ssp. *unalaschensis*, *Carex bicolor* (a range extension/filling), *C. lenticularis*, *C. phaeocephala* (rare in Alaska), *Carex rotundata*, *Cinna latifolia*, *Lycopodium lagopus*, *Potentilla diversifolia*, *Ranunculus aquatilis*, and *Ranunculus hyperboreus*.

Many new records were of widespread graminoid taxa (*Carex* spp. and *Eriophorum* spp.) of both mid-elevation wetlands and well-drained, open alpine slopes. Many of the collections were of widespread species that were likely not collected previously due to their commonness (e.g., *Athyrium felix-femina*, *Arctostaphylos alpina*, *Betula nana*, and *Salix reticulata*). Most of these new records are alpine plants and it is not surprising that few collections of such taxa are known from the Park, due to the difficulty in accessing this terrain.

## DISCUSSION

### Range Extensions

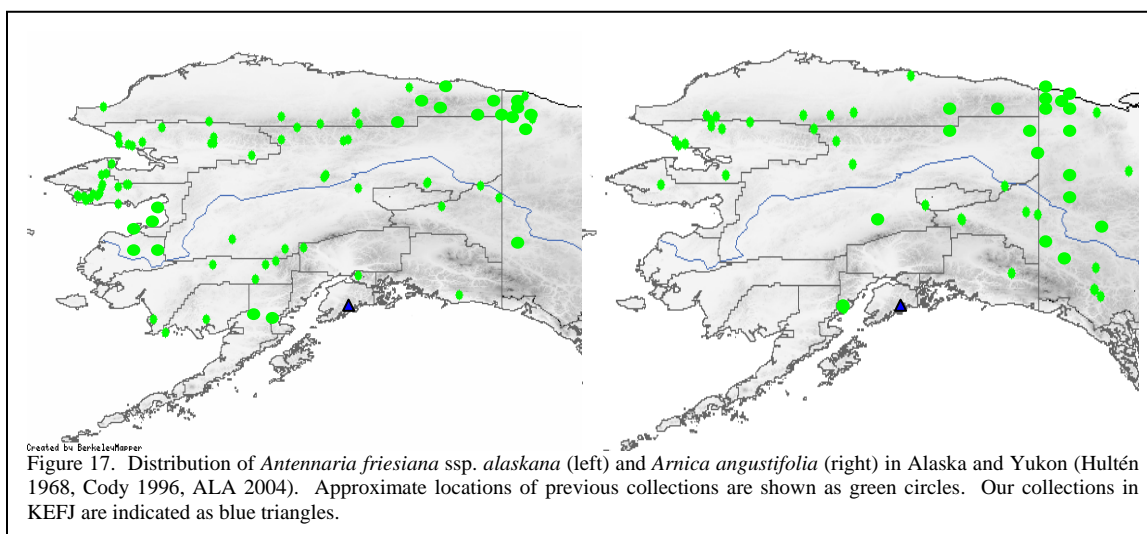
While no major range extensions were found, collections of eight species represent new records for the Kenai Peninsula. These collections are significant in filling out the distributions of species in Alaska.

#### *Antennaria friesiana* ssp. *alaskana* (Malte) Hultén

*Antennaria friesiana* ssp. *alaskana* (Fig. 17) is an Alaskan-Yukon endemic, found throughout the mountains of western Alaska, extending eastward through the Brooks Range, Tanana Highlands, and Alaska Range. There are two collections in the Chugach Mountains, one near Anchorage and the other near Bering Glacier.

The population in KEFJ was collected along a steep hillside above south side of Resurrection River (700 m) and represents a range extension to the south of approximately 150 km from the Fort Richardson collection in the Chugach Mountains (ALA 2004).

There were few individuals of *Antennaria friesiana* ssp. *alaskana* observed on this dwarf-shrub, graminoid, forb tundra site along Resurrection River. *Arctostaphylos alpina*, *Dryas octopetala*, *Anemone narcissiflora*, and *Festuca brachyphylla* were the dominant associated species. *Antennaria alpina* was also collected at this site.



#### *Arnica angustifolia* Vahl

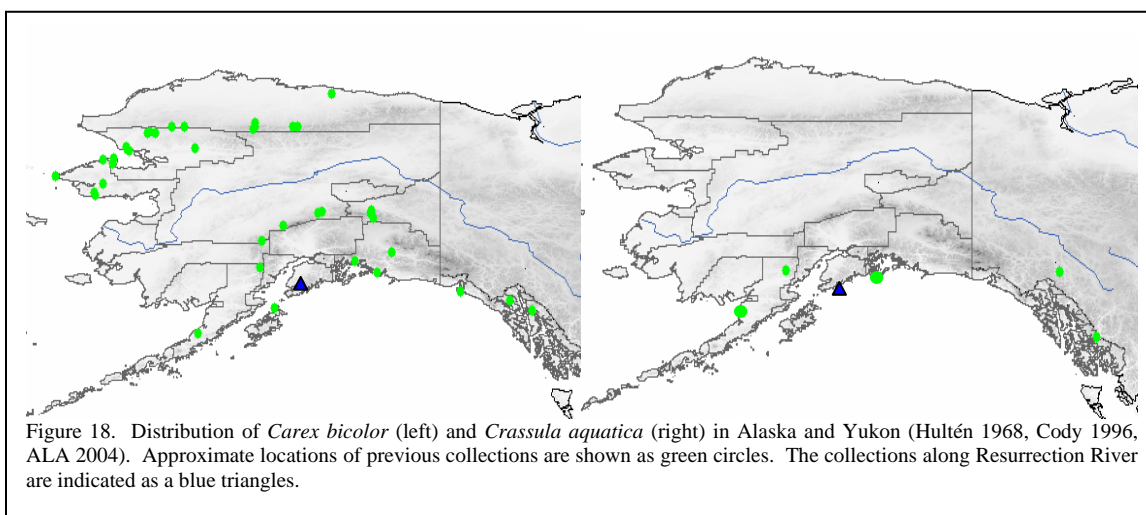
In a mid-elevation lush meadow above the sunken cirque of Crater Bay in Harris Bay, we collected *Arnica angustifolia*. Two interspecific taxa are recognized: subspecies *tomentosa* is a Rocky Mountain species, while subspecies *angustifolia* is known from Alaska (USDA 2003) and extends eastward to Greenland along the low and high arctic regions of Canada. In Alaska, this taxon is generally found on dry alpine slopes north of the Alaska Range (Fig. 17). However, one collection is known from Chinitna Bay, Chigmit Mountains at near sea-level (ALA 2004). The collection in KEFJ represents an important range extension, or a filling to the east of over 200 km



from the Chinitna Bay population. This taxon is likely uncommon throughout the southern mountains of Alaska, and the two collections south of the Alaska Range are very disjunct. It is difficult to speculate on its biogeographic history.

### *Carex bicolor* Wulfen

We collected *Carex bicolor* in the Exit Glacier area of the Resurrection River Valley. This is a montane sedge (generally subalpine or lower) of moist habitats with a circumpolar distribution (Nilsson 1995). It has been widely collected in montane regions of Alaska, but this is the first collection we are aware of the taxon on the Kenai Peninsula (Fig. 18). This is a significant collection in filling the species' range in from well established regions roughly 200 km to the north, east, and west. We collected it in a wetland adjacent to the Resurrection River, in standing water. *Equisetum*, *Salix*, and other *Carex* species were associated plants at the Resurrection River site.



### *Crassula aquatica* (L.) Schönl.

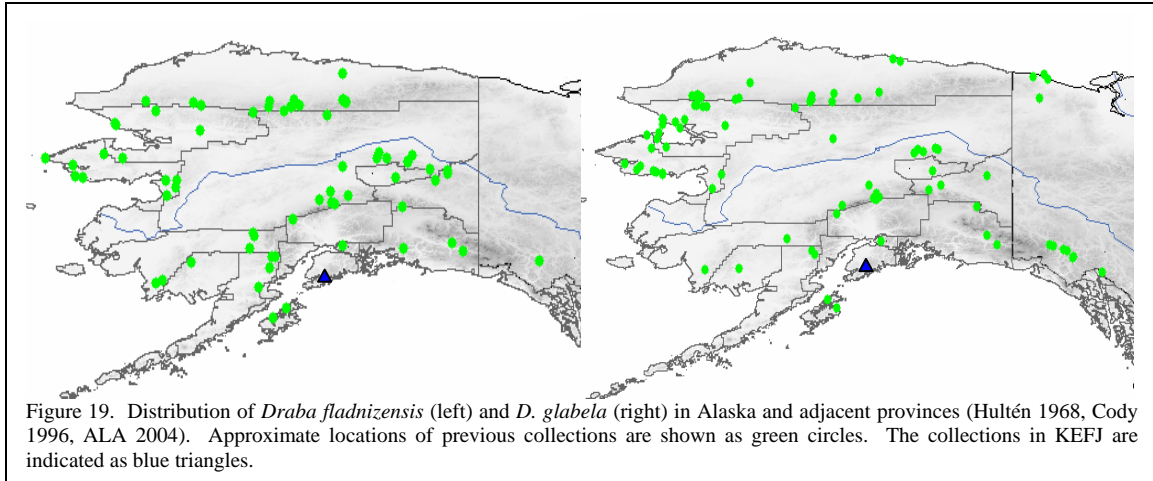
This tiny species of tidal marshes and brackish water is very widespread (circumpolar), but has rarely been collected in Alaska (Fig. 18). It is likely more common, but is probably frequently overlooked due to its small size. It was collected in KEFJ along the east side of Northwestern Lagoon in shallow brackish water. The nearest known site is from Middleton Island (Hultén 1968), 200 km to the east.

### *Draba fladnizensis* Wulfen and *Draba glabella* Pursh

On exposed alpine slopes at 500-800 m in the Nuka River Pass collections were made of two *Draba* species that represent range extensions to the Kenai Peninsula from the Chugach Mountains. Both of the taxa have circumpolar and high montane distributions, from Svalbard (70°N) and the Canadian High Arctic in the north and extending down the Rocky Mountains to Colorado (45°N) and in the Alps for *D. fladnizensis* (Lid and Lid 1994, PLANTS Database 2002). Both species are found throughout the high elevation regions of Alaska, including alpine slopes on Afognak Island and in the Chugach Mountains (Fig. 19). However, no specimens are known from the Kenai Peninsula and these new collections represent modest range fillers.

The collection of *D. fladnizensis* was made along a steep, rocky alpine rivulet in the Nuka River pass. The associated species were *Saxifraga nelsoniana*, *Luetkea pectinata*, *Romanzoffia sitchensis*, and *Geum rossi*.

*Draba glabella* was collected along a sparsely vegetated scree slope on the east side of Nuka River, associated with *Salix arctica*, *S. reticulata*, *Artemisia arctica*, *Bistorta vivipara*, *Saxifraga bronchialis*, and *Silene acaulis*.



### ***Euphrasia disjuncta* Fern. & Wieg.**

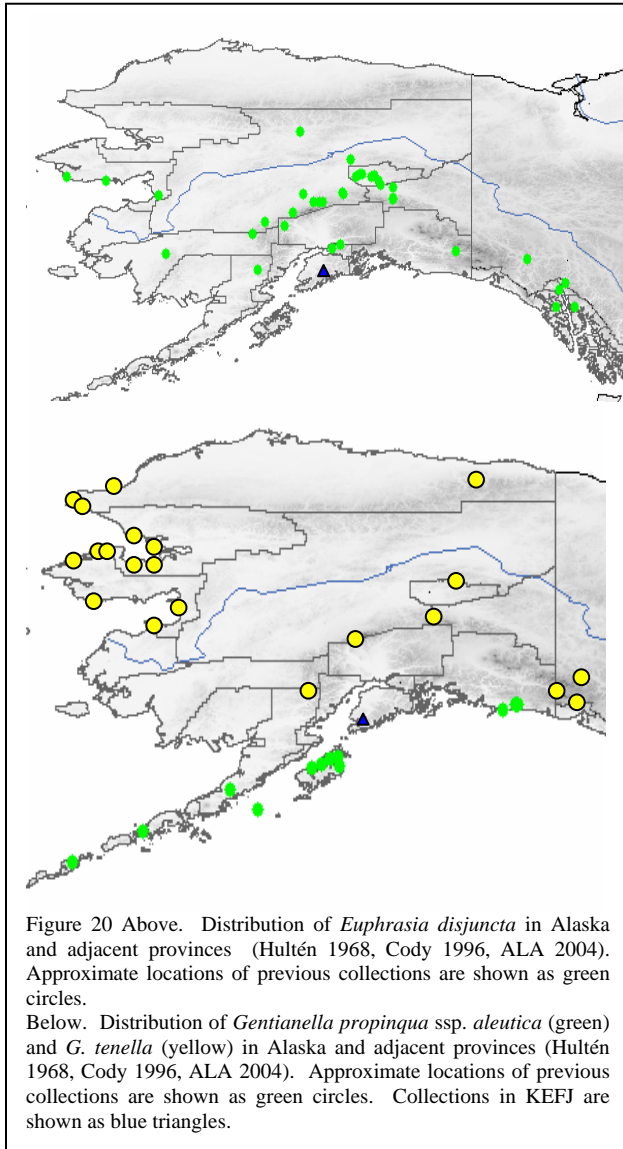
On the same site as *Draba glabella* was found, we collected *Euphrasia disjuncta*, which is also a new record for the Kenai Peninsula (Fig. 19). This species is one of the few native annuals of Alaska. Its range extends from the Seward Peninsula, Alaska, west into Saskatchewan (Cody 1996). USDA (2003) also reports this species as occurring in Maine.

*Euphrasia disjuncta* is a species of open mid- to high elevation slopes. The collection in KEFJ is approximately a 150 km range extension from sites in the Chugach Mountains.

### ***Gentianella propinqua* ssp. *aleutica* Cham. & Schlecht. and *Gentianella tenella* (Rottb.) Boerner**

The small gentian *Gentianella propinqua* ssp. *aleutica* is a taxon restricted to the western coast of the Gulf of Alaska, primarily in the Aleutians and Kodiak Island. Prior to our collection there were two known collections east of Kodiak Island: one in the Bering Glacier region (ALA 2004) and one from the Juneau area (Hultén 1968). Our collection from the Kenai Peninsula significantly fills the range of a subspecies that appeared to have extremely disjunct populations (Fig. 20).

*Gentianella tenella* is a widely circumpolar species with numerous populations in the high mountains of Europe, Asia, and North America. Collections in Alaska are somewhat dispersed, primarily concentrated in the Bering Strait Region, with disjunct populations in the Alaska, Brooks, and Coastal Ranges (Hultén 1968, ALA 2004). No collections are known south of the Alaska Range and the specimens from KEFJ represent a 250 km extension to the southwest of the nearest populations (Fig. 20). It is surprising that this taxon has not been collected from Prince William Sound.



the Robinson Mountains in 2001 and 2002 in the eastern portion of the Chugach Range. This species ranges from Hudson Bay, west through boreal and low arctic Canada and Alaska into northern Siberia to the Urals (Molau and Murray 1996).

We made collections of this taxon at two sites along the Upper Nuka River in mesic, graminoid-forb meadows and dwarf shrub-forb tundra. It was also collected in a nearby high elevation (410 m) coastal site above Quartz Bay, in Nuka Bay. This site was a moist-wet mossy forb-graminoid meadow on well vegetated blocky talus. Although being relatively abundant in the Nuka River area, this taxon does not appear to be common in south-central Alaska. Its widely disjunct southerly populations can be explained by either long-distance dispersal events or local recolonization following full glaciation from refugial populations.

Our collection of this species was from the steep, crumbling slope above the Upper Nuka River.

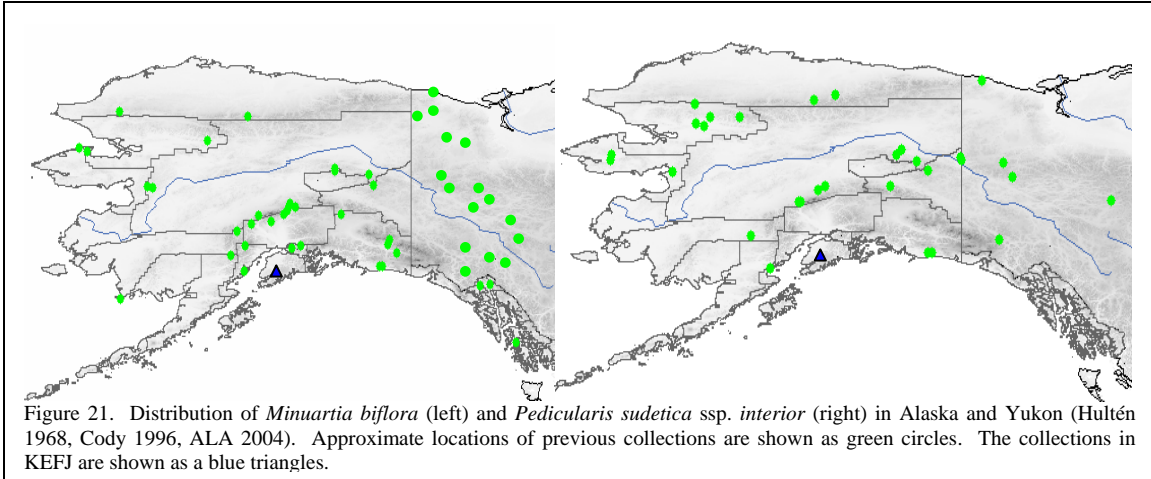
***Minuartia biflora* (L.) Schniz & Thellung**

Another new record for the Kenai Peninsula from this Upper Nuka River site was *Minuartia biflora*. This species is distributed throughout the circumpolar north and widely throughout Alaska (Fig. 21). A number of collections are known south of the Alaska Range and in the Chugach Mountains (Hultén 1968, ALA 2004) and it is not surprising it was found in the Kenai Mountains.

This species was collected from a sparsely vegetated scree slope in the Upper Nuka River Valley.

***Pedicularis sudetica* ssp. *interioides* Hultén**

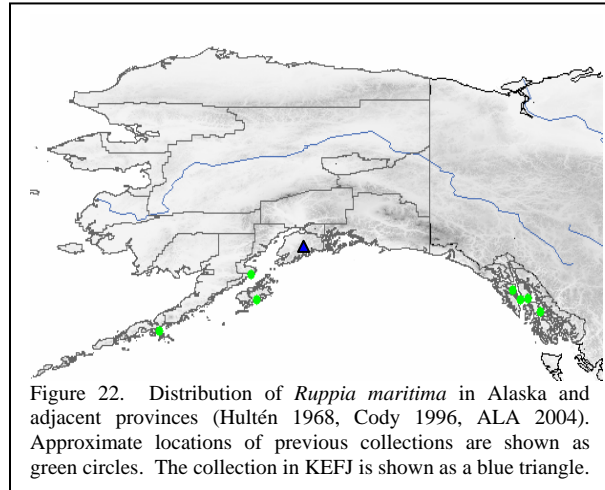
Our collection of the lousewort *Pedicularis sudetica* ssp. *interioides* (recently revised as *P. interior* – Molau and Murray 1996) is a range extension of over 300 km south from known collections north of the Alaska Range, and 250 km east of a collection in the Aleutian Range (Fig. 21, ALA 2004). Other collections from southern Alaska include those of M. Barker, which were made in



***Ruppia maritima* L.**

Widgeon grass is a globally distributed species of salt and brackish waters. Despite its wide distribution it is infrequently collected in Alaska (Fig. 22), probably overlooked because it is such a small, non-descript aquatic species. It is likely much more common throughout estuaries and tidal ponds in south-central Alaska.

We made a collection of this taxon at two locations in the northern section of KEFJ, Northwestern Lagoon and Pedersen Lagoon in Aialik Bay. Both sites were in brackish, lagoon ponds.



**Invasive Species**

Two non-native species vascular plant species were collected in the Park. Here we adopt the National Park Service terminology of “invasive” to describe non-native species, regardless of their potential to establish and alter communities and ecosystem function. The two populations were located on a beach and at a coastal cabin site. Most remote regions of the Park showed no signs of invasive species establishment and habitat alteration.

***Cerastium fontanum* Baumg.**

The introduced mouse-ear chickweed *Cerastium fontanum* was confined to a single site in McCarty Fjord, James Lagoon at sea-level (59.5833°N, 150.402°W). The location was a sparsely vegetated depression in moist graminoid meadow, associated with *Leymus mollis*, *Carex lyngbyei*, and *Argentina egedii*. In Alaska this species is normally associated with heavily used areas, with disturbed soils, such as along roads, ATV trails, and gardens. It is somewhat surprising to find this species in a relatively remote location, especially without collections in more frequently used parts of the Park, such as Aialik Bay. However, its occurrence in such a site highlights the importance of inventory and monitoring efforts.

This species is a very ubiquitous weed, introduced from Eurasia to all US states. It is most often found in open, mesic habitats, and it is a common weed of roads, lawns, and gardens. It is generally not considered a serious threat to natural habitats as it does not establish in areas with open soils and is a poor competitor. It is rarely found outside of roadsides and areas of habitation. No other collections of this species were known from the Park prior to 2003; however, collections are known from the Carter Lake trail, just north of KEFJ (NPSpecies 2004) and it was widely observed throughout the Kenai Peninsula along trails, campsites, and roads (Duffy 2003, DeVelice no date). This species is also expected to be common in Seward.

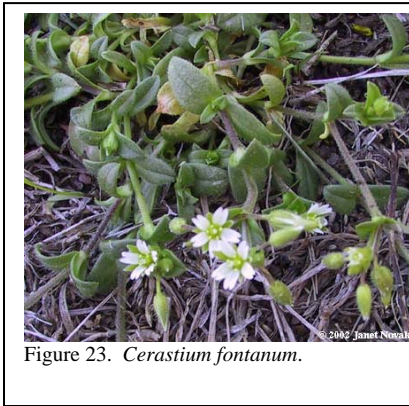


Figure 23. *Cerastium fontanum*.

Elimination of this population of introduced *Cerastium* is encouraged, as this appears to be a very isolated and small population that can be easily controlled. Further, the population has the potential of spreading to other remote areas, making control very difficult. This species is not known to cause major alterations of community structure or ecosystem function.

Native *Cerastium* species are not uncommon in the Park. The introduced species is distinguished by presence of pubescence on stems, leaves, and inflorescence, and petals equal in length to the sepals (Fig. 23).

### ***Poa annua* L.**

The introduced annual blue grass *Poa annua* was found at a single site at Aialik Bay (59.8375°N, 149.7722°W), lining the trail and surrounding a cabin. This site receives a significant number of visitors. Open, high nutrient conditions, with coarse soils around remote cabins elsewhere in south coastal Alaska often have small populations of this grass; despite persisting in these areas it does not appear to invade undisturbed habitats.

Elimination of this population is desirable. The concentrated human use of this location will probably result in continual re-introductions of this grass. *Poa annua* does not pose as serious a threat to native ecosystems or communities in Alaska relative to many non-native species, but it is extremely ubiquitous throughout the Kenai Peninsula and often forms large infestations along trails (Duffy 2003, DeVelice no date). This annual bluegrass site is probably not as serious a threat as the expanding invasive plant invasion in the Exit Glacier area of KEFJ.

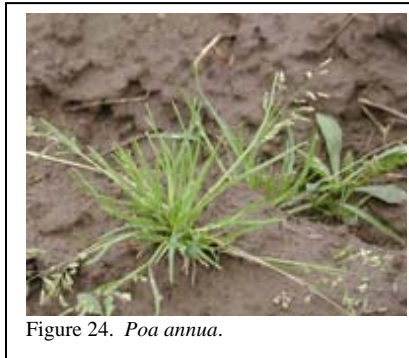


Figure 24. *Poa annua*.

This plant is easily distinguished from other grasses (Fig. 24). It has prow-shaped leaves; it is quite small, generally yellowish-green in color, and an annual with a small claw-like first glume.

### **Other invasive species known in the Park**

A number of invasive species are known from the Exit Glacier and ranger station areas of KEFJ. Densmore et al. (2001) summarized the occurrences of invasive species of KEFJ and other parks in Alaska. They found that dandelion (*Taraxacum officinale* ssp. *officinale*) was common in developed areas as well as scattered along trails, but was not found in habitats without anthropogenic disturbances. Butter-and-eggs (*Linaria vulgaris*), pineapple weed (*Matricaria*

*discoidea*), and common clover (*Trifolium repens*) were found along roads, parking lots, and the ranger station. Hawk's beard (*Crepis tectorum*), ox-eye daisy (*Leucanthemum vulgare*), alfalfa (*Medicago sativa*), yellow sweetclover (*Melilotus officinalis*), and red clover (*Trifolium pratense*) are all introduced species that were growing along Exit Glacier Road, but were currently outside of the Park boundary. Densmore et al. (2001) suggest that control of these invasives is a necessity before they expand into the Park.

### Species of Conservation Concern

We collected three species that are rare or uncommon globally and rare in Alaska and two additional species that are relatively common globally, but critically imperiled to rare in Alaska. Populations are defined here as a group of individuals of the same species (or subspecies) that occupy the same locality separated from other such groups by more than 1 km, following from the definition that NatureServe uses to define "element occurrences."

#### *Cochlearia cf. sessilifolia* Rollins (G1Q-S1)

A few individuals of what appears to be the rare scurvy grass, *Cochlearia sessilifolia*, were collected at a beach at Beauty Bay on the west side of Ferum Creek (59.5423°N, 150.662°W). The site was a combination of mud flats and shingle beach in the upper intertidal zone, with a sparsely vegetated, halophytic grass-forb meadow of *Puccinellia nutkaensis*, *Honckenya peploides*, and *Argentina egedii*. We visited this site in early July in 2003 (before fruits were present) making positive identification of this annual species difficult. We revisited the site in August of 2004 and collections were clearly different than the common *C. officinalis*, and most likely *C. sessilifolia*. We estimated that several thousand individuals were present. *Cochlearia sessilifolia* is a Gulf of Alaska endemic, listed as imperiled globally and within the state (G1Q – S1 AKNHP rare plant tracking list, see Appendix IV). However, questions remain as to the validity of this taxon and the AKNHP is currently conducting a taxonomic investigation (Lipkin unpublished data).

The population appeared to be relatively large. However, it is impossible to estimate demographic trends with only a single population estimate.

The putative sister species of *C. sessilifolia* is *C. officinalis* (*sensu* Rollins), which was collected in a nearby flooded mining road in Beauty Bay (as well as other coastal sites in KEFJ). *Cochlearia officinalis* is a widespread coastal circumboreal species that has significantly smaller fruits and seeds, and lacks sessile leaves. The rare species, *C. sessilifolia*, is known from a handful of sites on Kodiak and adjacent mainland beaches. We recommend ecological studies to determine habitat differentiation, potential for competition, and hybridization with its common congener.

#### *Platanthera chorisiana* (Cham.) Reichenb. (G3-S3)

We identified four small populations of the rare bog orchid, *Platanthera chorisiana* (Fig. 25) at mid-elevation, moist-acidic habitats. The site in the North Arm of Nuka Bay (59.5117°N, 150.505°W) was at a ridge crest above southeast side of Quartz Bay, and was characterized as moist graminoid -



Figure 25. *Platanthera chorisiana* photo of a plant in Japan (<http://www5.ocn.ne.jp/~rebun-fl/zukan/z-m/miyake.html>).

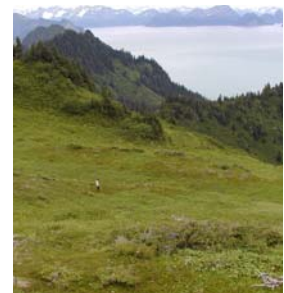


Figure 26. *Platanthera chorisiana* site in Coleman Bay, Aialik Bay.

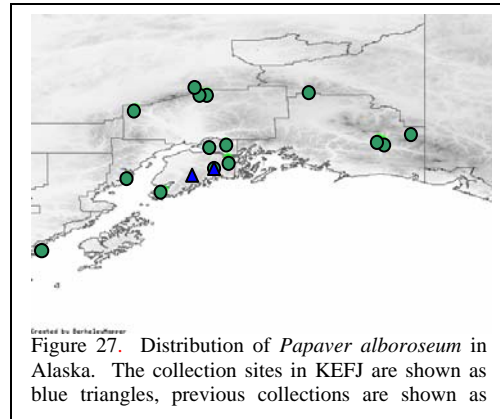
ericaceous dwarf shrub and forb tundra with scattered snowbeds and melt pools. The site at McCarty Fjord (59.4763°N, 150.3359°W), along a west-facing slope above Roaring Cove, was a "hanging bog" of thin mats of saturated moss and humic soil over bedrock. The associated species at this site were *Nephrophyllidium crista-galli*, *Trichophorum caespitosum*, *Drosera rotundifolia*, *Vaccinium uliginosum*, and *Gentiana douglasiana*. We collected this species in a subalpine meadow at Crater Bay (59.71805°N, 149.77694 °W) and a lush *Nephrophyllidium crista-galli* meadow at Coleman Bay (59.8588°N, 149.61083 °W, Fig. 26).

This species was listed by the AKNHP as a G3 - S3 (rare globally and within the state). Recent collections of this taxon in Prince William Sound and Southeast Alaska show that this species is more common than previously thought, and taken together with its status in British Columbia and Asia, suggest that a rank of G4-S3 S4 may more appropriately reflect its true status.

*Platanthera chorisiana* is distinguishable from other bog orchids in being less than 20 cm tall and having two basal leaves, but lacking developed cauline leaves. Its global distribution is amphipacific, occurring in northern Japan, Kamchatka, and east to Alaska and British Columbia. In Alaska it is known primarily from scattered sites in the Aleutians, Prince William Sound, and Southeast Alaska (Fig.28). This species is not rare enough to warrant specific research efforts.

#### ***Papaver alboroseum* Hultén (G4-S3S4)**

*Papaver alboroseum* is a rare poppy with two population centers, one in Kamchatka and the other in southcentral Alaska (Figs. 27 and 28). We collected this taxon at two locations in KEFJ. One was in the mountains around Exit Glacier (60.18139°N, 149.70142°W) at 1080 m, growing on exposed rounded scree mounds below the Icefield. The other location was along exposed gravel bars on the Upper Nuka River (59.6642°N, 150.6798°W). In both locations *Chamerion latifolia* (= *Epilobium latifolium*) was a dominant associate. Population sizes were estimated as 300 plants at Exit Glacier and fewer than 20 plants at the Nuka River site.



This species is a distinctive, small (<15 cm tall) poppy with white to rose-colored petals with a yellow spot at the base. It is somewhat more difficult to identify while not in flower, but it has heavily pubescent leaves with a broad, ovate to globose capsule bearing very distinctive ivory colored tuberculate hairs.

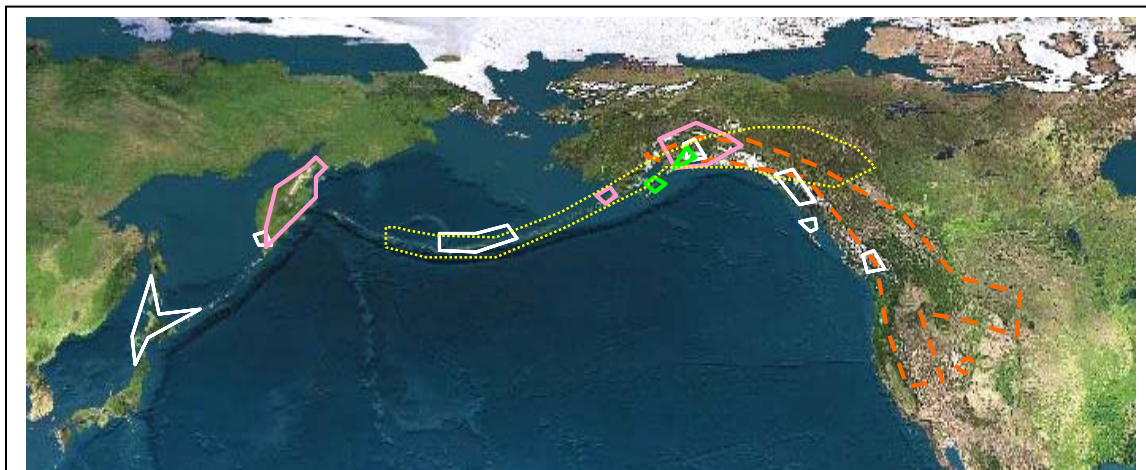


Figure 28. Distribution of *Cochlearia sessilifolia* (green lines), *Platanthera chorisiana* (white lines), *Papaver alboroseum* (pink lines), *Carex phaeocephala* (orange lines), and *C. lenticularis* var. *dolia*. Ranges are adapted from Hultén (1968).

*Papaver alboroseum* is found on well drained soils (sand, gravel, scree, volcanic ash) and rock outcrops, from sea-level to at least 2,000 m. It is usually found in alpine settings, but is also found in lowland sites near glacial moraines or along the gravel bars of glacial rivers. *Papaver alboroseum* is known from an increasing number of sites in southern Alaska. Most of these sites are in the Chugach, Kenai and Wrangell Mountains, with additional locations in the western Alaska Range and the Alaska Peninsula. Reports from northern Alaska and the westernmost Aleutian Islands are based on misidentifications. It is also known from at least twenty sites in Kamchatka (Russia) and the northern Kurile Islands, with several additional reports from northwest British Columbia and the southwest Yukon Territory.

### ***Carex phaeocephala* Piper (G4-S1S2)**

We made two collections of the state imperiled sedge, *Carex phaeocephala* (G4-S1S2). One collection was above the Upper Nuka River (59.6667°N, 150.6623°W) on a steep slope at 550 m. The other collection was above Exit Glacier at 60.18094°N, 149.70381°W and 1080 m elevation (Fig. 29).

This species is found throughout rocky high montane regions of the west (Mastrogriuseppe et al. 2002), but is confined to a handful of populations in the Coastal, Wrangell, and Chugach Mountains. A single site is known in the western Alaska Range. The collection in KEFJ is a significant range-filler, linking the highly disjunct western Alaska Range collection with the greater concentration of populations in the southeastern Alaska and Yukon Territory.

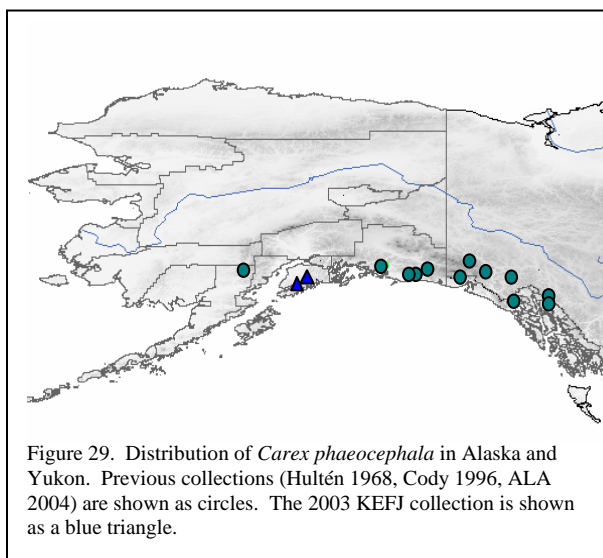


Figure 29. Distribution of *Carex phaeocephala* in Alaska and Yukon. Previous collections (Hultén 1968, Cody 1996, ALA 2004) are shown as circles. The 2003 KEFJ collection is shown as a blue triangle.

This species was growing on a very steep and eroding slope of fine and coarse sediments above the Nuka River. The site was mostly bare ground; the few other vascular plants that were associated with it included *Chamerion latifolium*, *Oxytropis campestris* var. *varians*, *Astragalus alpinus*, and *Equisetum variegatum*. We noted fewer than 100 individuals of this species at the site. It is likely it is also found on other slopes in the Upper Nuka River valley. The habitat where *C. phaeocephala* was collected near Exit Glacier was quite similar to the Nuka River site: the site was sparsely vegetated, with unstable scree mounds at high elevation.

Identification of this species is difficult, as with most members of *Carex* sect. *ovales*. It is distinguishable by a combination of traits: a dense tawny-colored head, with inconspicuous, winged perigynia, a small lower bract, and staminate flowers clustered at the base.

While this species is relatively common globally, it is quite restricted in Alaska and its presence in KEFJ is an important contribution to the biodiversity of the Park and Kenai Peninsula. We recommend additional surveys of high-elevation regions of the Park to identify more populations of this and other rare alpine species.



***Carex lenticularis* var. *dolia* (M.E. Jones) L. A. Standley (G5T3Q-S3)**

Figure 30. Collection site of *Carex lenticularis* var. *dolia* along the Upper Nuka River Valley.

We made multiple collections of *Carex lenticularis* var. *dolia* (= *C. enanderi* sensu Hultén, 1968; G5T3Q-S3) in KEFJ. One collection was from the Upper Nuka River Valley (59.65422°N, 150.6694°W) at 410 m elevation along the margins of a flooded subalpine stream in gravel and moss (Fig. 30). The associated species were *Salix barclayi*, *Vahlodea atropurpurea*, *Carex nigricans*, *C. anthoxantha*. We also collected *C. lenticularis* var. *dolia* near Exit Glacier (60.18314°N, 149.669°W) at 750 m. This site was very similar to the Nuka River site. Two populations of this species were found along alpine stream sides in the Coastal Region: one at the North Arm of Nuka Bay (59.5117°N, 150.5052°W) and one at Harris Bay (59.7164°N, 149.7831°W). These sites were at mid-elevations (130 to 400 m) in moist herbaceous meadows or snowmelt ponds.

This species is locally common in wet gravelly alpine meadows across south coastal Alaska, from the western Aleutian Islands to the southeast Panhandle. It extends south through the Yukon, British Columbia, Alberta, and Montana in the mountains (Fig. 28). This species is not rare enough to warrant future directed research.

### Recommendations

To achieve a more complete list of species in KEFJ, we recommend inventorying the following locations and habitats (Fig. 31):

- ***High elevation regions above Resurrection River***

The extreme northern border of KEFJ above Resurrection River has received only cursory visitation by botanists. A reasonable number of collections are known from the Exit Glacier area, but few exist to the west. Due to the difficult terrain, we were only able to access the alpine zone on a single day, but collected over 25 new records for the Park, including species not expected to occur in KEFJ and important range extensions. The alpine zone from Placer Creek to Moose Creek is the area with the greatest likelihood of harboring boreal species common to the rest of the Kenai Peninsula, but unknown in KEFJ.

- ***High elevation regions east of Bear Glacier***

The alpine zone from Paradise Creek to the headwaters of Tonsina Creek deserves attention, as this region has not been thoroughly surveyed botanically. Additionally, it represents a transition from a coastal to interior zone, where a high diversity of alpine species is likely. Further, a number of nunataks are present, which may be sources of unusual species that have been present during much of the last glacial period.

- ***Upper Nuka River***

The most productive area we visited was the Upper Nuka River. This was a region with a high proportion of species that are generally associated with more interior-boreal habitats, as well as unusual and rare alpine species. We collected 55 species that were new to the Park at

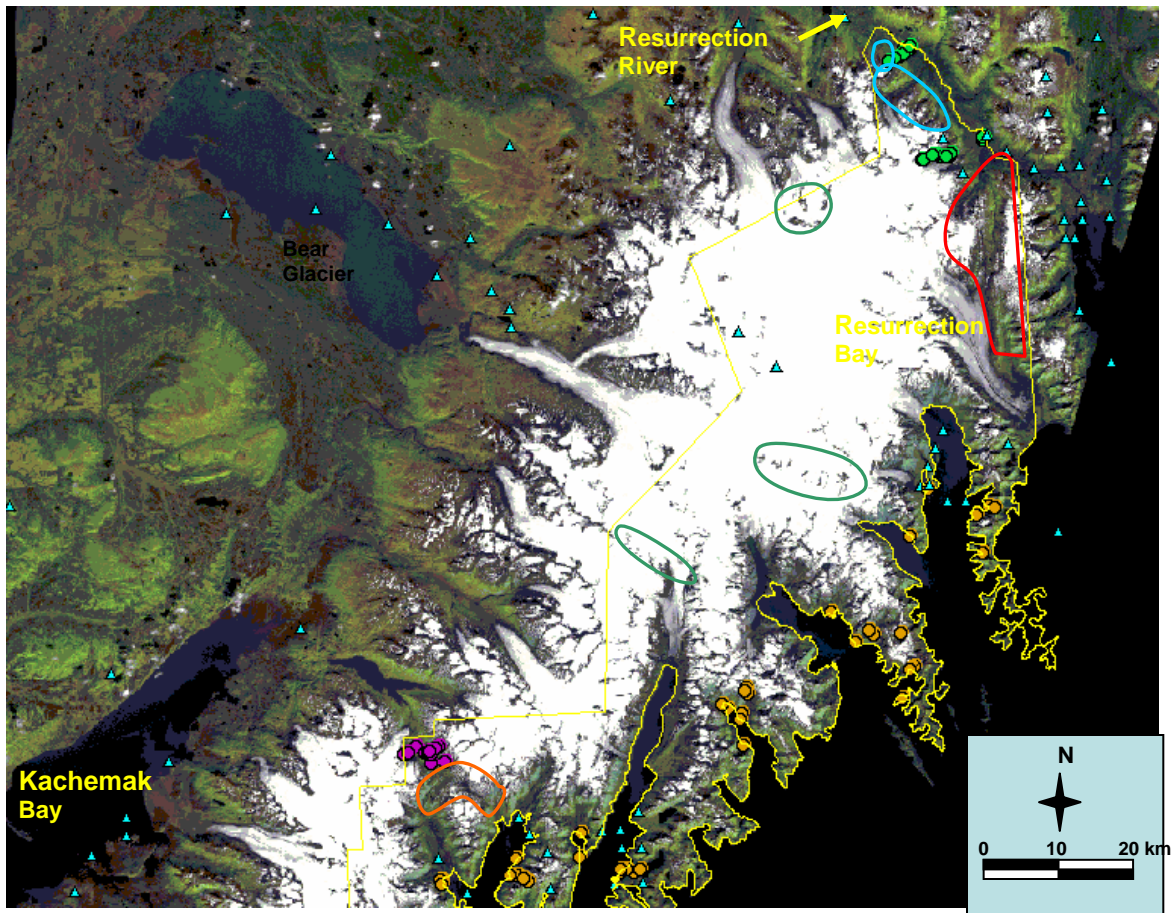
this location. Twenty of these were not expected to occur in KEFJ, and they represent most of the range extensions and rare species of our collections. While we conducted a thorough survey of the western portion of the river valley, we were unable to access the eastern valley and area around Storm Mountain.

- ***Nunataks in the Harding Icefield***

There are a significant number of outcrops that were ice-free throughout much of the last glaciation that should be surveyed for vascular plant taxa. Flying across the Harding Icefield, we noted a number of obviously vegetated nunataks. In general, nunataks are quite species-poor, but these refugia can harbor very significant taxa (e.g., disjunct and rare taxa separated from other populations for thousands of years, which play a large role in determining the pattern of succession in nearby recently deglaciated areas). For example, one of the few collections of *Phylodoce empetriformis* (G4-S1S2) in Alaska is from the Mendenhall Towers on the Juneau Icefield. While access would require helicopters, one or two days of sampling should be sufficient to inventory the primary nunataks.

All of these high elevation collection regions require helicopter support.

Figure 31. Suggested future sampling sites at Upper Nuka (orange polygon), Nunataks (green polygons), Resurrection River (blue polygons), and Bear Glacier area (red polygon) in KEFJ. Known plant collection sites are shown as circles (AKNHP 2003) or triangles (previous collections).



**Recommendations for monitoring or other action**

- We recommend casual monitoring of the following rare taxa encountered: *Cochlearia sessilifolia*, *Carex phaeocephala*, and *Papaver alboroseum*. These species were all located in apparently secure populations with no observable threats. However, NPS employees and botanists working in the Park should pay special attention to these species in known and in potential habitats to determine the number, extent, and status of the populations.
- Because of its extreme rarity and unknown biology, we recommend ecological and demographic studies of *Cochlearia sessilifolia*. Conservation management actions will be much better informed if we understand population trends, ecological interactions, and differences with its widespread sister taxa *C. officinalis*.
- *Carex lenticularis* var. *dolia* and *Platanthera chorisiana* appear to be relatively common in southcentral Alaska, and specific efforts to document their locations, abundance, and population trends are not necessary.
- Invasive species – Elimination of the weedy introduced species, *Cerastium fontanum* and of *Poa annua* in the coastal region is recommended.

## ACKNOWLEDGEMENTS

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APPENDIX I

National Park Service 2002 Status of Vascular Plants Expected or Documented in Kenai Fjords National Park –

Family	ITIS Name	2002 Park Status	Post 2003 Park Status
Asteraceae	<i>Achillea millefolium</i> var. <i>millefolium</i> L.	Present in Park	Present in Park
Apiaceae	<i>Angelica lucida</i> L.	Present in Park	Present in Park
Ranunculaceae	<i>Aquilegia formosa</i> Fisch. ex DC.	Present in Park	Present in Park
Brassicaceae	<i>Arabis lyrata</i> L.	Present in Park	Present in Park
Rosaceae	<i>Argentina egedii</i> ssp. <i>egedii</i> (Wormsk.) Rydb.	Present in Park	Present in Park
Rosaceae	<i>Aruncus dioicus</i> var. <i>vulgaris</i> (Maxim.) Hara	Present in Park	Present in Park
Fabaceae	<i>Astragalus polaris</i> Benth.	Present in Park	Present in Park
Brassicaceae	<i>Barbarea orthoceras</i> Ledeb.	Present in Park	Present in Park
Ranunculaceae	<i>Caltha palustris</i> var. <i>palustris</i> L.	Present in Park	Present in Park
Campanulaceae	<i>Campanula rotundifolia</i> L.	Present in Park	Present in Park
Brassicaceae	<i>Cardamine oligosperma</i> var. <i>kamtschatica</i> (Regel) D	Present in Park	Present in Park
Cyperaceae	<i>Carex lyngbyei</i> Hornem.	Present in Park	Present in Park
Cyperaceae	<i>Carex macrochaeta</i> C.A. Mey.	Present in Park	Present in Park
Cyperaceae	<i>Carex pyrenaica</i> ssp. <i>micropoda</i> (C.A. Mey.) Hultén	Present in Park	Present in Park
Scrophulariaceae	<i>Castilleja unalascensis</i> (Cham. & Schlecht.) Malte	Present in Park	Present in Park
Onagraceae	<i>Chamerion angustifolium</i> ssp. <i>angustifolium</i> (L.) Holu	Present in Park	Present in Park
Onagraceae	<i>Chamerion latifolium</i> (L.) Holub	Present in Park	Present in Park
Saxifragaceae	<i>Chrysosplenium tetrandrum</i> (Lund ex Malmgr.) Th. F	Present in Park	Present in Park
Portulacaceae	<i>Claytonia sibirica</i> L.	Present in Park	Present in Park
Pteridaceae	<i>Cryptogramma sitchensis</i> (Rupr.) T. Moore	Present in Park	Present in Park
Poaceae	<i>Deschampsia caespitosa</i> (L.) Beauv.	Present in Park	Present in Park
Diapensiaceae	<i>Diapensia lapponica</i> L.	Present in Park	Present in Park
Brassicaceae	<i>Draba stenoloba</i> Ledeb.	Present in Park	Present in Park
Ericaceae	<i>Elliottia pyroliflorus</i> (Bong.) S.W. Brim & P.F. Steve	Present in Park	Present in Park
Onagraceae	<i>Epilobium anagallidifolium</i> Lam.	Present in Park	Present in Park
Onagraceae	<i>Epilobium luteum</i> Pursh	Present in Park	Present in Park
Equisetaceae	<i>Equisetum arvense</i> L.	Present in Park	Present in Park
Equisetaceae	<i>Equisetum fluviatile</i> L.	Present in Park	Present in Park
Cyperaceae	<i>Eriophorum scheuchzeri</i> Hoppe	Present in Park	Present in Park
Scrophulariaceae	<i>Euphrasia mollis</i> (Ledeb.) Wettst.	Present in Park	Present in Park
Poaceae	<i>Festuca rubra</i> L.	Present in Park	Present in Park
Liliaceae	<i>Fritillaria camschaticensis</i> (L.) Ker-Gawl.	Present in Park	Present in Park
Rubiaceae	<i>Galium aparine</i> L.	Present in Park	Present in Park
Rubiaceae	<i>Galium trifidum</i> L. (possib ssp. <i>columbianum</i> (Rydb.	Present in Park	Present in Park
Gentianaceae	<i>Gentiana douglasiana</i> Bong.	Present in Park	Present in Park
Gentianaceae	<i>Gentiana glauca</i> Pallas	Present in Park	Present in Park
Gentianaceae	<i>Gentiana platypetala</i> Griseb.	Present in Park	Present in Park
Geraniaceae	<i>Geranium erianthum</i> DC.	Present in Park	Present in Park
Rosaceae	<i>Geum calthifolium</i> Menzies ex Sm.	Present in Park	Present in Park
Rosaceae	<i>Geum macrophyllum</i> Willd. (poss. var. <i>macrophyllum</i> )	Present in Park	Present in Park
Apiaceae	<i>Heracleum maximum</i> Bartr.	Present in Park	Present in Park
Saxifragaceae	<i>Heuchera glabra</i> Willd. ex Roemer & J.A. Schultes	Present in Park	Present in Park
Asteraceae	<i>Hieracium gracile</i> Hook.	Present in Park	Present in Park
Asteraceae	<i>Hieracium triste</i> Willd. ex Spreng.	Present in Park	Present in Park
Caryophyllaceae	<i>Honckenya peploides</i> (L.) Ehrh.	Present in Park	Present in Park
Iridaceae	<i>Iris setosa</i> Pallas ex Link	Present in Park	Present in Park
Juncaceae	<i>Juncus arcticus</i> Willd.	Present in Park	Present in Park
Juncaceae	<i>Juncus castaneus</i> Sm.	Present in Park	Present in Park
Juncaceae	<i>Juncus mertensianus</i> Bong.	Present in Park	Present in Park
Fabaceae	<i>Lathyrus japonicus</i> var. <i>maritimus</i> (L.) Kartesz & Gar	Present in Park	Present in Park
Saxifragaceae	<i>Leptarrhena pyrolifolia</i> (D. Don) R. Br. ex Ser.	Present in Park	Present in Park
Apiaceae	<i>Ligusticum scoticum</i> L.	Present in Park	Present in Park
Rosaceae	<i>Luetkea pectinata</i> (Pursh) Kuntze	Present in Park	Present in Park
Juncaceae	<i>Luzula parviflora</i> (Ehrh.) Desv.	Present in Park	Present in Park
Lycopodiaceae	<i>Lycopodium alpinum</i> L.	Present in Park	Present in Park

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**National Park Service 2002 Status of Vascular Plants Expected or Documented in Kenai Fjords National Park (cont.) –**

Family	ITIS Name	2002 Park Status	Post 2003 Park Status
Lycopodiaceae	<i>Lycopodium annotinum</i> L.	Present in Park	Present in Park
Rosaceae	<i>Malus fusca</i> (Raf.) Schneid.	Present in Park	Present in Park
Ericaceae	<i>Menziesia ferruginea</i> Sm.	Present in Park	Present in Park
Boraginaceae	<i>Mertensia maritima</i> var. <i>maritima</i> (L.) S.F. Gray	Present in Park	Present in Park
Scrophulariaceae	<i>Mimulus guttatus</i> DC.	Present in Park	Present in Park
Caryophyllaceae	<i>Minuartia macrocarpa</i> (Pursh) Ostenf.	Present in Park	Present in Park
Caryophyllaceae	<i>Minuartia rubella</i> (Wahlenb.) Hiern.	Present in Park	Present in Park
Pyrolaceae	<i>Moneses uniflora</i> (L.) Gray	Present in Park	Present in Park
Menyanthaceae	<i>Nephrrophyllidium crista-galli</i> (Menzies ex Hook.) Gilg	Present in Park	Present in Park
Araliaceae	<i>Oplopanax horridus</i> Miq.	Present in Park	Present in Park
Pyrolaceae	<i>Orthilia secunda</i> (L.) House	Present in Park	Present in Park
Apiaceae	<i>Osmorhiza purpurea</i> (Coul. & Rose) Suksdorf	Present in Park	Present in Park
Polygonaceae	<i>Oxyria digyna</i> (L.) Hill	Present in Park	Present in Park
Fabaceae	<i>Oxytropis campestris</i> (L.) DC.	Present in Park	Present in Park
Scrophulariaceae	<i>Pedicularis verticillata</i> L.	Present in Park	Present in Park
Asteraceae	<i>Petasites frigidus</i> var. <i>frigidus</i> (L.) Fries	Present in Park	Present in Park
Plantaginaceae	<i>Plantago major</i> L.	Present in Park	Present in Park
Plantaginaceae	<i>Plantago maritima</i> L.	Present in Park	Present in Park
Orchidaceae	<i>Platanthera dilatata</i> (Pursh) Lindl. ex Beck	Present in Park	Present in Park
Orchidaceae	<i>Platanthera stricta</i> Lindl.	Present in Park	Present in Park
Poaceae	<i>Poa arctica</i> ssp. <i>lanata</i> (Scribn. & Merr.) Soreng	Present in Park	Present in Park
Poaceae	<i>Poa eminens</i> J. Presl	Present in Park	Present in Park
Polemoniaceae	<i>Polemonium acutiflorum</i> Willd. ex Roemer & J.A. Schreb.	Present in Park	Present in Park
Polemoniaceae	<i>Polemonium pulcherrimum</i> ssp. <i>lindleyi</i> (Wherry) V.	Present in Park	Present in Park
Polygonaceae	<i>Polygonum viviparum</i> L.	Present in Park	Present in Park
Rosaceae	<i>Potentilla villosa</i> Pallas ex Pursh	Present in Park	Present in Park
Asteraceae	<i>Prenanthes alata</i> (Hook.) D. Dietr.	Present in Park	Present in Park
Primulaceae	<i>Primula cuneifolia</i> ssp. <i>saxifragifolia</i> (Lehm.) W.W. Smith	Present in Park	Present in Park
Pyrolaceae	<i>Pyrola asarifolia</i> ssp. <i>asarifolia</i> Michx.	Present in Park	Present in Park
Ranunculaceae	<i>Ranunculus eschscholtzii</i> Schlecht.	Present in Park	Present in Park
Ranunculaceae	<i>Ranunculus occidentalis</i> Nutt.	Present in Park	Present in Park
Scrophulariaceae	<i>Rhinanthus minor</i> L.	Present in Park	Present in Park
Crassulaceae	<i>Rhodiola integrifolia</i> Raf.	Present in Park	Present in Park
Grossulariaceae	<i>Ribes laxiflorum</i> Pursh	Present in Park	Present in Park
Brassicaceae	<i>Rorippa palustris</i> (L.) Bess.	Present in Park	Present in Park
Rosaceae	<i>Rubus arcticus</i> ssp. <i>stellatus</i> (Sm.) Boivin	Present in Park	Present in Park
Rosaceae	<i>Rubus pedatus</i> Sm.	Present in Park	Present in Park
Rosaceae	<i>Rubus spectabilis</i> Pursh	Present in Park	Present in Park
Polygonaceae	<i>Rumex aquaticus</i> var. <i>fenestratus</i> (Greene) Dorn	Present in Park	Present in Park
Salicaceae	<i>Salix arctica</i> Pallas	Present in Park	Present in Park
Salicaceae	<i>Salix pulchra</i> Cham.	Present in Park	Present in Park
Salicaceae	<i>Salix sitchensis</i> Sanson ex Bong.	Present in Park	Present in Park
Rosaceae	<i>Sanguisorba canadensis</i> L.	Present in Park	Present in Park
Saxifragaceae	<i>Saxifraga bronchialis</i> L.	Present in Park	Present in Park
Saxifragaceae	<i>Saxifraga caespitosa</i> L.	Present in Park	Present in Park
Saxifragaceae	<i>Saxifraga ferruginea</i> Graham	Present in Park	Present in Park
Saxifragaceae	<i>Saxifraga lyallii</i> Engl.	Present in Park	Present in Park
Asteraceae	<i>Senecio triangularis</i> Hook.	Present in Park	Present in Park
Rosaceae	<i>Sibbaldia procumbens</i> L.	Present in Park	Present in Park
Asteraceae	<i>Solidago multiradiata</i> Ait.	Present in Park	Present in Park
Rosaceae	<i>Sorbus sitchensis</i> M. Roemer	Present in Park	Present in Park
Rosaceae	<i>Spiraea stevenii</i> (Schneid.) Rydb.	Present in Park	Present in Park
Caryophyllaceae	<i>Stellaria borealis</i> ssp. <i>borealis</i> Bigelow	Present in Park	Present in Park
Caryophyllaceae	<i>Stellaria borealis</i> ssp. <i>sitchana</i> (Steud.) Piper	Present in Park	Present in Park
Caryophyllaceae	<i>Stellaria humifusa</i> Rottb.	Present in Park	Present in Park



KENAI FJORDS NATIONAL PARK VASCULAR PLANT INVENTORY

**National Park Service 2002 Status of Vascular Plants Expected or Documented in Kenai Fjords National Park (cont.) –**

Family	ITIS Name	2002 Park Status	Post 2003 Park Status
Caryophyllaceae	<i>Stellaria longipes</i> Goldie	Present in Park	Present in Park
Liliaceae	<i>Streptopus amplexifolius</i> (L.) DC.	Present in Park	Present in Park
Saxifragaceae	<i>Tellima grandiflora</i> (Pursh) Dougl. ex Lindl.	Present in Park	Present in Park
Saxifragaceae	<i>Tiarella trifoliata</i> L.	Present in Park	Present in Park
Liliaceae	<i>Tofieldia coccinea</i> Richards.	Present in Park	Present in Park
Cyperaceae	<i>Trichophorum caespitosum</i> (L.) Hartman	Present in Park	Present in Park
Primulaceae	<i>Trientalis europaea</i> L.	Present in Park	Present in Park
Poaceae	<i>Trisetum spicatum</i> (L.) Richter	Present in Park	Present in Park
Ericaceae	<i>Vaccinium ovalifolium</i> Sm.	Present in Park	Present in Park
Ericaceae	<i>Vaccinium oxycoccos</i> L.	Present in Park	Present in Park
Ericaceae	<i>Vaccinium uliginosum</i> L.	Present in Park	Present in Park
Valerianaceae	<i>Valeriana sitchensis</i> Bong.	Present in Park	Present in Park
Liliaceae	<i>Veratrum viride</i> Ait.	Present in Park	Present in Park
Scrophulariaceae	<i>Veronica stelleri</i> Pallas ex Link	Present in Park	Present in Park
Scrophulariaceae	<i>Veronica wormskjoldii</i> Roemer & J.A. Schultes	Present in Park	Present in Park
Violaceae	<i>Viola langsdorffii</i> Fisch. Ex Ging.	Present in Park	Present in Park
Liliaceae	<i>Zigadenus elegans</i> Pursh	Present in Park	Present in Park
Asteraceae	<i>Achillea millefolium</i> var. <i>borealis</i> (Bong.) Farw.	Probably Present	Present in Park
Pteridaceae	<i>Adiantum pedatum</i> L.	Probably Present	Present in Park
Adoxaceae	<i>Adoxa moschatellina</i> L.	Probably Present	Probably Present
Asteraceae	<i>Agoseris glauca</i> (Pursh) Raf.	Probably Present	Probably Present
Poaceae	<i>Agrostis exarata</i> Trin.	Probably Present	Present in Park
Liliaceae	<i>Allium schoenoprasum</i> L.	Probably Present	Probably Present
Betulaceae	<i>Alnus incana</i> ssp. <i>tenuifolia</i> (Nutt.) Breitung	Probably Present	Present in Park
Poaceae	<i>Alopecurus alpinus</i> Sm.	Probably Present	Probably Present
Rosaceae	<i>Amelanchier alnifolia</i> (Nutt.) Nutt. ex M. Roemer	Probably Present	Probably Present
Ericaceae	<i>Andromeda polifolia</i> L.	Probably Present	Present in Park
Primulaceae	<i>Androsace septentrionalis</i> L.	Probably Present	Probably Present
Ranunculaceae	<i>Anemone multifida</i> Poir.	Probably Present	Probably Present
Ranunculaceae	<i>Anemone parviflora</i> Michx.	Probably Present	Present in Park
Ranunculaceae	<i>Anemone richardsonii</i> Hook.	Probably Present	Probably Present
Apiaceae	<i>Angelica genuflexa</i> Nutt.	Probably Present	Probably Present
Asteraceae	<i>Antennaria alpina</i> (L.) Gaertn.	Probably Present	Present in Park
Asteraceae	<i>Antennaria rosea</i> ssp. <i>confinis</i> (Greene) Bayer	Probably Present	Present in Park
Asteraceae	<i>Antennaria rosea</i> ssp. <i>rosea</i> Greene	Probably Present	Probably Present
Brassicaceae	<i>Arabis hirsuta</i> (L.) Scop.	Probably Present	Probably Present
Brassicaceae	<i>Arabis holboellii</i> Hornem.	Probably Present	Probably Present
Brassicaceae	<i>Arabis X divaricarpa</i> A. Nels. (pro sp.)	Probably Present	Probably Present
Poaceae	<i>Arctophila fulva</i> (Trin.) Rupr. ex Anderss.	Probably Present	Probably Present
Ericaceae	<i>Arctostaphylos alpina</i> (L.) Spreng.	Probably Present	Present in Park
Ericaceae	<i>Arctostaphylos rubra</i> (Rehd. & Wilson) Fern.	Probably Present	Probably Present
Ericaceae	<i>Arctostaphylos uva-ursi</i> (L.) Spreng.	Probably Present	Probably Present
Plumbaginaceae	<i>Armeria maritima</i> (P. Mill.) Willd.	Probably Present	Probably Present
Asteraceae	<i>Arnica chamissonis</i> Less.	Probably Present	Probably Present
Asteraceae	<i>Arnica frigida</i> C.A. Mey. ex Iljin	Probably Present	Present in Park
Asteraceae	<i>Arnica latifolia</i> Bong.	Probably Present	Present in Park
Asteraceae	<i>Aster sibiricus</i> Linnaeus	Probably Present	Present in Park
Dryopteridaceae	<i>Athyrium filix-femina</i> (L.) Roth	Probably Present	Present in Park
Chenopodiaceae	<i>Atriplex alaskensis</i> S. Wats.	Probably Present	Probably Present
Chenopodiaceae	<i>Atriplex gmelinii</i> C.A. Mey. ex Bong.	Probably Present	Present in Park
Betulaceae	<i>Betula nana</i> L.	Probably Present	Present in Park
Betulaceae	<i>Betula papyrifera</i> var. <i>kenaica</i> (W.H. Evans) A. Henry	Probably Present	Probably Present
Orobanchaceae	<i>Boschniakia rossica</i> (Cham. & Schlecht.) Fedtsch.	Probably Present	Present in Park
Poaceae	<i>Calamagrostis stricta</i> ssp. <i>inexpansa</i> (Gray) C.W. G	Probably Present	Probably Present
Araceae	<i>Calla palustris</i> L.	Probably Present	Probably Present

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**National Park Service 2002 Status of Vascular Plants Expected or Documented in Kenai Fjords National Park (cont.) –**

Family	ITIS Name	2002 Park Status	Post 2003 Park Status
Callitrichaceae	Callitriche hermaphroditica L.	Probably Present	Present in Park
Callitrichaceae	Callitriche palustris L.	Probably Present	Present in Park
Ranunculaceae	Caltha leptosepala DC.	Probably Present	Present in Park
Brassicaceae	Capsella bursa-pastoris (L.) Medik.	Probably Present	Probably Present
Brassicaceae	Cardamine bellidifolia L.	Probably Present	Present in Park
Brassicaceae	Cardamine pratensis L.	Probably Present	Probably Present
Cyperaceae	Carex anthoxanthea J.& K. Presl	Probably Present	Present in Park
Cyperaceae	Carex aquatilis var. aquatilis Wahlenb.	Probably Present	Present in Park
Cyperaceae	Carex atrosquama Mackenzie	Probably Present	Probably Present
Cyperaceae	Carex buxbaumii Wahlenb.	Probably Present	Probably Present
Cyperaceae	Carex canescens L.	Probably Present	Present in Park
Cyperaceae	Carex capillaris L.	Probably Present	Probably Present
Cyperaceae	Carex circinata C.A. Mey.	Probably Present	Present in Park
Cyperaceae	Carex disperma Dewey	Probably Present	Present in Park
Cyperaceae	Carex foenea var. foenea Willd.	Probably Present	Probably Present
Cyperaceae	Carex glareosa Schkuhr ex Wahlenb.	Probably Present	Probably Present
Cyperaceae	Carex gmelinii Hook. & Arn.	Probably Present	Present in Park
Cyperaceae	Carex gynocrates Wormsk. ex Drej.	Probably Present	Probably Present
Cyperaceae	Carex lachenalii Schkuhr	Probably Present	Present in Park
Cyperaceae	Carex laeviculmis Meinsh.	Probably Present	Probably Present
Cyperaceae	Carex leptalea Wahlenb.	Probably Present	Probably Present
Cyperaceae	Carex limosa L.	Probably Present	Present in Park
Cyperaceae	Carex macloviana d'Urv.	Probably Present	Present in Park
Cyperaceae	Carex magellanica Lam.	Probably Present	Present in Park
Cyperaceae	Carex microchaeta ssp. nesophila (Holm) E. Murr.	Probably Present	Present in Park
Cyperaceae	Carex nardina Fries	Probably Present	Present in Park
Cyperaceae	Carex norvegica ssp. inferalpina (Wahlenb.) Hultén	Probably Present	Probably Present
Cyperaceae	Carex pauciflora Lightf.	Probably Present	Probably Present
Cyperaceae	Carex pluriflora Hultén	Probably Present	Present in Park
Cyperaceae	Carex podocarpa R. Br.	Probably Present	Probably Present
Cyperaceae	Carex praticola Rydb.	Probably Present	Probably Present
Cyperaceae	Carex preslii Steud.	Probably Present	Probably Present
Cyperaceae	Carex ramenskii Komarov	Probably Present	Probably Present
Cyperaceae	Carex saxatilis L.	Probably Present	Present in Park
Cyperaceae	Carex scirpoidea Michx.	Probably Present	Present in Park
Cyperaceae	Carex stylosa C.A. Mey.	Probably Present	Present in Park
Cyperaceae	Carex tenuiflora Wahlenb.	Probably Present	Present in Park
Cyperaceae	Carex utriculata Boott	Probably Present	Present in Park
Cyperaceae	Carex X paludivagans Drury (pro sp.)	Probably Present	Probably Present
Ericaceae	Cassiope lycopodioides (Pallas) D. Don	Probably Present	Present in Park
Caryophyllaceae	Cerastium arvense L.	Probably Present	Probably Present
Caryophyllaceae	Cerastium fischerianum Ser.	Probably Present	Probably Present
Caryophyllaceae	Cerastium fontanum Baumg.	Probably Present	Present in Park
Chenopodiaceae	Chenopodium album L.	Probably Present	Probably Present
Apiaceae	Cicuta douglasii (DC.) Coult. & Rose	Probably Present	Probably Present
Apiaceae	Cicuta virosa L.	Probably Present	Probably Present
Onagraceae	Circaea alpina L.	Probably Present	Present in Park
Portulacaceae	Claytonia sarmentosa C.A. Mey.	Probably Present	Present in Park
Brassicaceae	Cochlearia groenlandica L.	Probably Present	Present in Park
Brassicaceae	Cochlearia sessilifolia Rollins	Probably Present	Present in Park
Ranunculaceae	Coptis trifolia (L.) Salisb.	Probably Present	Present in Park
Orchidaceae	Corallorrhiza trifida Chatelain	Probably Present	Probably Present
Cornaceae	Cornus canadensis L.	Probably Present	Present in Park
Cornaceae	Cornus suecica L.	Probably Present	Present in Park
Fumariaceae	Corydalis pauciflora (Steph.) Pers.	Probably Present	Probably Present

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**National Park Service 2002 Status of Vascular Plants Expected or Documented in Kenai Fjords National Park (cont.) –**

Family	ITIS Name	2002 Park Status	Post 2003 Park Status
Fumariaceae	<i>Corydalis sempervirens</i> (L.) Pers.	Probably Present	Probably Present
Dryopteridaceae	<i>Cystopteris montana</i> (Lam.) Bernh. ex Desv.	Probably Present	Probably Present
Rosaceae	<i>Dasiphora floribunda</i> (Pursh) Kartesz, comb. nov. ined.	Probably Present	Present in Park
Ranunculaceae	<i>Delphinium glaucum</i> S. Wats.	Probably Present	Probably Present
Asteraceae	<i>Dendranthema arcticum</i> ssp. <i>arcticum</i> (L.) Tzvelev	Probably Present	Present in Park
Caryophyllaceae	<i>Dianthus repens</i> Willd.	Probably Present	Probably Present
Primulaceae	<i>Douglasia alaskana</i> (Coville & Standl. ex Hultén) S.	Probably Present	Probably Present
Brassicaceae	<i>Draba aurea</i> Vahl ex Hornem.	Probably Present	Probably Present
Brassicaceae	<i>Draba borealis</i> DC.	Probably Present	Probably Present
Brassicaceae	<i>Draba incerta</i> Payson	Probably Present	Probably Present
Brassicaceae	<i>Draba lonchocarpa</i> Rydb.	Probably Present	Probably Present
Brassicaceae	<i>Draba nemorosa</i> L.	Probably Present	Probably Present
Brassicaceae	<i>Draba nivalis</i> Lilj.	Probably Present	Present in Park
Brassicaceae	<i>Draba palanderiana</i> Kjellm.	Probably Present	Probably Present
Droseraceae	<i>Drosera anglica</i> Huds.	Probably Present	Probably Present
Droseraceae	<i>Drosera rotundifolia</i> L.	Probably Present	Present in Park
Rosaceae	<i>Dryas integrifolia</i> Vahl	Probably Present	Present in Park
Rosaceae	<i>Dryas octopetala</i> L.	Probably Present	Present in Park
Poaceae	<i>Elymus alaskanus</i> ssp. <i>latiglumis</i> (Scribn. & J.G. S.)	Probably Present	Probably Present
Poaceae	<i>Elymus sibiricus</i> L.	Probably Present	Probably Present
Poaceae	<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i> (Link) Gould	Probably Present	Probably Present
Empetraceae	<i>Empetrum nigrum</i> ssp. <i>hermaphroditum</i> (Lange ex Hultén)	Probably Present	Probably Present
Onagraceae	<i>Epilobium hornemannii</i> ssp. <i>behringianum</i> (Hauskn.)	Probably Present	Probably Present
Onagraceae	<i>Epilobium hornemannii</i> ssp. <i>hornemannii</i> Reichenb.	Probably Present	Present in Park
Onagraceae	<i>Epilobium palustre</i> L.	Probably Present	Present in Park
Equisetaceae	<i>Equisetum pratense</i> Ehrh.	Probably Present	Probably Present
Equisetaceae	<i>Equisetum scirpoides</i> Michx.	Probably Present	Probably Present
Equisetaceae	<i>Equisetum sylvaticum</i> L.	Probably Present	Present in Park
Asteraceae	<i>Erigeron humilis</i> Graham	Probably Present	Probably Present
Cyperaceae	<i>Eriophorum angustifolium</i> Honckeny	Probably Present	Probably Present
Cyperaceae	<i>Eriophorum angustifolium</i> ssp. <i>triste</i> (T. Fries) Hultén	Probably Present	Probably Present
Cyperaceae	<i>Eriophorum brachyantherum</i> Trautv. & C.A. Mey.	Probably Present	Probably Present
Cyperaceae	<i>Eriophorum russeolum</i> Fries ex Hartman	Probably Present	Present in Park
Brassicaceae	<i>Erysimum cheiranthoides</i> L.	Probably Present	Probably Present
Brassicaceae	<i>Erysimum inconspicuum</i> (S. Wats.) MacM.	Probably Present	Probably Present
Poaceae	<i>Festuca altaica</i> Trin.	Probably Present	Probably Present
Poaceae	<i>Festuca brachyphylla</i> J.A. Schultes ex J.A. & J.H. S.	Probably Present	Present in Park
Poaceae	<i>Festuca occidentalis</i> Hook.	Probably Present	Probably Present
Rosaceae	<i>Fragaria chiloensis</i> ssp. <i>pacifica</i> Staudt	Probably Present	Probably Present
Lamiaceae	<i>Galeopsis bifida</i> Boenn.	Probably Present	Probably Present
Rubiaceae	<i>Galium boreale</i> L.	Probably Present	Probably Present
Rubiaceae	<i>Galium triflorum</i> Michx.	Probably Present	Probably Present
Gentianaceae	<i>Gentianella amarella</i> (L.) Boerner	Probably Present	Probably Present
Santalaceae	<i>Geocaulon lividum</i> (Richards.) Fern.	Probably Present	Probably Present
Rosaceae	<i>Geum macrophyllum</i> var. <i>perincisum</i> (Rydb.) Raup	Probably Present	Probably Present
Rosaceae	<i>Geum rossii</i> var. <i>rossii</i> (R. Br.) Ser.	Probably Present	Present in Park
Primulaceae	<i>Glaux maritima</i> L.	Probably Present	Present in Park
Orchidaceae	<i>Goodyera repens</i> (L.) R. Br. ex Ait. f.	Probably Present	Probably Present
Dryopteridaceae	<i>Gymnocarpium dryopteris</i> (L.) Newman	Probably Present	Present in Park
Ericaceae	<i>Harrimanella stelleriana</i> (Pallas) Coville	Probably Present	Present in Park
Fabaceae	<i>Hedysarum alpinum</i> L.	Probably Present	Probably Present
Poaceae	<i>Hierochloa odorata</i> (L.) Beauv.	Probably Present	Probably Present
Hippuridaceae	<i>Hippuris vulgaris</i> L.	Probably Present	Probably Present
Poaceae	<i>Hordeum brachyantherum</i> Nevski	Probably Present	Present in Park
Poaceae	<i>Hordeum jubatum</i> L.	Probably Present	Probably Present

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**National Park Service 2002 Status of Vascular Plants Expected or Documented in Kenai Fjords National Park (cont.) –**

Family	ITIS Name	2002 Park Status	Post 2003 Park Status
Lycopodiaceae	Huperzia selago (L.) Bernh.	Probably Present	Probably Present
Balsaminaceae	Impatiens noli-tangere L.	Probably Present	Probably Present
Juncaceae	Juncus alpinoarticulatus ssp. nodulosus (Wahlenb.) Kuhn	Probably Present	Probably Present
Juncaceae	Juncus biglumis L.	Probably Present	Probably Present
Juncaceae	Juncus drummondii E. Mey.	Probably Present	Present in Park
Juncaceae	Juncus ensifolius Wikstr.	Probably Present	Probably Present
Polygonaceae	Koenigia islandica L.	Probably Present	Present in Park
Fabaceae	Lathyrus palustris L.	Probably Present	Probably Present
Ericaceae	Ledum groenlandicum Oeder	Probably Present	Probably Present
Ericaceae	Ledum palustre ssp. decumbens (Ait.) Hultén	Probably Present	Probably Present
Scrophulariaceae	Linaria vulgaris P. Mill.	Probably Present	Probably Present
Caprifoliaceae	Linnaea borealis L.	Probably Present	Present in Park
Liliaceae	Lloydia serotina (L.) Reichenb.	Probably Present	Present in Park
Ericaceae	Loiseleuria procumbens (L.) Desv.	Probably Present	Present in Park
Gentianaceae	Lomatogonium rotatum (L.) Fries ex Fern.	Probably Present	Probably Present
Fabaceae	Lupinus nootkatensis Donn ex Sims	Probably Present	Probably Present
Fabaceae	Lupinus polyphyllus Lindl.	Probably Present	Probably Present
Juncaceae	Luzula arcuata ssp. unalaschcensis (Buch.) Hultén	Probably Present	Present in Park
Juncaceae	Luzula multiflora (Ehrh.) Lej.	Probably Present	Probably Present
Juncaceae	Luzula spicata (L.) DC.	Probably Present	Present in Park
Lycopodiaceae	Lycopodium clavatum L.	Probably Present	Present in Park
Lycopodiaceae	Lycopodium complanatum L.	Probably Present	Probably Present
Primulaceae	Lysimachia thyrsoflora L.	Probably Present	Probably Present
Liliaceae	Maianthemum dilatatum (Wood) A. Nels. & J.F. MacG.	Probably Present	Present in Park
Asteraceae	Matricaria discoidea DC.	Probably Present	Probably Present
Boraginaceae	Mertensia paniculata var. paniculata (Ait.) G. Don	Probably Present	Probably Present
Scrophulariaceae	Misopates orontium (L.) Raf.	Probably Present	Probably Present
Saxifragaceae	Mitella pentandra Hook.	Probably Present	Probably Present
Caryophyllaceae	Moehringia lateriflora (L.) Fenzl	Probably Present	Probably Present
Portulacaceae	Montia chamissoi (Ledeb. ex Spreng.) Greene	Probably Present	Probably Present
Portulacaceae	Montia fontana L.	Probably Present	Present in Park
Boraginaceae	Myosotis palustris (L.) Hill	Probably Present	Probably Present
Nymphaeaceae	Nuphar lutea ssp. polysepala (Engelm.) E.O. Beal	Probably Present	Probably Present
Apiaceae	Osmorhiza depauperata Phil.	Probably Present	Probably Present
Fabaceae	Oxytropis nigrescens var. nigrescens (Pallas) Fisch.	Probably Present	Present in Park
Asteraceae	Packera indecora (Greene) A. & D. Löve	Probably Present	Probably Present
Asteraceae	Packera pauciflora (Pursh) A. & D. Löve	Probably Present	Probably Present
Papaveraceae	Papaver lapponicum (Tolm.) Nordh.	Probably Present	Probably Present
Papaveraceae	Papaver nudicaule L.	Probably Present	Probably Present
Papaveraceae	Papaver radicum ssp. alaskanum (Hultén) J.P. Anderson	Probably Present	Present in Park
Saxifragaceae	Parnassia kotzebuei Cham. ex Spreng.	Probably Present	Present in Park
Brassicaceae	Parrya nudicaulis (L.) Boiss.	Probably Present	Probably Present
Scrophulariaceae	Pedicularis capitata M.F. Adams	Probably Present	Present in Park
Scrophulariaceae	Pedicularis kanei Dur.	Probably Present	Probably Present
Scrophulariaceae	Pedicularis labradorica Wirsing	Probably Present	Present in Park
Scrophulariaceae	Pedicularis langsдорffii Fisch. ex Stev.	Probably Present	Probably Present
Asteraceae	Petasites frigidus var. palmatus (Ait.) Cronq.	Probably Present	Probably Present
Poaceae	Phalaris arundinacea L.	Probably Present	Probably Present
Thelypteridaceae	Phegopteris connectilis (Michx.) Watt	Probably Present	Probably Present
Zosteraceae	Phyllospadix scouleri Hook.	Probably Present	Probably Present
Zosteraceae	Phyllospadix serrulatus Rupr. ex Aschers.	Probably Present	Probably Present
Pinaceae	Picea glauca (Moench) Voss	Probably Present	Probably Present
Pinaceae	Picea glauca X sitchensis	Probably Present	Probably Present
Pinaceae	Picea mariana (P. Mill.) B.S.P.	Probably Present	Probably Present
Pinaceae	Picea sitchensis (Bong.) Carr.	Probably Present	Probably Present

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**National Park Service 2002 Status of Vascular Plants Expected or Documented in Kenai Fjords National Park (cont.) –**

Family	ITIS Name	2002 Park Status	Post 2003 Park Status
Lentibulariaceae	<i>Pinguicula villosa</i> L.	Probably Present	Probably Present
Lentibulariaceae	<i>Pinguicula vulgaris</i> L.	Probably Present	Present in Park
Orchidaceae	<i>Platanthera hyperborea</i> var. <i>viridiflora</i> (Cham.) Luer	Probably Present	Probably Present
Orchidaceae	<i>Platanthera obtusata</i> (Banks ex Pursh) Lindl.	Probably Present	Probably Present
Poaceae	<i>Poa alpina</i> L.	Probably Present	Present in Park
Poaceae	<i>Poa arctica</i> ssp. <i>williamsii</i> (Nash) Hultén	Probably Present	Probably Present
Poaceae	<i>Poa glauca</i> Vahl	Probably Present	Probably Present
Poaceae	<i>Poa macrocalyx</i> Trautv. & C.A. Mey.	Probably Present	Present in Park
Poaceae	<i>Poa palustris</i> L.	Probably Present	Probably Present
Poaceae	<i>Poa paucispicula</i> Scribn. & Merr.	Probably Present	Present in Park
Poaceae	<i>Poa pratensis</i> L.	Probably Present	Probably Present
Poaceae	<i>Poa pratensis</i> ssp. <i>alpigena</i> (Fries ex Blytt) Hiitonen	Probably Present	Present in Park
Poaceae	<i>Poa pseudoabbreviata</i> Rosh.	Probably Present	Probably Present
Poaceae	<i>Poa stenantha</i> Trin.	Probably Present	Present in Park
Polemoniaceae	<i>Polemonium boreale</i> M.F. Adams	Probably Present	Probably Present
Polygonaceae	<i>Polygonum amphibium</i> L.	Probably Present	Probably Present
Polygonaceae	<i>Polygonum aviculare</i> L.	Probably Present	Probably Present
Polygonaceae	<i>Polygonum convolvulus</i> L.	Probably Present	Probably Present
Dryopteridaceae	<i>Polystichum braunii</i> (Spenner) Fée	Probably Present	Probably Present
Dryopteridaceae	<i>Polystichum lonchitis</i> (L.) Roth	Probably Present	Present in Park
Salicaceae	<i>Populus balsamifera</i> ssp. <i>trichocarpa</i> (Torr. & Gray) e	Probably Present	Probably Present
Salicaceae	<i>Populus tremuloides</i> Michx.	Probably Present	Probably Present
Potamogetonaceae	<i>Potamogeton alpinus</i> Balbis	Probably Present	Present in Park
Potamogetonaceae	<i>Potamogeton gramineus</i> L.	Probably Present	Probably Present
Potamogetonaceae	<i>Potamogeton natans</i> L.	Probably Present	Probably Present
Potamogetonaceae	<i>Potamogeton praelongus</i> Wulfen	Probably Present	Probably Present
Potamogetonaceae	<i>Potamogeton pusillus</i> ssp. <i>tenuissimus</i> (Mert. & Ko	Probably Present	Probably Present
Rosaceae	<i>Potentilla bimundorum</i> Soják	Probably Present	Probably Present
Rosaceae	<i>Potentilla diversifolia</i> Lehm.	Probably Present	Probably Present
Rosaceae	<i>Potentilla gracilis</i> Dougl. ex Hook.	Probably Present	Probably Present
Rosaceae	<i>Potentilla nana</i> Willd. ex Schlecht.	Probably Present	Present in Park
Rosaceae	<i>Potentilla norvegica</i> L.	Probably Present	Probably Present
Rosaceae	<i>Potentilla pensylvanica</i> L.	Probably Present	Probably Present
Rosaceae	<i>Potentilla uniflora</i> Ledeb.	Probably Present	Present in Park
Poaceae	<i>Puccinellia nutkaensis</i> (J. Presl) Fern. & Weatherby	Probably Present	Present in Park
Poaceae	<i>Puccinellia phryganodes</i> (Trin.) Scribn. & Merr.	Probably Present	Probably Present
Pyrolaceae	<i>Pyrola chlorantha</i> Sw.	Probably Present	Probably Present
Pyrolaceae	<i>Pyrola grandiflora</i> Radius	Probably Present	Probably Present
Pyrolaceae	<i>Pyrola minor</i> L.	Probably Present	Probably Present
Ranunculaceae	<i>Ranunculus abortivus</i> L.	Probably Present	Probably Present
Ranunculaceae	<i>Ranunculus cymbalaria</i> Pursh	Probably Present	Present in Park
Ranunculaceae	<i>Ranunculus flammula</i> var. <i>filiformis</i> (Michx.) Hook	Probably Present	Probably Present
Ranunculaceae	<i>Ranunculus lapponicus</i> L.	Probably Present	Probably Present
Ranunculaceae	<i>Ranunculus uncinatus</i> var. <i>parviflorus</i> (Torr.) L. Bensch	Probably Present	Probably Present
Grossulariaceae	<i>Ribes bracteosum</i> Dougl. ex Hook.	Probably Present	Present in Park
Grossulariaceae	<i>Ribes glandulosum</i> Grauer	Probably Present	Probably Present
Grossulariaceae	<i>Ribes hudsonianum</i> Richards.	Probably Present	Present in Park
Grossulariaceae	<i>Ribes lacustre</i> (Pers.) Poir.	Probably Present	Probably Present
Grossulariaceae	<i>Ribes triste</i> Pallas	Probably Present	Probably Present
Hydrophyllaceae	<i>Romanzoffia sitchensis</i> Bong.	Probably Present	Present in Park
Brassicaceae	<i>Rorippa barbareaifolia</i> (DC.) Kitagawa	Probably Present	Probably Present
Rosaceae	<i>Rosa acicularis</i> Lindl.	Probably Present	Probably Present
Rosaceae	<i>Rosa nutkana</i> K. Presl	Probably Present	Probably Present
Rosaceae	<i>Rubus chamaemorus</i> L.	Probably Present	Probably Present
Rosaceae	<i>Rubus idaeus</i> L.	Probably Present	Probably Present

KENAI FJORDS NATIONAL PARK VASCULAR PLANT INVENTORY

**National Park Service 2002 Status of Vascular Plants Expected or Documented in Kenai Fjords National Park (cont.) –**

Family	ITIS Name	2002 Park Status	Post 2003 Park Status
Polygonaceae	Rumex acetosella L.	Probably Present	Probably Present
Polygonaceae	Rumex arcticus Trautv.	Probably Present	Probably Present
Polygonaceae	Rumex longifolius DC.	Probably Present	Probably Present
Polygonaceae	Rumex salicifolius var. transitorius (Rech. f.) Hickman	Probably Present	Present in Park
Chenopodiaceae	Salicornia maritima Wolf & Jefferies	Probably Present	Probably Present
Salicaceae	Salix alaxensis var. longistylis (Rydb.) Schneid. -- fel	Probably Present	Probably Present
Salicaceae	Salix arbusculoides Anderss.	Probably Present	Probably Present
Salicaceae	Salix barclayi Anderss.	Probably Present	Present in Park
Salicaceae	Salix bebbiana Sarg.	Probably Present	Probably Present
Salicaceae	Salix commutata Bebb	Probably Present	Present in Park
Salicaceae	Salix fuscescens Anderss.	Probably Present	Present in Park
Salicaceae	Salix reticulata L.	Probably Present	Present in Park
Salicaceae	Salix rotundifolia ssp. rotundifolia Trautv.	Probably Present	Present in Park
Salicaceae	Salix scouleriana Barratt ex Hook.	Probably Present	Probably Present
Saxifragaceae	Saxifraga calycina Sternb.	Probably Present	Probably Present
Saxifragaceae	Saxifraga cernua L.	Probably Present	Present in Park
Saxifragaceae	Saxifraga eschscholtzii Sternb.	Probably Present	Probably Present
Saxifragaceae	Saxifraga nivalis L.	Probably Present	Probably Present
Saxifragaceae	Saxifraga oppositifolia L.	Probably Present	Probably Present
Saxifragaceae	Saxifraga rivularis L.	Probably Present	Present in Park
Saxifragaceae	Saxifraga sibirica L.	Probably Present	Present in Park
Saxifragaceae	Saxifraga tricuspidata Rottb.	Probably Present	Present in Park
Asteraceae	Senecio lugens Richards.	Probably Present	Probably Present
Elaeagnaceae	Shepherdia canadensis (L.) Nutt.	Probably Present	Probably Present
Caryophyllaceae	Silene menziesii ssp. menziesii Hook.	Probably Present	Probably Present
Caryophyllaceae	Silene noctiflora L.	Probably Present	Probably Present
Caryophyllaceae	Silene uralensis ssp. uralensis (Rupr.) Bocquet	Probably Present	Probably Present
Asteraceae	Solidago canadensis var. lepida (DC.) Cronq.	Probably Present	Present in Park
Asteraceae	Sonchus asper (L.) Hill	Probably Present	Probably Present
Rosaceae	Sorbus scopulina Green	Probably Present	Present in Park
Sparganiaceae	Sparganium hyperboreum Laestad.	Probably Present	Present in Park
Caryophyllaceae	Spergularia canadensis (Pers.) G. Don	Probably Present	Present in Park
Orchidaceae	Spiranthes romanzoffiana Cham.	Probably Present	Probably Present
Caryophyllaceae	Stellaria calycantha (Ledeb.) Bong.	Probably Present	Present in Park
Caryophyllaceae	Stellaria crispa Cham. & Schlecht.	Probably Present	Present in Park
Caryophyllaceae	Stellaria longifolia Muhl. ex Willd.	Probably Present	Present in Park
Caryophyllaceae	Stellaria media (L.) Vill.	Probably Present	Probably Present
Potamogetonaceae	Stuckenia filiformis ssp. alpinus (Blytt) Haynes, D.H	Probably Present	Probably Present
Potamogetonaceae	Stuckenia filiformis ssp. occidentalis (J.W. Robbins)	Probably Present	Probably Present
Potamogetonaceae	Stuckenia pectinatus (L.) Boerner	Probably Present	Present in Park
Potamogetonaceae	Stuckenia vaginatus (Turcz.) Holub	Probably Present	Probably Present
Gentianaceae	Swertia perennis L.	Probably Present	Present in Park
Asteraceae	Taraxacum lyratum (Ledeb.) DC.	Probably Present	Probably Present
Asteraceae	Taraxacum officinale ssp. officinale G.H. Weber ex W	Probably Present	Probably Present
Ranunculaceae	Thalictrum alpinum L.	Probably Present	Present in Park
Ranunculaceae	Thalictrum sparsiflorum Turcz. ex Fisch. & C.A. Mey	Probably Present	Present in Park
Brassicaceae	Thlaspi arcticum Porsild	Probably Present	Probably Present
Liliaceae	Tofieldia glutinosa (Michx.) Pers.	Probably Present	Probably Present
Cyperaceae	Trichophorum alpinum (L.) Pers.	Probably Present	Probably Present
Fabaceae	Trifolium hybridum L.	Probably Present	Probably Present
Fabaceae	Trifolium pratense L.	Probably Present	Probably Present
Fabaceae	Trifolium repens L.	Probably Present	Probably Present
Juncaginaceae	Triglochin maritima	Probably Present	Present in Park
Juncaginaceae	Triglochin palustre L.	Probably Present	Present in Park
Pinaceae	Tsuga mertensiana (Bong.) Carr.	Probably Present	Probably Present

KENAI FJORDS NATIONAL PARK VASCULAR PLANT INVENTORY

**National Park Service 2002 Status of Vascular Plants Expected or Documented in Kenai Fjords National Park (cont.) –**

Family	ITIS Name	2002 Park Status	Post 2003 Park Status
Urticaceae	<i>Urtica dioica</i> L.	Probably Present	Present in Park
Lentibulariaceae	<i>Utricularia intermedia</i> Hayne	Probably Present	Probably Present
Ericaceae	<i>Vaccinium caespitosum</i> Michx.	Probably Present	Probably Present
Ericaceae	<i>Vaccinium vitis-idaea</i> L.	Probably Present	Present in Park
Valerianaceae	<i>Valeriana capitata</i>	Probably Present	Probably Present
Scrophulariaceae	<i>Veronica americana</i> Schwein. ex Benth.	Probably Present	Present in Park
Scrophulariaceae	<i>Veronica serpyllifolia</i> L.	Probably Present	Probably Present
Caprifoliaceae	<i>Viburnum edule</i> (Michx.) Raf.	Probably Present	Present in Park
Violaceae	<i>Viola adunca</i> Sm.	Probably Present	Probably Present
Violaceae	<i>Viola glabella</i> Nutt.	Probably Present	Present in Park
Asteraceae	<i>Arnica ovata</i> What is this thing??	Probably Present	Probably Present
Dryopteridaceae	<i>Woodsia ilvensis</i> (L.) R. Br.	Probably Present	Present in Park
Zannichelliaceae	<i>Zannichellia palustris</i> L.	Probably Present	Probably Present
Zosteraceae	<i>Zostera marina</i> L.	Probably Present	Present in Park
Ranunculaceae	<i>Aconitum delphinifolium</i> ssp. <i>chamissonianum</i> (Reichb.)	Unconfirmed	Unconfirmed
Ranunculaceae	<i>Aconitum delphinifolium</i> ssp. <i>delphinifolium</i> DC.	Unconfirmed - Bud Rice	Unconfirmed - Bud Rice
Ranunculaceae	<i>Actaea rubra</i> ssp. <i>arguta</i> (Nutt.) Hultén	Unconfirmed	Unconfirmed
Poaceae	<i>Agrostis mertensii</i> Trin.	Unconfirmed	Present in Park
Poaceae	<i>Agrostis scabra</i> Willd.	Unconfirmed	Present in Park
Betulaceae	<i>Alnus viridis</i> ssp. <i>sinuata</i> (Regel) A. & D. Löve	Unconfirmed	Unconfirmed
Asteraceae	<i>Anaphalis margaritacea</i> (L.) Benth.	Unconfirmed	Present in Park
Ranunculaceae	<i>Anemone narcissiflora</i> ssp. <i>alaskana</i> Hultén	Unconfirmed	Unconfirmed
Ranunculaceae	<i>Anemone narcissiflora</i> var. <i>monantha</i> DC.	Unconfirmed	Unconfirmed
Asteraceae	<i>Antennaria friesiana</i> ssp. <i>friesiana</i> (Trautv.) Ekman	Unconfirmed	Unconfirmed
Asteraceae	<i>Antennaria monocephala</i> ssp. <i>monocephala</i> DC.	Unconfirmed - Bud Rice	Present in Park
Asteraceae	<i>Antennaria rosea</i> ssp. <i>pulvinata</i> (Greene) Bayer	Unconfirmed	Unconfirmed
Poaceae	<i>Arctagrostis latifolia</i> ssp. <i>arundinacea</i> (Trin.) Tzvelev	Unconfirmed	Unconfirmed
Asteraceae	<i>Arnica amplexicaulis</i> Nutt.	Unconfirmed	Unconfirmed
Asteraceae	<i>Arnica lessingii</i> (Torr. & Gray) Greene	Unconfirmed	Present in Park
Asteraceae	<i>Artemisia arctica</i> ssp. <i>arctica</i> Less.	Unconfirmed	Present in Park
Asteraceae	<i>Artemisia tilesii</i> ssp. <i>elatiior</i> (Torr. & Gray) Hultén	Unconfirmed	Unconfirmed
Fabaceae	<i>Astragalus alpinus</i> var. <i>alpinus</i> L.	Unconfirmed	Present in Park
Ophioglossaceae	<i>Botrychium multifidum</i> (Gmel.) Trev.	Unconfirmed - Bud Rice	Unconfirmed - Bud Rice
Poaceae	<i>Calamagrostis canadensis</i> var. <i>canadensis</i> (Michx.) B.	Unconfirmed	Unconfirmed
Poaceae	<i>Calamagrostis canadensis</i> var. <i>langsдорffii</i> (Link) Inma	Unconfirmed	Unconfirmed
Poaceae	<i>Calamagrostis nutkaensis</i> (J. Presl) J. Presl ex Steud.	Unconfirmed	Present in Park
Campanulaceae	<i>Campanula lasiocarpa</i> Cham.	Unconfirmed	Unconfirmed
Cyperaceae	<i>Carex bebbii</i> Olney ex Fern.	Unconfirmed	Unconfirmed
Cyperaceae	<i>Carex mertensii</i> Prescott ex Bong.	Unconfirmed	Unconfirmed
Cyperaceae	<i>Carex pachystachya</i> Cham. ex Steud.	Unconfirmed	Unconfirmed
Caryophyllaceae	<i>Cerastium beeringianum</i> var. <i>beeringianum</i> Cham. &	Unconfirmed	Unconfirmed
Ericaceae	<i>Chamaedaphne calyculata</i> (L.) Moench	Unconfirmed - Bud Rice	Unconfirmed - Bud Rice
Rosaceae	<i>Comarum palustre</i> L.	Unconfirmed	Present in Park
Apiaceae	<i>Conioselinum gmelinii</i> (Cham. & Schlecht.) Steud.	Unconfirmed	Present in Park
Cornaceae	<i>Cornus canadensis</i> X <i>suecica</i>	Unconfirmed	Unconfirmed
Pteridaceae	<i>Cryptogramma acrostichoides</i> R. Br.	Unconfirmed - Bud Rice	Unconfirmed - Bud Rice
Dryopteridaceae	<i>Cystopteris fragilis</i> (L.) Bernh.	Unconfirmed	Unconfirmed
Primulaceae	<i>Dodecatheon jeffreyi</i> Van Houtte	Unconfirmed	Present in Park
Primulaceae	<i>Dodecatheon pulchellum</i> ssp. <i>macrocarpum</i> (Gray) T.	Unconfirmed	Unconfirmed
Rosaceae	<i>Dryas drummondii</i> Richards. ex Hook.	Unconfirmed	Unconfirmed
Dryopteridaceae	<i>Dryopteris expansa</i> (K. Presl) Fraser-Jenkins & Jerm	Unconfirmed	Present in Park
Cyperaceae	<i>Eleocharis</i>	Unconfirmed	Unconfirmed
Empetraceae	<i>Empetrum nigrum</i> ssp. <i>nigrum</i> L.	Unconfirmed	Present in Park
Onagraceae	<i>Epilobium ciliatum</i> ssp. <i>glandulosum</i> (Lehm.) Hoch &	Unconfirmed	Present in Park
Onagraceae	<i>Epilobium minutum</i> Lindl. ex Lehm.	Unconfirmed	Unconfirmed

KENAI FJORDS NATIONAL PARK VASCULAR PLANT INVENTORY

**National Park Service 2002 Status of Vascular Plants Expected or Documented in Kenai Fjords National Park (cont.) –**

Family	ITIS Name	2002 Park Status	Post 2003 Park Status
Equisetaceae	<i>Equisetum variegatum</i> var. <i>variegatum</i> Schleich. ex F	Unconfirmed	Unconfirmed
Asteraceae	<i>Erigeron acris</i> ssp. <i>politus</i> (Fries) Schinz & R. Keller	Unconfirmed	Unconfirmed
Asteraceae	<i>Erigeron peregrinus</i> ssp. <i>peregrinus</i> (Banks ex Pursh	Unconfirmed	Unconfirmed
Poaceae	<i>Festuca viviparoides</i> Krajina ex Pavlick	Unconfirmed	Unconfirmed
Rubiaceae	<i>Galium trifidum</i> ssp. <i>trifidum</i> L.	Unconfirmed	Present in Park
Poaceae	<i>Hierochloe alpina</i> (Sw. ex Willd.) Roemer & J.A. Sch	Unconfirmed - Bud Rice	Unconfirmed - Bud Rice
Juncaceae	<i>Juncus haenkei</i> E. Mey.	Unconfirmed	Present in Park
Cupressaceae	<i>Juniperus communis</i> var. <i>montana</i> Ait.	Unconfirmed	Unconfirmed
Fabaceae	<i>Lathyrus maritimus</i> ssp. <i>maritimus</i> X <i>pubescens</i>	Unconfirmed	Unconfirmed
Poaceae	<i>Leymus mollis</i> ssp. <i>mollis</i> (Trin.) Pilger	Unconfirmed	Unconfirmed
Apiaceae	<i>Ligusticum scoticum</i> ssp. <i>hultenii</i> (Fern.) Calder & T	Unconfirmed	Present in Park
Orchidaceae	<i>Listera caurina</i> Piper	Unconfirmed	Present in Park
Orchidaceae	<i>Listera cordata</i> var. <i>nephrophylla</i> (Rydb.) Hultén	Unconfirmed	Present in Park
Lycopodiaceae	<i>Lycopodium annotinum</i> var. <i>annotinum</i> L.	Unconfirmed	Unconfirmed
Araceae	<i>Lysichiton americanus</i> Hultén & St. John	Unconfirmed	Unconfirmed
Menyanthaceae	<i>Menyanthes trifoliata</i> L.	Unconfirmed	Unconfirmed
Boraginaceae	<i>Myosotis asiatica</i> (Vesterg.) Schischkin & Sergievsk	Unconfirmed	Unconfirmed
Papaveraceae	<i>Papaver alboroseum</i> Hultén	Unconfirmed - Bud Rice	Present in Park
Saxifragaceae	<i>Parnassia palustris</i> var. <i>tenuis</i> Wahlenb.	Unconfirmed	Unconfirmed
Asteraceae	<i>Petasites frigidus</i> var. <i>nivalis</i> (Greene) Cronq.	Unconfirmed	Present in Park
Poaceae	<i>Phleum alpinum</i> L.	Unconfirmed	Present in Park
Ericaceae	<i>Phyllodoce aleutica</i> (Spreng.) Heller	Unconfirmed	Unconfirmed
Ericaceae	<i>Phyllodoce glanduliflora</i> (Hook.) Coville	Unconfirmed	Present in Park
Lentibulariaceae	<i>Pinguicula macroceras</i> var. <i>macroceras</i> Link	Unconfirmed	Unconfirmed
Poaceae	<i>Poa arctica</i> R. Br.	Unconfirmed	Unconfirmed
Polypodiaceae	<i>Polypodium glycyrrhiza</i> D.C. Eat.	Unconfirmed	Unconfirmed
Salicaceae	<i>Populus balsamifera</i> (possib. ssp. <i>balsamifera</i> L.)	Unconfirmed	Unconfirmed
Rosaceae	<i>Potentilla fragiformis</i> Willd. ex Schlecht.	Unconfirmed	Unconfirmed
Poaceae	<i>Puccinellia andersonii</i> Swallen	Unconfirmed	Unconfirmed
Ericaceae	<i>Rhododendron camtschaticum</i> ssp. <i>camtschaticum</i>	Unconfirmed	Unconfirmed
Brassicaceae	<i>Rorippa islandica</i> (Oeder) Borbas	Unconfirmed	Unconfirmed
Caryophyllaceae	<i>Sagina nivalis</i> (Lindbl.) Fries	Unconfirmed - Bud Rice	Present in Park
Salicaceae	<i>Salix alaxensis</i> var. <i>alaxensis</i> (Anderss.) Coville	Unconfirmed	Present in Park
Salicaceae	<i>Salix phlebophylla</i> Anderss.	Unconfirmed	Unconfirmed
Salicaceae	<i>Salix polaris</i> Wahlenb.	Unconfirmed	Unconfirmed
Caprifoliaceae	<i>Sambucus racemosa</i> ssp. <i>pubens</i> var. <i>arborescens</i>	Unconfirmed	Present in Park
Saxifragaceae	<i>Saxifraga bronchialis</i> ssp. <i>cherlerioides</i> (D. Don) Hult	Unconfirmed	Unconfirmed
Saxifragaceae	<i>Saxifraga bronchialis</i> ssp. <i>funstonii</i> (Small) Hultén	Unconfirmed	Unconfirmed
Saxifragaceae	<i>Saxifraga nelsoniana</i> ssp. <i>nelsoniana</i> D. Don	Unconfirmed	Unconfirmed
Saxifragaceae	<i>Saxifraga nelsoniana</i> ssp. <i>pacifica</i> (Hultén) Hultén	Unconfirmed	Unconfirmed
Saxifragaceae	<i>Saxifraga nivalis</i> x <i>bracteata</i> ssp. <i>flexuosa</i>	Unconfirmed	Unconfirmed
Saxifragaceae	<i>Saxifraga rivularis</i> x <i>bracteata</i>	Unconfirmed	Unconfirmed
Asteraceae	<i>Senecio pseudo-arnica</i> Less.	Unconfirmed	Present in Park
Caryophyllaceae	<i>Silene acaulis</i> var. <i>acaulis</i> (L.) Jacq.	Unconfirmed	Present in Park
Caryophyllaceae	<i>Stellaria borealis</i> ssp. <i>sitchana</i> (Steud.) Piper	Unconfirmed	Unconfirmed
Asteraceae	<i>Taraxacum officinale</i> ssp. <i>ceratophorum</i> (Ledeb.) Scf	Unconfirmed	Present in Park
Asteraceae	<i>Taraxacum phymatocarpum</i> J. Vahl	Unconfirmed	Present in Park
Liliaceae	<i>Tofieldia pusilla</i> (Michx.) Pers.	Unconfirmed	Present in Park
Poaceae	<i>Vahlodea atropurpurea</i> (Wahlenb.) Fries ex Hartman	Unconfirmed	Present in Park
Violaceae	<i>Viola epipsila</i> ssp. <i>repens</i> Becker	Unconfirmed	Present in Park



## APPENDIX II

## Plant Collections by Alaska Natural Heritage Program at Kenai Fjords National Park in 2003 -

Annotated species list describing all taxa and the basic geographic and NPSpecies attributes.

Family	ITIS Genus	ITIS Species		Collection #	Stem	General Locality	Specific locality	Lat (dd)	Long (dd)
Asteraceae	Achillea	millefolium	var. borealis	03-1141	pp	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416
Peridaceae	Adiantum	pedantum		003	pp	North Arm of Nuka Bay	trail from Park Service	59.562583	150.522105
Poaceae	Agrostis	aequalis		005	none	North Arm of Nuka Bay	valley on S side of	59.546977	150.5364568
Poaceae	Agrostis	aequalis		165	none	McCarty Fjord	west facing slope	59.4763	150.3359
Poaceae	Agrostis	exarata		041	b pp	North Arm of Nuka Bay	Beauty Bay, west side	59.54695172	150.6615592
Poaceae	Agrostis	exarata		102	pp	Delight Lake, McCarty	lakeshore on north	59.544	150.3129
Poaceae	Agrostis	exarata		229	pp	Resurrection River valley	steep hillside above	60.27341233	149.7558527
Poaceae	Agrostis	exarata		03-1118	a pp	Nuka Bay	East Arm, Delight Lake	59.5477	150.3333
Poaceae	Agrostis	exarata		03-1136	a pp	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416
Poaceae	Agrostis	gigantea		03-1136	b none	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416
Poaceae	Agrostis	humilis		070	none	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501
Poaceae	Agrostis	mertensii		018	u	North Arm of Nuka Bay	valley on S side of	59.5435784	150.511415
Poaceae	Agrostis	mertensii		041	u	North Arm of Nuka Bay	Beauty Bay, west side	59.54695172	150.6615592
Poaceae	Agrostis	mertensii		326	u	Upper Nuka River valley	E ridge of hill 3,840,	59.663613	150.7157692
Poaceae	Agrostis	mertensii		03-1118	b u	Nuka Bay	East Arm, Delight Lake	59.5477	150.3333
Poaceae	Agrostis	mertensii		03-1228	u	Northwestern Lagoon	east side of	59.75	149.85
Poaceae	Agrostis	mertensii		03-1235	u	Aialik Bay	Coleman Bay	59.8588	149.61083
Poaceae	Agrostis	scabra		03-1237	b pp	Northwestern Lagoon	east side of	59.7436	149.8838
Poaceae	Agrostis	sp.		03-1138		Two Arm Bay	Paguna Arm, north end	59.6933	150.13416
Betulaceae	Alnus	viridis	ssp. crispa	03-1131	pp	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416
Betulaceae	Alnus	incana	ssp. tenuifolia	03-1305	pp	Exit Glacier Road	Resurrection River,	60.19645	149.58618
Poaceae	Alopecurus	aequalis		111	none	Delight Lake, McCarty	northwest shore of sw	59.5461	150.3021
Poaceae	Alopecurus	aequalis		124	none	Delight Lake spit,	near small lagoon, west	59.54451056	150.3353377
Poaceae	Alopecurus	aequalis		113	none	Delight Lake, McCarty	northwest shore of sw	59.5461	150.3021
Asteraceae	Anaphalis	margaritacea		03-1102	u	Nuka Bay	East Arm, Delight Lake	59.5477	150.3333
Ericaceae	Andromeda	polifolia		144	pp	Chance Cove	south facing slope	59.4896	150.3119
Ranunculaceae	Anemone	narcissiflora		03-1220	p	Harris Bay	Crater Bay, east side	59.6888	149.8038
Ranunculaceae	Anemone	parviflora		260	pp	Upper Nuka River valley	slope on E side of	59.66378352	150.6695906
Asteraceae	Antennaria	alpina		208	pp	Resurrection River valley	steep hillside above	60.27676356	149.7421397
Asteraceae	Antennaria	alpina		263	pp	Upper Nuka River valley	slope on E side of	59.66660395	150.6623429
Asteraceae	Antennaria	friesiana	ssp. alaskana	209	none	Resurrection River valley	steep hillside above	60.27676356	149.7421397
Asteraceae	Antennaria	monocephala		216	u	Resurrection River valley	steep hillside above	60.27341233	149.7558527
Asteraceae	Antennaria	monocephala		266	u	Upper Nuka River valley	slope on E side of	59.66660395	150.6623429
Asteraceae	Antennaria	monocephala		03-1310	u, An	Exit Glacier	Harding Icefield Trail	60.18094	149.70381
Asteraceae	Antennaria	rosea	ssp. confinis	03-1225	pp	Northwestern Lagoon	east side of	59.75	149.85
Asteraceae	Antennaria	rosea	ssp. pulvinata	044	none	North Arm of Nuka Bay	Beauty Bay, gravel	59.54695172	150.6615592
Brassicaceae	Arabis	kamchatica		194	none	Resurrection River valley	tributary creek on	60.28009612	149.7243845
Ericaceae	Arctostaphylos	alpina		196	pp	Resurrection River valley	steep hillside above	60.27676356	149.7421397
Ericaceae	Arctostaphylos	alpina		206	pp	Resurrection River valley	steep hillside above	60.27676356	149.7421397
Ericaceae	Arctostaphylos	alpina		03-1257	pp	Aialik Bay	Coleman Bay	59.8588	149.61083
Rosaceae	Argentina	egedii		03-1233	p	Northwestern Lagoon	east side of	59.7436	149.8838
Asteraceae	Arnica	angustifolia		03-1204	none	Harris Bay	Crater Bay	59.71638	149.78305
Asteraceae	Arnica	frigida		225	pp	Resurrection River valley	steep hillside above	60.27341233	149.7558527
Asteraceae	Arnica	latifolia		249	pp	Upper Nuka River valley	E side of river, across	59.66385248	150.6725199
Asteraceae	Arnica	latifolia		03-1183	pp	Two Arm Bay	Paguna Arm, west side	59.6555	150.1005
Asteraceae	Arnica	latifolia		03-1223	pp	Northwestern Lagoon	east side of	59.75	149.85
Asteraceae	Arnica	lessingii		300	u	Upper Nuka River valley	hillside on E side of	59.65432416	150.6449581
Asteraceae	Artemisia	arctica		015	u	North Arm of Nuka Bay	valley on S side of	59.5435784	150.511415
Asteraceae	Artemisia	arctica		095	u	North Arm of Nuka Bay	ridge crest above	59.51167463	150.5051855
Asteraceae	Artemisia	tilsii	ssp. unalaschcensis	184	none	Resurrection River	south side of river,	60.2867	149.7137
Asteraceae	Artemisia	tilsii		03-1281	none	Aialik Bay	Ranger Station	59.8527	149.6472
Asteraceae	Aster	sibiricus		290	pp	Upper Nuka River valley	slope on E side of	59.66747827	150.6607924
Fabaceae	Astragalus	alpinus		043	u	North Arm of Nuka Bay	Beauty Bay, gravel	59.54695172	150.6615592
Fabaceae	Astragalus	alpinus		228	a u	Resurrection River valley	steep hillside above	60.27341233	149.7558527
Fabaceae	Astragalus	alpinus		228	b u	Resurrection River valley	steep hillside above	60.27341233	149.7558527
Fabaceae	Astragalus	polaris		305	p	Upper Nuka River valley	E side of river, across	59.66417466	150.6797889
Dryopterida	Athyrium	filix-femina		053	pp	North Arm of Nuka Bay	forest on east side of	59.56258329	150.5221048
Dryopterida	Athyrium	filix-femina		191	pp	Resurrection River valley	tributary creek on	60.28009612	149.7243845
Dryopterida	Athyrium	filix-femina		03-1277	pp	Aialik Bay	Ranger Station	59.8527	149.6472

KENAI FJORDS NATIONAL PARK VASCULAR PLANT INVENTORY

Plant Collections by Alaska Natural Heritage Program at Kenai Fjords National Park in 2003 (cont.) –

Family	ITIS Genus	ITIS Species	Collection #	Stem	General Locality	Specific locality	Lat (dd)	Long (dd)	
Chenopodiaceae	Atriplex	gmelinii	132	pp	McCarty Fjord, James	outer spit at mouth of	59.56104539	150.4060151	
Brassicaceae	Barbarea	orthoceras	080	p	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501	
Betulaceae	Betula	nana	247	pp	Resurrection River valley	approx 3km NW of	60.28351867	149.7236549	
Blechnaceae	Blechnum	spicant	166	none	McCarty Fjord	west facing slope	59.4763	150.3359	
Blechnaceae	Blechnum	spicant	03-1190	none	Harris Bay	Crater Bay	59.71638	149.78305	
Orobanchaceae	Boschniakia	rossica	105	pp	Delight Lake, McCarty	northwest shore of sw	59.5461	150.3021	
Ophioglossaceae	Botrychium	lanceolatum	273	none	Upper Nuka River valley	slope on E side of	59.66660395	150.6623429	
Ophioglossaceae	Botrychium	lanceolatum	312	none	Upper Nuka River valley	E ridge of hill 3,840,	59.67053209	150.6949536	
Ophioglossaceae	Botrychium	lunaria	274	none	Upper Nuka River valley	slope on E side of	59.66660395	150.6623429	
Ophioglossaceae	Botrychium	lunaria	311	none	Upper Nuka River valley	E ridge of hill 3,840,	59.67053209	150.6949536	
Poaceae	Bromus	sitchensis	03-1289	none	Aialik Bay	Tooth Cove	59.81861	149.64027	
Poaceae	Calamagrostis	nuthaensis	03-1240	u	Northwestern Lagoon	east side of	59.7436	149.8838	
Poaceae	Calamagrostis	vivipara	03-1143	none	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416	
Callitricaceae	Callitriche	hermaphroditica	03-1109	pp	Nuka Bay	East Arm, Delight Lake	59.5477	150.3333	
Callitricaceae	Callitriche	palustris	120	pp	Delight Lake spit,	near small lagoon, west	59.54451056	150.3353377	
Callitricaceae	Callitriche	palustris	174	pp	Delight Lake spit,	spit and small lagoon	59.5435	150.3374	
Ranunculaceae	Caltha	leptosepala	078	pp	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501	
Ranunculaceae	Caltha	leptosepala	134	pp	McCarty Fjord, James	northeast corner of	59.58330749	150.4021555	
Ranunculaceae	Caltha	leptosepala	03-1315	pp	Exit Glacier	Harding Icefield Trail	60.18292	149.65874	
Campanulaceae	Campanula	lasiocarpa	03-1224	pp (S)	Northwestern Lagoon	east side of	59.75	149.85	
Campanulaceae	Campanula	lasiocarpa	03-1239	pp (S)	Aialik Bay	Coleman Bay	59.8588	149.61083	
Campanulaceae	Campanula	rotundifolia	250	p	Upper Nuka River valley	W side small knoll on	59.66385248	150.6725199	
Campanulaceae	Campanula	rotundifolia	03-1125	p	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416	
Brassicaceae	Cardamine	bellidifolia	009	pp	North Arm of Nuka Bay	valley on S side of	59.5435784	150.511415	
Brassicaceae	Cardamine	oligosperma	var. kamtschatica	099	p	Delight Lake spit,	trail along outlet	59.5465	150.3238
Cyperaceae	Carex	anthoxantha	142	pp	Chance Cove	south facing slope	59.4896	150.3119	
Cyperaceae	Carex	anthoxantha	03-1207	pp	Harris Bay	Crater Bay	59.71638	149.78305	
Cyperaceae	Carex	anthoxantha	03-1210	pp	Harris Bay	Crater Bay	59.71638	149.78305	
Cyperaceae	Carex	aquatilis	242	pp	Resurrection River valley	approx 3km NW of	60.28351867	149.7236549	
Cyperaceae	Carex	bicolor	03-1299	none	Exit Glacier Road	Resurrection River,	60.19567	149.58932	
Cyperaceae	Carex	brunnescens	106	none	Delight Lake, McCarty	northwest shore of sw	59.5461	150.3021	
Cyperaceae	Carex	canescens	183	pp	Resurrection River	south side of river,	60.2867	149.7137	
Cyperaceae	Carex	canescens	234	pp	Resurrection River valley	approx 3km NW of	60.28351867	149.7236549	
Cyperaceae	Carex	canescens	03-1148	pp	Two Arm Bay	Paguna Arm, east side	59.67916	150.1027	
Cyperaceae	Carex	canescens	03-1184	pp	Two Arm Bay	Paguna Arm, west side	59.6555	150.1005	
Cyperaceae	Carex	canescens	03-1271	pp	Northwestern Lagoon	east side of	59.77305	149.92472	
Cyperaceae	Carex	circinata	020	pp	North Arm of Nuka Bay	valley on S side of	59.5435784	150.511415	
Cyperaceae	Carex	circinata	03-1135	pp	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416	
Cyperaceae	Carex	circinata	03-1235	pp	Aialik Bay	Coleman Bay	59.86027	149.62361	
Cyperaceae	Carex	disperma	188	pp	Resurrection River valley	south side of river,	60.28294804	149.7158745	
Cyperaceae	Carex	gmelinii	037	pp	North Arm of Nuka Bay	Beauty Bay, west side	59.54695172	150.6615592	
Cyperaceae	Carex	lachenalii	017	pp	North Arm of Nuka Bay	valley on S side of	59.5435784	150.511415	
Cyperaceae	Carex	lachenalii	061	pp	North Arm of Nuka Bay	slope above southeast	59.5135	150.523	
Cyperaceae	Carex	lachenalii	232	pp	Upper Nuka River valley	E side small knoll on	59.66385248	150.6725199	
Cyperaceae	Carex	lachenalii	295	E pp	Upper Nuka River valley	small stream on E	59.65422333	150.6694421	
Cyperaceae	Carex	lachenalii	03-1133	pp	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416	
Cyperaceae	Carex	lachenalii	03-1142	pp	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416	
Cyperaceae	Carex	lachenalii	03-1284	pp	Aialik Bay	Ranger Station	59.8527	149.6472	
Cyperaceae	Carex	lenticularis	var. dolia	092	none	North Arm of Nuka Bay	ridge crest above	59.51167463	150.5051855
Cyperaceae	Carex	lenticularis	var. dolia	295	none	Upper Nuka River valley	small stream on E	59.65422333	150.6694421
Cyperaceae	Carex	lenticularis	var. dolia	03-1198	none	Harris Bay	Crater Bay	59.71638	149.78305
Cyperaceae	Carex	lenticularis	var. dolia	03-1302	none	Exit Glacier	Harding Icefield Trail	60.18314	149.66934
Cyperaceae	Carex	lenticularis	var. lipocarpa	103	none	Delight Lake, McCarty	lakeshore on north	59.544	150.3129
Cyperaceae	Carex	lenticularis	var. lipocarpa	235	none	Resurrection River valley	approx 3km NW of	60.28351867	149.7236549
Cyperaceae	Carex	lenticularis	var. lipocarpa	03-1101	none	Nuka Bay	East Arm, Delight Lake	59.5477	150.3333
Cyperaceae	Carex	limosa	179	pp	Resurrection River	south side of river,	60.2838	149.7125	
Cyperaceae	Carex	lyngbyei	108	p	Delight Lake, McCarty	northwest shore of sw	59.5461	150.3021	
Cyperaceae	Carex	macloviana	03-1280	pp	Aialik Bay	Ranger Station	59.8527	149.6472	
Cyperaceae	Carex	macrochaeta	062	p	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501	
Cyperaceae	Carex	macrochaeta	233	p	Resurrection River valley	approx 3km NW of	60.28351867	149.7236549	

KENAI FJORDS NATIONAL PARK VASCULAR PLANT INVENTORY

Plant Collections by Alaska Natural Heritage Program at Kenai Fjords National Park in 2003 (cont.) –

Family	ITIS Genus	ITIS Species		Collection #	Stem	General Locality	Specific locality	Lat (dd)	Long (dd)
Cyperaceae	Carex	magellunica		245	pp	Resurrection River valley	approx 3km NW of	60.28351867	149.7236549
Cyperaceae	Carex	microchaeta	ssp. nesophila	086	pp	North Arm of Nuka Bay	ridge crest above	59.51167463	150.5051855
Cyperaceae	Carex	microchaeta	ssp. nesophila	198	pp	Resurrection River valley	steep hillside above	60.27676356	149.7421397
Cyperaceae	Carex	microchaeta	ssp. nesophila	03-1265	pp	Aialik Bay	Coleman Bay	59.8588	149.61083
Cyperaceae	Carex	nardina		223	pp	Resurrection River valley	steep hillside above	60.27341233	149.7558527
Cyperaceae	Carex	nigricans		023	none	North Arm of Nuka Bay	valley on S side of	59.54045448	150.5023497
Cyperaceae	Carex	nigricans		068	A	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501
Cyperaceae	Carex	nigricans		231	none	Upper Nuka River valley	E side small knoll on	59.66385248	150.6725199
Cyperaceae	Carex	nigricans		03-1258	none	Aialik Bay	Coleman Bay	59.8588	149.61083
Cyperaceae	Carex	nigricans		03-1294	none	Aialik Bay	McMullen Cove	59.7488	149.79805
Cyperaceae	Carex	pauciflora		149	none	Chance Cove	south facing slope	59.4909	150.3116
Cyperaceae	Carex	phaeocephala		275	none	Upper Nuka River valley	slope on E side of	59.66660395	150.6623429
Cyperaceae	Carex	phaeocephala		03-1300	none	Exit Glacier	Harding Icefield Trail	60.18094	149.70381
Cyperaceae	Carex	pluriflora		237	pp	Resurrection River valley	approx 3km NW of	60.28351867	149.7236549
Cyperaceae	Carex	pluriflora		241	pp	Resurrection River valley	approx 3km NW of	60.28351867	149.7236549
Cyperaceae	Carex	pyrenaica	ssp. micropoda	058	p	North Arm of Nuka Bay	slope above southeast	59.5135	150.523
Cyperaceae	Carex	pyrenaica	ssp. micropoda	060	p	North Arm of Nuka Bay	slope above southeast	59.5135	150.523
Cyperaceae	Carex	pyrenaica	ssp. micropoda	068	B	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501
Cyperaceae	Carex	pyrenaica	ssp. micropoda	233	p	Upper Nuka River valley	E side small knoll on	59.66385248	150.6725199
Cyperaceae	Carex	pyrenaica	ssp. micropoda	321	p	Upper Nuka River valley	small rocky rivulet on	59.66421892	150.7102114
Cyperaceae	Carex	pyrenaica	ssp. micropoda	03-1151	p	Two Arm Bay	Paguna Arm, east side	59.679116	150.1027
Cyperaceae	Carex	pyrenaica	ssp. micropoda	03-1166	p	Two Arm Bay	Paguna Arm, east side	59.70513	150.09009
Cyperaceae	Carex	rotundata		180	none	Resurrection River	south side of river,	60.2838	149.7125
Cyperaceae	Carex	saxatilis		156	pp	Chance Cove	south facing slope	59.4909	150.3116
Cyperaceae	Carex	saxatilis		296	pp	Upper Nuka River valley	small stream on E	59.65422333	150.6694421
Cyperaceae	Carex	scirpoidea		222	pp	Resurrection River valley	steep hillside above	60.27341233	149.7558527
Cyperaceae	Carex	scirpoidea		236	pp	Upper Nuka River valley	slope on E side of	59.66578352	150.6695906
Cyperaceae	Carex	sp.		03-1211		Harris Bay	Crater Bay	59.71638	149.78305
Cyperaceae	Carex	sp.		03-1236		Northwestern Lagoon	east side of	59.7436	149.8838
Cyperaceae	Carex	sp.		03-1247		Northwestern Lagoon	east side of	59.77305	149.92472
Cyperaceae	Carex	sp.		03-1283		Aialik Bay	Ranger Station	59.8527	149.6472
Cyperaceae	Carex	sp.		03-1293		Aialik Bay	McMullen Cove	59.7488	149.79805
Cyperaceae	Carex	spectabilis		008	none	North Arm of Nuka Bay	valley on S side of	59.54641507	150.5222516
Cyperaceae	Carex	spectabilis		087	none	North Arm of Nuka Bay	ridge crest above	59.51167463	150.5051855
Cyperaceae	Carex	spectabilis		090	none	North Arm of Nuka Bay	ridge crest above	59.51167463	150.5051855
Cyperaceae	Carex	spectabilis		234	none	Upper Nuka River valley	E side small knoll on	59.66385248	150.6725199
Cyperaceae	Carex	spectabilis		03-1295	none	Aialik Bay	McMullen Cove	59.7488	149.79805
Cyperaceae	Carex	stylosa		150	pp	Chance Cove	south facing slope	59.4909	150.3116
Cyperaceae	Carex	stylosa		181	pp	Resurrection River	south side of river,	60.2838	149.7125
Cyperaceae	Carex	stylosa		294	pp	Upper Nuka River valley	slope on E side of	59.66544664	150.671266
Cyperaceae	Carex	stylosa		307	pp	Upper Nuka River valley	west side of river, at	59.67053209	150.6949536
Cyperaceae	Carex	tenuiflora		03-1140	pp	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416
Cyperaceae	Carex	utriculata		240	pp	Resurrection River valley	approx 3km NW of	60.28351867	149.7236549
Ericaceae	Cassiope	lycopodioides		084	pp	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501
Ericaceae	Cassiope	lycopodioides		298	pp	Upper Nuka River valley	small stream on E	59.65422333	150.6694421
Ericaceae	Cassiope	lycopodioides		03-1134	pp	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416
Ericaceae	Cassiope	lycopodioides		03-1292	pp	Aialik Bay	McMullen Cove	59.7488	149.79805
Scrophularia	Castilleja	unalaschcensis		03-1230	p	Aialik Bay	Coleman Bay	59.86027	149.62261
Caryophylla	Cerastium	fontanum		131	pp	McCarty Fjord, James	northeast corner of	59.58330749	150.4021555
Poaceae	Cinna	latifolia		189	none	Resurrection River valley	south side of river,	60.28294804	149.7158745
Poaceae	Cinna	latifolia		03-1242	none	Northwestern Lagoon	east side of	59.75416	149.8586
Onagraceae	Circaea	alpina		098	pp	Delight Lake spit,	trail along outlet	59.5465	150.3238
Portulacaceae	Claytonia	sibirica		03-1160	p	Two Arm Bay	Paguna Arm, east side	59.68956	150.12407
Portulacaceae	Claytonia	sarmentosa		314	pp	Upper Nuka River valley	small rocky rivulet on	59.66421892	150.7102114
Portulacaceae	Claytonia	sibirica		116	p	Delight Lake, McCarty	northwest shore of sw	59.5461	150.3021
Brassicaceae	Cochlearia	groenlandica		026	pp	North Arm of Nuka Bay	beach at Beauty Bay,	59.54233829	150.6618065
Brassicaceae	Cochlearia	groenlandica		048	none	North Arm of Nuka Bay	Beauty Bay, mining	59.54627587	150.6629326
Brassicaceae	Cochlearia	groenlandica		170	none	Delight Lake spit,	spit and small lagoon	59.5435	150.3374
Orchidaceae	Coeloglossum	viride		276	none	Upper Nuka River valley	slope on E side of	59.66660395	150.6623429
Rosaceae	Comarum	palustre		129	u	McCarty Fjord, James	northeast corner of	59.58330749	150.4021555

KENAI FJORDS NATIONAL PARK VASCULAR PLANT INVENTORY

Plant Collections by Alaska Natural Heritage Program at Kenai Fjords National Park in 2003 (cont.) –

Family	ITIS Genus	ITIS Species		Collection #	Stem	General Locality	Specific locality	Lat (dd)	Long (dd)
Rosaceae	Comarum	palustre		03-1123	u	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416
Apiaceae	Comioselinum	gmelinii		050	u	North Arm of Nuka Bay	Beauty Bay, mining	59.54627387	150.6629326
Apiaceae	Comioselinum	gmelinii		03-1176	pp	Two Arm Bay	Paguna Arm, east side	59.67916	150.1027
Ranunculaceae	Coptis	trifoliata		139	pp	Chance Cove	south facing slope	59.4896	150.3119
Ranunculaceae	Coptis	asplenifolia		03-1222	none	Harris Bay	Crater Bay, east side	59.6888	149.8038
Orchidaceae	Corallorrhiza	trifida		097	pp	Delight Lake spit,	trail along outlet	59.5465	150.3238
Orchidaceae	Corallorrhiza	trifida		03-1106	pp	Nuka Bay	East Arm, Delight Lake	59.5477	150.3333
Cornaceae	Cornus	canadensis		03-1181	pp	Two Arm Bay	Paguna Arm, west side	59.6555	150.1005
Cornaceae	Cornus	suecica		03-1191	pp	Harris Bay	Crater Bay	59.7155	149.7877
Cornaceae	Cornus	suecica		03-1266	pp	Aialik Bay	Coleman Bay	59.8588	149.61083
Crassulaceae	Crassula	aquatica		03-1239	none	Northwestern Lagoon	east side of	59.7436	149.8838
Pteridaceae	Cryptogramma	sitchensis		03-1128	p	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416
Dryopterida	Cystopteris	fragilis		270	pp (u)	Upper Nuka River valley	slope on E side of	59.66660395	150.6623429
Dryopterida	Cystopteris	fragilis		03-1147	pp (u)	Two Arm Bay	Paguna Arm, east side	59.67916	150.1027
Poaceae	Danthonia	intermedia		03-1214	none	Harris Bay	Crater Bay	59.71638	149.78305
Rosaceae	Dasiphora	floribunda		246	pp	Resurrection River valley	approx 3km NW of	60.28351867	149.7236549
Asteraceae	Dendranthema	arcticum	ssp. arcticum	03-1244	pp	Northwestern Lagoon	east side of	59.77305	149.92472
Poaceae	Deschampsia	beringensis		03-1117	none	Nuka Bay	East Arm, Delight Lake	59.5477	150.3333
Poaceae	Deschampsia	caespitosa		03-1145	p	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416
Poaceae	Deschampsia	caespitosa		03-1150	p	Two Arm Bay	Paguna Arm, east side	59.67916	150.1027
Primulaceae	Dodecatheon	jeffreyi		151	u	Chance Cove	south facing slope	59.4909	150.3116
Primulaceae	Dodecatheon	jeffreyi		03-1192	u	Harris Bay	Crater Bay	59.71638	149.78305
Brassicaceae	Draba	fladruzensis		319	none	Upper Nuka River valley	small rocky rivulet on	59.66421892	150.7102114
Brassicaceae	Draba	glabella		272	E none	Upper Nuka River valley	slope on E side of	59.66660395	150.6623429
Brassicaceae	Draba	lonchocarpa	var. vestita	227	pp (C)	Resurrection River valley	steep hillside above	60.27341233	149.7558527
Brassicaceae	Draba	nivalis		279	pp	Upper Nuka River valley	slope on E side of	59.66660395	150.6623429
Brassicaceae	Draba	nivalis		320	pp	Upper Nuka River valley	small rocky rivulet on	59.66421892	150.7102114
Brassicaceae	Draba	stenoloba		230	p	Resurrection River valley	steep hillside above	60.27341233	149.7558527
Brassicaceae	Draba	stenoloba		289	p	Upper Nuka River valley	slope on E side of	59.66747827	150.6607924
Brassicaceae	Draba	stenoloba		302	p	Upper Nuka River valley	E side of river, across	59.66417466	150.6797889
Brassicaceae	Draba	stenoloba		303	p	Upper Nuka River valley	E side of river, across	59.66417466	150.6797889
Brassicaceae	Draba	stenoloba		03-1312	p	Exit Glacier	Harding Icefield Trail	60.18529	149.67911
Brassicaceae	Draba	ventosa		272	none	Upper Nuka River valley	slope on E side of	59.66660395	150.6623429
Droseraceae	Drosera	rotundifolia		143	pp	Chance Cove	south facing slope	59.4896	150.3119
Rosaceae	Dryas	integrifolia		220	pp	Resurrection River valley	steep hillside above	60.27341233	149.7558527
Rosaceae	Dryas	integrifolia		261	pp	Upper Nuka River valley	slope on E side of	59.66578352	150.6695906
Rosaceae	Dryas	integrifolia		324	pp	Upper Nuka River valley	E ridge of hill 3,840,	59.663613	150.7157692
Rosaceae	Dryas	octopetala	ssp. alaskensis	323	none	Upper Nuka River valley	E ridge of hill 3,840,	59.663613	150.7157692
Rosaceae	Dryas	octopetala		202	pp	Resurrection River valley	steep hillside above	60.27676356	149.7421397
Rosaceae	Dryas	octopetala		207	pp	Resurrection River valley	steep hillside above	60.27676356	149.7421397
Rosaceae	Dryas	octopetala		324	a pp	Upper Nuka River valley	E ridge of hill 3,840,	59.663613	150.7157692
Dryopterida	Dryopteris	expansa		03-1278	u	Aialik Bay	Ranger Station	59.8527	149.6472
Dryopterida	Dryopteris	expansa		03-1282	u	Aialik Bay	Ranger Station	59.8527	149.6472
Cyperaceae	Eleocharis	palustris		107	none	Delight Lake, McCarty	northwest shore of sw	59.5461	150.3021
Cyperaceae	Eleocharis	palustris		114	none	Delight Lake, McCarty	northwest shore of sw	59.5461	150.3021
Cyperaceae	Eleocharis	palustris		03-1116	none	Nuka Bay	East Arm, Delight Lake	59.5477	150.3333
Ericaceae	Elliottia	pyroliflorus		146	p	Chance Cove	south facing slope	59.4896	150.3119
Ericaceae	Elliottia	pyroliflorus		03-1155	p	Two Arm Bay	Paguna Arm, east side	59.68443	150.09987
Empetraceae	Empetrum	nigrum	ssp. nigrum	03-1291	u	Aialik Bay	cove/bay just south of	59.81861	149.64027
Onagraceae	Epilobium	anagallidifolium		021	p	North Arm of Nuka Bay	valley on S side of	59.54045448	150.5023497
Onagraceae	Epilobium	anagallidifolium		073	p	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501
Onagraceae	Epilobium	ciliatum		038	u (ssp)	North Arm of Nuka Bay	Beauty Bay, west side	59.54695172	150.6615592
Onagraceae	Epilobium	hornemannii	ssp. hornemannii	045	pp	North Arm of Nuka Bay	Beauty Bay, gravel	59.54695172	150.6615592
Onagraceae	Epilobium	hornemannii	ssp. hornemannii	069	pp	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501
Onagraceae	Epilobium	hornemannii	ssp. hornemannii	03-1119	pp	Nuka Bay	East Arm, Delight Lake	59.5477	150.3333
Onagraceae	Epilobium	hornemannii		169	pp	Delight Lake spit,	spit and small lagoon	59.5435	150.3374
Onagraceae	Epilobium	luteum		03-1314	p	Exit Glacier	Harding Icefield Trail	60.18553	149.65012
Onagraceae	Epilobium	palustre		130	pp	McCarty Fjord, James	northeast corner of	59.58330749	150.4021555
Onagraceae	Epilobium	palustre		239	pp	Resurrection River valley	approx 3km NW of	60.28351867	149.7236549
Equisetaceae	Equisetum	arvense		330	p	Upper Nuka River valley	E side of river, across	59.66417466	150.6797889

KENAI FJORDS NATIONAL PARK VASCULAR PLANT INVENTORY

Plant Collections by Alaska Natural Heritage Program at Kenai Fjords National Park in 2003 (cont.) –

Family	ITIS Genus	ITIS Species		Collection #	Stem	General Locality	Specific locality	Lat (dd)	Long (dd)
Equisetaceae	Equisetum	arvense		03-1276	p	Northwestern Lagoon	east side of	59.77305	149.92472
Equisetaceae	Equisetum	fluviatile		109	p	Delight Lake, McCarty	northwest shore of sw	59.5461	150.3021
Equisetaceae	Equisetum	fluviatile		112	p	Delight Lake, McCarty	northwest shore of sw	59.5461	150.3021
Equisetaceae	Equisetum	fluviatile		03-1273	pp	Northwestern Lagoon	east side of	59.77305	149.92472
Equisetaceae	Equisetum	sylvaticum		187	pp	Resurrection River	south side of river,	60.2867	149.7137
Equisetaceae	Equisetum	sylvaticum		03-1165	pp	Two Arm Bay	Paguna Arm, east side	59.68443	150.09987
Equisetaceae	Equisetum	variegatum		293	pp (E)	Upper Nuka River valley	slope on E side of	59.66544664	150.671266
Equisetaceae	Equisetum	variegatum		03-1275	pp (E)	Northwestern Lagoon	east side of	59.77305	149.92472
Asteraceae	Erigeron	peregrinus		03-1144	p (E)	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416
Asteraceae	Erigeron	peregrinus		03-1158	p (E)	Two Arm Bay	Paguna Arm, east side	59.70513	150.09009
Asteraceae	Erigeron	peregrinus		03-1202	p (E)	Harris Bay	Crater Bay	59.71638	149.78305
Cyperaceae	Eriophorum	angustifolium	ssp. scabriusculu	093	none	North Arm of Nuka Bay	ridge crest above	59.51167463	150.5051855
Cyperaceae	Eriophorum	angustifolium	ssp. scabriusculu	145	none	Chance Cove	south facing slope	59.4896	150.3119
Cyperaceae	Eriophorum	angustifolium	ssp. scabriusculu	178	none	Resurrection River	south side of river,	60.2838	149.7125
Cyperaceae	Eriophorum	angustifolium	ssp. scabriusculu	03-1200	none	Harris Bay	Crater Bay	59.71638	149.78305
Cyperaceae	Eriophorum	russeolum		177	pp	Resurrection River	south side of river,	60.2838	149.7125
Cyperaceae	Eriophorum	scheuchzeri		03-1268	pp	Northwestern Lagoon	east side of	59.77305	149.92472
Scrophulari	Euphrasia	disjuncta		281	none	Upper Nuka River valley	slope on E side of	59.66660395	150.6623429
Poaceae	Festuca	brachyphylla		018	b pp	North Arm of Nuka Bay	valley on S side of	59.5435784	150.511415
Poaceae	Festuca	brachyphylla		205	pp	Resurrection River valley	steep hillside above	60.27676356	149.7421397
Poaceae	Festuca	brachyphylla		03-1149	pp	Two Arm Bay	Paguna Arm, east side	59.67916	150.1027
Poaceae	Festuca	brachyphylla		03-1227	pp	Northwestern Lagoon	east side of	59.75	149.85
Poaceae	Festuca	richardsonii		027	none	North Arm of Nuka Bay	beach at Beauty Bay,	59.54233829	150.6618065
Poaceae	Festuca	richardsonii		03-1113	none	Nuka Bay	East Arm, Delight Lake	59.5477	150.3333
Rubiaceae	Galium	aparine		032	p	North Arm of Nuka Bay	Beauty Bay, west side	59.5465	150.6619
Rubiaceae	Galium	trifidum	ssp. trifidum	034	u	North Arm of Nuka Bay	Beauty Bay, west side	59.5465	150.6619
Rubiaceae	Galium	trifidum	ssp. trifidum	101	u	Delight Lake, McCarty	lakeshore on north	59.544	150.3129
Gentianaceae	Gentiana	douglasiana		141	p	Chance Cove	south facing slope	59.4896	150.3119
Gentianaceae	Gentiana	douglasiana		03-1195	p	Harris Bay	Crater Bay	59.7155	149.7877
Gentianaceae	Gentiana	platypetala		268	p	Upper Nuka River valley	slope on E side of	59.66660395	150.6623429
Gentianaceae	Gentiana	platypetala		03-1252	p	Aialik Bay	Coleman Bay	59.8588	149.61083
Gentianaceae	Gentianella	propinqua	ssp. aleutica	264	none	Upper Nuka River valley	slope on E side of	59.66660395	150.6623429
Gentianaceae	Gentianella	tenella		280	none	Upper Nuka River valley	slope on E side of	59.66660395	150.6623429
Geraniaceae	Geranium	erianthum		03-1124	p	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416
Rosaceae	Geum	macrophyllum	var. perincisum	03-1122	p	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416
Rosaceae	Geum	macrophyllum	var. perincisum	03-1288	pp	Aialik Bay	Tooth Cove	59.81861	149.64027
Rosaceae	Geum	rossii		308	pp	Upper Nuka River valley	E ridge of hill 3,840,	59.67053209	150.6949536
Primulaceae	Glaux	maritima		025	pp	North Arm of Nuka Bay	beach at Beauty Bay,	59.54233829	150.6618065
Dryopterida	Gymnocarpium	dryopteris		054	pp	North Arm of Nuka Bay	forest on east side of	59.56258329	150.5221048
Ericaceae	Harrimanella	stelleriana		063	pp	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501
Sudfragaceae	Heuchera	glabra		03-1100	p	Nuka Bay	East Arm, Delight Lake	59.5477	150.3333
Asteraceae	Hieracium	triste		03-1161	p	Two Arm Bay	Paguna Arm, east side	59.70513	150.09009
Poaceae	Hierochloa	alpina	ssp. alpina	03-1137	none	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416
Hippuridaceae	Hippuris	montana		057	none	North Arm of Nuka Bay	slope above southeast	59.5135	150.523
Hippuridaceae	Hippuris	montana		088	none	North Arm of Nuka Bay	ridge crest above	59.51167463	150.5051855
Hippuridaceae	Hippuris	montana		03-1164	none	Two Arm Bay	Paguna Arm, east side	59.68956	150.12407
Hippuridaceae	Hippuris	montana		03-1245	none	Northwestern Lagoon	east side of	59.77305	149.92472
Hippuridaceae	Hippuris	tetraphylla		172	none	Delight Lake spit,	spit and small lagoon	59.5435	150.3374
Caryophylla	Honckenya	peplodes		029	p	North Arm of Nuka Bay	beach at Beauty Bay,	59.54233829	150.6618065
Poaceae	Hordeum	brachyantherum		002	pp	North Arm of Nuka Bay	trail from Park Service	59.562583	-150.522105
Lycopodiaceae	Huperzia	sp.		03-1132		Two Arm Bay	Paguna Arm, north end	59.6933	150.13416
Lycopodiaceae	Huperzia	sp.		03-1219		Harris Bay	Crater Bay, east side	59.6888	149.8038
Iridaceae	Iris	setosa		03-1180	p	Two Arm Bay	Paguna Arm, west side	59.6555	150.1005
Juncaceae	Juncus	castaneus		248	p	Resurrection River valley	approx 3km NW of	60.28351867	149.7236549
Juncaceae	Juncus	drummondii		067	pp	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501
Juncaceae	Juncus	drummondii		03-1170	pp	Two Arm Bay	Paguna Arm, east side	59.7022	150.08638
Juncaceae	Juncus	haenkei ?		03-1178	u	Two Arm Bay	Paguna Arm, west side	59.6555	150.1005
Juncaceae	Juncus	haenkei ?		03-1272	u	Northwestern Lagoon	east side of	59.77305	149.92472
Juncaceae	Juncus	haenkei ?		03-1274	u	Northwestern Lagoon	east side of	59.77305	149.92472
Juncaceae	Juncus	mertensianus		022	p	North Arm of Nuka Bay	valley on S side of	59.54045448	150.5023497

KENAI FJORDS NATIONAL PARK VASCULAR PLANT INVENTORY

Plant Collections by Alaska Natural Heritage Program at Kenai Fjords National Park in 2003 (cont.) –

Family	ITIS Genus	ITIS Species		Collection #	Stem	General Locality	Specific locality	Lat (dd)	Long (dd)
Juncaceae	Juncus	mertensianus		03-1269	p	Northwestern Lagoon	east side of	59.77305	149.92472
Juncaceae	Juncus	sp.		03-1290		Aialik Bay	cove/bay just south of	59.81861	149.64027
Polygonaceae	Koenigia	islandica		047	pp	North Arm of Nuka Bay	Beauty Bay, mining	59.54627587	150.6629326
Ranunculaceae	Kumlienia	cooleyae		100	none	Delight Lake spit,	trail along outlet	59.5465	150.3238
Apiaceae	Ligusticum	scoticum	ssp. hultentii	03-1216	u	Harris Bay	Crater Bay, east side	59.6888	149.8038
Caprifoliaceae	Linnaea	borealis		201	pp	Resurrection River valley	steep hillside above	60.27676356	149.7421397
Orchidaceae	Listera	caurina		03-1205	u	Harris Bay	Crater Bay	59.71805	149.77694
Orchidaceae	Listera	cordata		119	u	Delight Lake, McCarty	northwest shore of sw	59.5461	150.3021
Orchidaceae	Listera	cordata		03-1108	u	Nuka Bay	East Arm, Delight Lake	59.5477	150.3333
Liliaceae	Lloydia	serotina		203	pp	Resurrection River valley	steep hillside above	60.27676356	149.7421397
Liliaceae	Lloydia	serotina		03-1308	pp	Exit Glacier	Harding Icefield Trail	60.18094	149.70381
Ericaceae	Loiseleuria	procumbens		085	pp	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501
Juncaceae	Luzula	arcuata	ssp. unalaschcens	019	pp	North Arm of Nuka Bay	valley on S side of	59.5435784	150.511415
Juncaceae	Luzula	arcuata	ssp. unalaschcens	327	pp	Upper Nuka River valley	E ridge of hill 3,840,	59.66355947	150.7182906
Juncaceae	Luzula	arcuata	ssp. unalaschcens	03-1213	pp	Harris Bay	Crater Bay	59.71638	149.78305
Juncaceae	Luzula	arcuata	ssp. unalaschcens	03-1264	pp	Aialik Bay	Coleman Bay	59.8588	149.61083
Juncaceae	Luzula	arcuata		018	c pp	North Arm of Nuka Bay	valley on S side of	59.5435784	150.511415
Juncaceae	Luzula	multiflora	ssp. frigida	03-1209	none	Harris Bay	Crater Bay	59.7155	149.7877
Juncaceae	Luzula	multiflora	ssp. frigida	03-1262	none	Aialik Bay	Coleman Bay	59.8588	149.61083
Juncaceae	Luzula	multiflora		136	pp	Chance Cove	north end of Chance	59.4892	150.3129
Juncaceae	Luzula	parviflora		03-1139	p	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416
Juncaceae	Luzula	parviflora		03-1174	p	Two Arm Bay	Paguna Arm, east side	59.7075	150.0886
Juncaceae	Luzula	sp.		03-1221		Harris Bay	Crater Bay, east side	59.6888	149.8038
Juncaceae	Luzula	spicata		232	pp	Resurrection River valley	steep hillside above	60.27341233	149.7558527
Juncaceae	Luzula	spicata		325	pp	Upper Nuka River valley	E ridge of hill 3,840,	59.663613	150.7157692
Juncaceae	Luzula	spicata		328	pp	Upper Nuka River valley	E ridge of hill 3,840,	59.66355947	150.7182906
Juncaceae	Luzula	spicata		03-1146	pp	Two Arm Bay	Paguna Arm, east side	59.67916	150.1027
Juncaceae	Luzula	spicata		322		Upper Nuka River valley	E ridge of hill 3,840,	59.663613	150.7157692
Lycopodiaceae	Lycopodium	alpinum		094	p	North Arm of Nuka Bay	ridge crest above	59.51167463	150.5051855
Lycopodiaceae	Lycopodium	alpinum		213	p	Resurrection River valley	steep hillside above	60.27676356	149.7421397
Lycopodiaceae	Lycopodium	alpinum		03-1177	p	Two Arm Bay	Paguna Arm, east side	59.7075	150.0886
Lycopodiaceae	Lycopodium	clavatum		164	pp	McCarty Fjord	west facing slope	59.4763	150.3339
Lycopodiaceae	Lycopodium	clavatum		03-1215	pp	Harris Bay	Crater Bay	59.71805	149.77694
Lycopodiaceae	Lycopodium	lagopus		212	none	Resurrection River valley	steep hillside above	60.27676356	149.7421397
Lycopodiaceae	Lycopodium	sitchense		083	none	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501
Lycopodiaceae	Lycopodium	sitchense		03-1175	none	Two Arm Bay	Paguna Arm, east side	59.7075	150.0886
Lycopodiaceae	Lycopodium	sitchense		03-1196	none	Harris Bay	Crater Bay	59.71805	149.77694
Lycopodiaceae	Lycopodium	sitchense		03-1238	none	Northwestern Lagoon	east side of	59.75416	149.8586
Liliaceae	Maianthemum	dilatatum		117	pp	Delight Lake, McCarty	northwest shore of sw	59.5461	150.3021
Liliaceae	Maianthemum	dilatatum		140	pp	Chance Cove	south facing slope	59.4896	150.3119
Liliaceae	Maianthemum	dilatatum		03-1163	pp	Two Arm Bay	Paguna Arm, east side	59.68956	150.12407
Boraginaceae	Mertensia	maritima		03-1229	p	Northwestern Lagoon	east side of	59.7436	149.8838
Scrophulariaceae	Mimulus	guttatus		03-1249	p	Aialik Bay	Coleman Bay	59.86027	149.62361
Caryophyllaceae	Minuartia	biflora		277	none	Upper Nuka River valley	slope on E side of	59.66660395	150.6623429
Caryophyllaceae	Minuartia	macrocarpa		211	p	Resurrection River valley	steep hillside above	60.27676356	149.7421397
Caryophyllaceae	Minuartia	macrocarpa		03-1311	p	Exit Glacier	Harding Icefield Trail	60.18094	149.70381
Caryophyllaceae	Minuartia	rubella		278	p	Upper Nuka River valley	slope on E side of	59.66660395	150.6623429
Portulacaceae	Montia	fontana		049	pp	North Arm of Nuka Bay	Beauty Bay, mining	59.54627587	150.6629326
Portulacaceae	Montia	fontana		03-1110	pp	Nuka Bay	East Arm, Delight Lake	59.5477	150.3333
Myricaceae	Myrica	gale		176	none	Resurrection River	south side of river,	60.2838	149.7125
Haloragaceae	Myriophyllum	sibiricum		135	none	Delight Lake spit,	near small lagoon, west	59.54451056	150.335377
Menyanthaceae	Nephrrophyllum	crista-galli		03-1156	p	Two Arm Bay	Paguna Arm, east side	59.68443	150.09987
Apiaceae	Osmorhiza	purpurea		03-1172	p	Two Arm Bay	Paguna Arm, east side	59.7075	150.0886
Fabaceae	Oxytropis	nigrescens		197	pp	Resurrection River valley	steep hillside above	60.27676356	149.7421397
Fabaceae	Oxytropis	campestris	var. jordalii	310	p? (O)	Upper Nuka River valley	E ridge of hill 3,840,	59.67053209	150.6949536
Papaveraceae	Papaver	alb-oroseum		304	u	Upper Nuka River valley	E side of river, across	59.66417466	150.6797889
Papaveraceae	Papaver	alb-oroseum		03-1309	u	Exit Glacier	Harding Icefield Trail	60.18139	149.70142
Papaveraceae	Papaver	radicatum	ssp. alaskanum	288	pp	Upper Nuka River valley	slope on E side of	59.66747827	150.6607924
Saxifragaceae	Parnassia	kozzebuei		313	pp	Upper Nuka River valley	small rocky rivulet on	59.66421892	150.7102114
Saxifragaceae	Parnassia	palustris		238	pp [u]	Resurrection River valley	approx 3km NW of	60.28351867	149.7236549

KENAI FJORDS NATIONAL PARK VASCULAR PLANT INVENTORY

Plant Collections by Alaska Natural Heritage Program at Kenai Fjords National Park in 2003 (cont.) –

Family	ITIS Genus	ITIS Species		Collection #	Stem	General Locality	Specific locality	Lat (dd)	Long (dd)
Saufraggiaceae	Parnassia	palustris		03-1298	pp	Exit Glacier Road	Resurrection River,	60.19823	149.58992
Scrophulariaceae	Pedicularis	capitata		199	pp	Resurrection River valley	steep hillside above	60.27676356	149.7421397
Scrophulariaceae	Pedicularis	labradorica		182	pp	Resurrection River	south side of river,	60.2838	149.7125
Scrophulariaceae	Pedicularis	parviflora	ssp. parviflora	148	none	Chance Cove	south facing slope	59.4909	150.3116
Scrophulariaceae	Pedicularis	sudetica	ssp. interior	074	none	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501
Scrophulariaceae	Pedicularis	sudetica	ssp. interior	258	none	Upper Nuka River valley	slope on E side of	59.66578352	150.6695906
Scrophulariaceae	Pedicularis	sudetica	ssp. interior	299	none	Upper Nuka River valley	hillside on E side of	59.65432416	150.6449581
Asteraceae	Petasites	frigidus	var. nivalis	03-1167	u	Two Arm Bay	Paguna Arm, east side	59.70513	150.09009
Thelypteridaceae	Phegopteris	connectilis		104	none	Delight Lake, McCarty	northwest shore of sw	59.5461	150.3021
Poaceae	Phleum	alpinum		039	u	North Arm of Nuka Bay	Beauty Bay, west side	59.54695172	150.6615592
Poaceae	Phleum	alpinum		03-1199	u	Harris Bay	Crater Bay	59.71805	149.77694
Ericaceae	Phyllodoce	glanduliflora		231	u	Resurrection River valley	steep hillside above	60.27341233	149.7558527
Ericaceae	Phyllodoce	glanduliflora		03-1154	u	Two Arm Bay	Paguna Arm, east side	59.7075	150.0886
Ericaceae	Phyllodoce	glanduliflora		03-1201	u	Harris Bay	Crater Bay	59.71805	149.77694
Lentibulariaceae	Pinguicula	vulgaris		153	pp	Chance Cove	south facing slope	59.4909	150.3116
Lentibulariaceae	Pinguicula	vulgaris		160	pp	McCarty Fjord	west facing slope	59.4763	150.3359
Lentibulariaceae	Pinguicula	vulgaris		03-1193	pp	Harris Bay	Crater Bay	59.7155	149.7877
Plantaginaceae	Plantago	macrocarpa		152	none	Chance Cove	south facing slope	59.4909	150.3116
Plantaginaceae	Plantago	maritima		03-1230	p	Northwestern Lagoon	east side of	59.7436	149.8838
Orchidaceae	Platanthera	chorisiana		091	none	North Arm of Nuka Bay	ridge crest above	59.51167463	150.5051855
Orchidaceae	Platanthera	chorisiana		163	none	McCarty Fjord	west facing slope	59.4763	150.3359
Orchidaceae	Platanthera	chorisiana		03-1206	none	Harris Bay	Crater Bay	59.71805	149.77694
Orchidaceae	Platanthera	chorisiana		03-1234	none	Aialik Bay	Coleman Bay	59.8588	149.61083
Orchidaceae	Platanthera	dilatata		081	p	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501
Orchidaceae	Platanthera	dilatata		236	p	Resurrection River valley	approx. 1km NW of	60.28351867	149.7263549
Orchidaceae	Platanthera	dilatata		03-1203	p	Harris Bay	Crater Bay	59.71638	149.78305
Orchidaceae	Platanthera	stricta		075	p	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501
Orchidaceae	Platanthera	stricta		138	p	Chance Cove	south facing slope	59.4896	150.3119
Orchidaceae	Platanthera	stricta		03-1212	p	Harris Bay	Crater Bay	59.71638	149.78305
Poaceae	Poa	annua		03-1287	none	Aialik Bay	Aialik Bay cabin, across	59.8375	149.7722
Poaceae	Poa	stenantha		03-1226	pp	Northwestern Lagoon	east side of	59.75	149.85
Poaceae	Poa	alpina		193	pp	Resurrection River valley	tributary creek on	60.28009612	149.7243845
Poaceae	Poa	eminens		031	p	North Arm of Nuka Bay	Beauty Bay, west side	59.5465	150.6619
Poaceae	Poa	macrocalyx		036	pp	North Arm of Nuka Bay	Beauty Bay, west side	59.5465	150.6619
Poaceae	Poa	macrocalyx		168	pp	Delight Lake spit,	spit and small lagoon	59.5435	150.3374
Poaceae	Poa	paucispicula		059	pp	North Arm of Nuka Bay	slope above southeast	59.5135	150.523
Poaceae	Poa	paucispicula		071	pp	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501
Poaceae	Poa	paucispicula		03-1263	pp	Aialik Bay	Coleman Bay	59.8588	149.61083
Poaceae	Poa	pratensis	ssp. alpigena	012	pp	North Arm of Nuka Bay	valley on S side of	59.5435784	150.511415
Poaceae	Poa	pratensis		190	pp	Resurrection River valley	tributary creek on	60.28009612	149.7243845
Poaceae	Poa	stenantha		016	pp	North Arm of Nuka Bay	valley on S side of	59.5435784	150.511415
Polemoniaceae	Polemonium	pulcherrimum		271	p	Upper Nuka River valley	slope on E side of	59.66660395	150.6623429
Polygonaceae	Polygonum	vivipara		033	p	North Arm of Nuka Bay	Beauty Bay, west side	59.5465	150.6619
Polygonaceae	Polygonum	vivipara		03-1104	p	Nuka Bay	East Arm, Delight Lake	59.5477	150.3333
Aspidiaceae	Polystichum	lonchitis		03-1317	pp	Exit Glacier	Harding Icefield Trail	60.18291	149.65329
Potamogetonaceae	Potamogeton	alpinus		122	pp	Delight Lake spit,	near small lagoon, west	59.54451056	150.3353377
Potamogetonaceae	Potamogeton	sp.		125		Delight Lake spit,	near small lagoon, west	59.54451056	150.3353377
Rosaceae	Potentilla	diversifolia		217	none	Resurrection River valley	steep hillside above	60.27341233	149.7558527
Rosaceae	Potentilla	nana		228	pp	Resurrection River valley	steep hillside above	60.27341233	149.7558527
Rosaceae	Potentilla	nana		309	pp	Upper Nuka River valley	E ridge of hill 3,840,	59.67053209	150.6949536
Rosaceae	Potentilla	uniflora		221	pp	Resurrection River valley	steep hillside above	60.27341233	149.7558527
Rosaceae	Potentilla	villosa		269	p	Upper Nuka River valley	slope on E side of	59.66660395	150.6623429
Rosaceae	Potentilla	villosa		03-1217	p	Harris Bay	Crater Bay, east side	59.6888	149.8038
Asteraceae	Prenanthes	alata		03-1179	p	Two Arm Bay	Paguna Arm, west side	59.6555	150.1005
Primulaceae	Primula	cuneifolia	ssp. saxifragifolia	03-1236	p	Aialik Bay	Coleman Bay	59.8594	149.6166
Primulaceae	Primula	cuneifolia		329	p	Upper Nuka River valley	E ridge of hill 3,840,	59.66355947	150.7182906
Poaceae	Puccinellia	nuthaensis		024	pp	North Arm of Nuka Bay	beach at Beauty Bay,	59.54233829	150.6618065
Poaceae	Puccinellia	nuthaensis		028	pp	North Arm of Nuka Bay	beach at Beauty Bay,	59.54233829	150.6618065
Poaceae	Puccinellia	nuthaensis		03-1234	pp	Northwestern Lagoon	east side of	59.7436	149.8838
Pyrolaceae	Pyrola	asarifolia		042	p	North Arm of Nuka Bay	Beauty Bay, west side	59.54695172	150.6615592

KENAI FJORDS NATIONAL PARK VASCULAR PLANT INVENTORY

Plant Collections by Alaska Natural Heritage Program at Kenai Fjords National Park in 2003 (cont.) –

Family	ITIS Genus	ITIS Species	Collection #	Stems	General Locality	Specific locality	Lat (dd)	Long (dd)	
Pyrolaceae	Pyrola	minor	267	p	Upper Nuka River valley	slope on E side of	59.66660395	150.6623429	
Ranunculaceae	Ranunculus	aquatilis	03-1296	none	Exit Glacier Road	Resurrection River,	60.19823	149.58992	
Ranunculaceae	Ranunculus	cymbalaria	126	pp	Delight Lake spit,	near small lagoon, west	59.54451056	150.3353377	
Ranunculaceae	Ranunculus	eschscholtzii	079	p	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501	
Ranunculaceae	Ranunculus	eschscholtzii	285	p	Upper Nuka River valley	slope on E side of	59.66747827	150.6607924	
Ranunculaceae	Ranunculus	hyperboreus	03-1297	none	Exit Glacier Road	Resurrection River,	60.19823	149.58992	
Ranunculaceae	Ranunculus	occidentalis	03-1313	p	Exit Glacier	Harding Icefield Trail	60.18553	149.65012	
Grossulariaceae	Ribes	bracteosum	03-1261	pp	Aialik Bay	Coleman Bay	59.86027	149.62361	
Grossulariaceae	Ribes	hudsonianum	03-1303	pp	Exit Glacier Road	Resurrection River,	60.19823	149.58992	
Grossulariaceae	Ribes	laxiflorum	03-1127	p	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416	
Hydrophyllaceae	Romanzoffia	sitchensis	010	pp	North Arm of Nuka Bay	valley on S side of	59.5435784	150.511415	
Hydrophyllaceae	Romanzoffia	sitchensis	064	pp	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501	
Hydrophyllaceae	Romanzoffia	sitchensis	283	pp	Upper Nuka River valley	slope on E side of	59.66747827	150.6607924	
Hydrophyllaceae	Romanzoffia	sitchensis	03-1279	pp	Aialik Bay	Ranger Station	59.8527	149.6472	
Brassicaceae	Rorippa	palustris	ssp. palustris	110	p	Delight Lake, McCarty	northwest shore of sw	59.5461	150.3021
Rosaceae	Rubus	arcticus	046	p	North Arm of Nuka Bay	Beauty Bay, gravel	59.54695172	150.6615592	
Rosaceae	Rubus	arcticus	03-1246	p	Northwestern Lagoon	east side of	59.77305	149.92472	
Rosaceae	Rubus	pedatus	03-1107	p	Nuka Bay	East Arm, Delight Lake	59.5477	150.3333	
Polygonaceae	Rumex	salicifolius	var. transitorius	03-1185	pp	Two Arm Bay	Paguna Arm, west side	59.5555	150.1005
Polygonaceae	Rumex	salicifolius	var. transitorius	03-1232	pp	Northwestern Lagoon	east side of	59.7436	149.8838
Potamogetonaceae	Ruppia	cirrhosa	133	none	McCarty Fjord, James	outer spit at mouth of	59.56104539	150.4060151	
Potamogetonaceae	Ruppia	maritima	03-1237	a	none	Northwestern Lagoon	east side of	59.7436	149.8838
Potamogetonaceae	Ruppia	maritima	03-1286	none	Aialik Bay	Pederson Lagoon,	59.88	149.73138	
Caryophyllaceae	Sagina	maxima	ssp. crassicaulis	128	none	Delight Lake spit,	near small lagoon, west	59.54451056	150.3353377
Caryophyllaceae	Sagina	nivalis	292	u	Upper Nuka River valley	slope on E side of	59.66824512	150.6551005	
Caryophyllaceae	Sagina	nivalis	03-1243	u	Northwestern Lagoon	east side of	59.77305	149.92472	
Caryophyllaceae	Sagina	nivalis	03-1306	u	Exit Glacier	Harding Icefield Trail	60.18139	149.70142	
Caryophyllaceae	Sagina	saginoides	137	none	Chance Cove	north end of Chance	59.4892	150.3129	
Salicaceae	Salix	alaxensis	175	u	Delight Lake spit,	vicinity of Cabin	59.547	150.3313	
Salicaceae	Salix	alaxensis	306	u	Upper Nuka River valley	E side of river, across	59.66417466	150.6797889	
Salicaceae	Salix	arctica	03-1260	p	Aialik Bay	Coleman Bay	59.8588	149.61083	
Salicaceae	Salix	barclayi	006	pp	North Arm of Nuka Bay	valley on S side of	59.54641507	150.5222516	
Salicaceae	Salix	barclayi	007	pp	North Arm of Nuka Bay	valley on S side of	59.54641507	150.5222516	
Salicaceae	Salix	barclayi	077	pp	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501	
Salicaceae	Salix	barclayi	03-1173	pp	Two Arm Bay	Paguna Arm, east side	59.67916	150.1027	
Salicaceae	Salix	commutata	076	pp	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501	
Salicaceae	Salix	commutata	243	pp	Resurrection River valley	approx 3km NW of	60.28351867	149.7236549	
Salicaceae	Salix	fusescens	244	pp	Resurrection River valley	approx 3km NW of	60.28351867	149.7236549	
Salicaceae	Salix	pulchra	200	p	Resurrection River valley	steep hillside above	60.27676356	149.7421397	
Salicaceae	Salix	reticulata	219	pp	Resurrection River valley	steep hillside above	60.27341233	149.7558527	
Salicaceae	Salix	reticulata	262	pp	Upper Nuka River valley	slope on E side of	59.66578352	150.6695906	
Salicaceae	Salix	reticulata	03-1267	pp	Northwestern Lagoon	east side of	59.77305	149.92472	
Salicaceae	Salix	rotundifolia	ssp. rotundifolia	214	pp	Resurrection River valley	steep hillside above	60.27676356	149.7421397
Salicaceae	Salix	rotundifolia	265	pp	Upper Nuka River valley	slope on E side of	59.66660395	150.6623429	
Salicaceae	Salix	rotundifolia	282	pp	Upper Nuka River valley	slope on E side of	59.66660395	150.6623429	
Caprifoliaceae	Sambucus	racemosa	var. racemosa	03-1152	u	Two Arm Bay	Paguna Arm, east side	59.70513	150.09009
Saxifragaceae	Saxifraga	cernua	315	pp	Upper Nuka River valley	small rocky rivulet on	59.66421892	150.7102114	
Saxifragaceae	Saxifraga	ferruginea	072	p	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501	
Saxifragaceae	Saxifraga	ferruginea	235	p	Upper Nuka River valley	E side small knoll on	59.66385248	150.6725199	
Saxifragaceae	Saxifraga	ferruginea	03-1231	p	Northwestern Lagoon	east side of	59.75416	149.8586	
Saxifragaceae	Saxifraga	lyallii	287	p	Upper Nuka River valley	slope on E side of	59.66747827	150.6607924	
Saxifragaceae	Saxifraga	lyallii	297	p	Upper Nuka River valley	small stream on E	59.65422333	150.6694421	
Saxifragaceae	Saxifraga	lyallii	301	p	Upper Nuka River valley	hillside above stream	59.66249516	150.6694784	
Saxifragaceae	Saxifraga	lyallii	03-1121	p	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416	
Saxifragaceae	Saxifraga	nelsoniana	014	p	North Arm of Nuka Bay	valley on S side of	59.5435784	150.511415	
Saxifragaceae	Saxifraga	rivularis	065	pp	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501	
Saxifragaceae	Saxifraga	rivularis	284	pp	Upper Nuka River valley	slope on E side of	59.66747827	150.6607924	
Saxifragaceae	Saxifraga	sibirica	011	pp	North Arm of Nuka Bay	valley on S side of	59.5435784	150.511415	
Saxifragaceae	Saxifraga	sibirica	066	pp	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501	
Saxifragaceae	Saxifraga	sibirica	286	pp	Upper Nuka River valley	slope on E side of	59.66747827	150.6607924	



KENAI FJORDS NATIONAL PARK VASCULAR PLANT INVENTORY

Plant Collections by Alaska Natural Heritage Program at Kenai Fjords National Park in 2003 (cont.) –

Family	ITIS Genus	ITIS Species		Collection #	Stem	General Locality	Specific locality	Lat (dd)	Long (dd)
Saxifragaceae	Saxifraga	sibirica		318	pp	Upper Nuka River valley	small rocky rivulet on	59.66421892	150.7102114
Saxifragaceae	Saxifraga	tricuspidata		210	pp	Resurrection River valley	steep hillside above	60.27676356	149.7421397
Cyperaceae	Schoenoplectus	tabernaemontani		127	none	Delight Lake spit,	near small lagoon, west	59.54451056	150.3353377
Selaginellaceae	Selaginella	selaginoides		03-1197	none	Harris Bay	Crater Bay	59.7155	149.7877
Selaginellaceae	Selaginella	selaginoides		03-1248	none	Northwestern Lagoon	east side of	59.77305	149.92472
Asteraceae	Senecio	pseudoarnica		052	u	North Arm of Nuka Bay	beach on east side of	59.56258329	150.5221048
Asteraceae	Senecio	triangularis		03-1251	p	Aialik Bay	Coleman Bay	59.8588	149.61083
Rosaceae	Sibbaldia	procumbens		03-1120	p	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416
Caryophylla	Silene	acaulis		218	u	Resurrection River valley	steep hillside above	60.27341233	149.7558527
Asteraceae	Solidago	multiradiata	var. multiradiata	215	p	Resurrection River valley	steep hillside above	60.27676356	149.7421397
Asteraceae	Solidago	canadensis	var. lepida	03-1187	pp	Two Arm Bay	Paguna Arm, west side	59.6555	150.1005
Rosaceae	Sorbus	scopolina		195	pp	Resurrection River valley	steep hillside above	60.27784559	149.735293
Rosaceae	Sorbus	sitchensis		03-1153	p	Two Arm Bay	Paguna Arm, east side	59.70513	150.09009
Sparganiaceae	Sparganium	angustifolium		121	none	Delight Lake spit,	near small lagoon, west	59.54451056	150.3353377
Sparganiaceae	Sparganium	angustifolium		173	none	Delight Lake spit,	spit and small lagoon	59.5435	150.3374
Sparganiaceae	Sparganium	angustifolium		03-1235	none	Northwestern Lagoon	east side of	59.7436	149.8838
Sparganiaceae	Sparganium	hyperboreum		154	pp	Chance Cove	south facing slope	59.4909	150.3116
Sparganiaceae	Sparganium	hyperboreum		03-1270	pp	Northwestern Lagoon	east side of	59.77305	149.92472
Caryophylla	Spargularia	canadensis		03-1285	pp	Aialik Bay	Pederson Lagoon,	59.88	149.73138
Caryophylla	Stellaria	borealis	ssp. borealis	115	p	Delight Lake, McCarty	northwest shore of sw	59.5461	150.3021
Caryophylla	Stellaria	borealis	ssp. sichana	03-1126	p	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416
Caryophylla	Stellaria	calycantha		013	pp	North Arm of Nuka Bay	valley on S side of	59.5435784	150.511415
Caryophylla	Stellaria	calycantha		035	pp	North Arm of Nuka Bay	Beauty Bay, west side	59.5465	150.6619
Caryophylla	Stellaria	calycantha		192	pp	Resurrection River valley	tributary creek on	60.28009612	149.7243845
Caryophylla	Stellaria	calycantha		317	pp	Upper Nuka River valley	small rocky rivulet on	59.66421892	150.7102114
Caryophylla	Stellaria	crispa		03-1129	pp	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416
Caryophylla	Stellaria	humifusa		171	p	Delight Lake spit,	spit and small lagoon	59.5435	150.3374
Caryophylla	Stellaria	humifusa		03-1189	p	Two Arm Bay	Paguna Arm, west side	59.6555	150.1005
Caryophylla	Stellaria	humifusa		03-1241	p	Northwestern Lagoon	east side of	59.7436	149.8838
Caryophylla	Stellaria	longifolia		03-1111	pp	Nuka Bay	East Arm, Delight Lake	59.5477	150.3333
Caryophylla	Stellaria	longipes		040	p	North Arm of Nuka Bay	Beauty Bay, west side	59.54695172	150.661592
Caryophylla	Stellaria	longipes		204	p	Resurrection River valley	steep hillside above	60.27676356	149.7421397
Caryophylla	Stellaria	longipes		03-1188	p	Two Arm Bay	Paguna Arm, west side	59.6555	150.1005
Potamogeto:	Stuckenia	pectinatus		123	pp	Delight Lake spit,	near small lagoon, west	59.54451056	150.3353377
Gentianaceae	Swertia	perennis		157	pp	Chance Cove	south facing slope	59.4909	150.3116
Gentianaceae	Swertia	perennis		03-1182	pp	Two Arm Bay	Paguna Arm, west side	59.6555	150.1005
Gentianaceae	Swertia	perennis		03-1316	pp	Exit Glacier	Harding Icefield Trail	60.18292	149.65874
Asteraceae	Symphotrichum	subspicatum		155	none	Chance Cove	south facing slope	59.4909	150.3116
Asteraceae	Symphotrichum	subspicatum	var. subspicatum	03-1114	none	Nuka Bay	East Arm, Delight Lake	59.5477	150.3333
Asteraceae	Symphotrichum	subspicatum	var. subspicatum	03-1208	none	Harris Bay	Crater Bay	59.7155	149.7877
Asteraceae	Taraxacum	officinale	ssp. ceratophorum	291	u	Upper Nuka River valley	slope on E side of	59.66747827	150.6607924
Asteraceae	Taraxacum	phymatocarpum		226	u	Resurrection River valley	steep hillside above	60.27341233	149.7558527
Asteraceae	Taraxacum	phymatocarpum		316	u	Upper Nuka River valley	small rocky rivulet on	59.66421892	150.7102114
Asteraceae	Taraxacum	phymatocarpum		03-1307	u	Exit Glacier	Harding Icefield Trail	60.18519	149.68346
Ranunculaceae	Thalictrum	alpinum		259	pp	Upper Nuka River valley	slope on E side of	59.66578352	150.6695906
Ranunculaceae	Thalictrum	sparsiflorum		185	pp	Resurrection River	south side of river,	60.2867	149.7137
Ranunculaceae	Thalictrum	sparsiflorum	var. richardsonii	03-1130	none	Two Arm Bay	Paguna Arm, north end	59.6933	150.13416
Thelypterid:	Thelypteris	quelpaertensis		167	none	McCarty Fjord	west facing slope	59.4763	150.3359
Thelypterid:	Thelypteris	quelpaertensis		03-1169	none	Two Arm Bay	Paguna Arm, east side	59.7075	150.0886
Saxifragaceae	Tiarella	trifoliata		03-1103	p	Nuka Bay	East Arm, Delight Lake	59.5477	150.3333
Liliaceae	Toffieldia	coccinea		162	p	McCarty Fjord	west facing slope	59.4763	150.3359
Liliaceae	Toffieldia	glutinosa		161	pp	McCarty Fjord	west facing slope	59.4763	150.3359
Liliaceae	Toffieldia	glutinosa	ssp. brevistyla	03-1194	u	Harris Bay	Crater Bay	59.7155	149.7877
Liliaceae	Toffieldia	glutinosa	ssp. brevistyla	257	u	Upper Nuka River valley	slope on E side of	59.66578352	150.6695906
Cyperaceae	Trichophorum	caespitosum		004	p	North Arm of Nuka Bay	valley on S side of	59.5476977	150.5364568
Cyperaceae	Trichophorum	caespitosum		089	p	North Arm of Nuka Bay	ridge crest above	59.51167463	150.5051855
Cyperaceae	Trichophorum	caespitosum		096	p	North Arm of Nuka Bay	ridge crest above	59.51167463	150.5051855
Cyperaceae	Trichophorum	caespitosum		147	p	Chance Cove	south facing slope	59.4909	150.3116
Juncaginaceae	Triglochin	maritima		051	pp	North Arm of Nuka Bay	Beauty Bay, mining	59.54627587	150.6629326
Juncaginaceae	Triglochin	palustre		030	pp	North Arm of Nuka Bay	beach at Beauty Bay,	59.54233829	150.6618065

KENAI FJORDS NATIONAL PARK VASCULAR PLANT INVENTORY

**Plant Collections by Alaska Natural Heritage Program at Kenai Fjords National Park in 2003 (cont.) –**

Family	ITIS Genus	ITIS Species		Collection #	Stem	General Locality	Specific locality	Lat (dd)	Long (dd)
Poaceae	Trisetum	canescens		001	none	North Arm of Nuka Bay	trail from Park Service	59.562583	150.522105
Poaceae	Trisetum	canescens		055	none	North Arm of Nuka Bay	forest on east side of	59.56258329	150.5221048
Poaceae	Trisetum	canescens		03-1115	none	Nuka Bay	East Arm, Delight Lake	59.5477	150.3333
Urticaceae	Urtica	dioica	ssp. gracilis	186	pp	Resurrection River	south side of river,	60.2867	149.7137
Ericaceae	Vaccinium	ovalifolium		03-1105	p	Nuka Bay	East Arm, Delight Lake	59.5477	150.3333
Ericaceae	Vaccinium	vitis-idaea		159	pp	McCarty Fjord	west facing slope	59.4763	150.3359
Poaceae	Vahlodea	atropurpurea		056	u	North Arm of Nuka Bay	slope above southeast	59.5135	150.523
Poaceae	Vahlodea	atropurpurea		03-1168	u	Two Arm Bay	Paguna Arm, east side	59.70513	150.09009
Scrophularia	Veronica	wormskjoldii		082	p	North Arm of Nuka Bay	slope above southeast	59.51219527	150.5105501
Scrophularia	Veronica	americana		03-1301	pp	Exit Glacier Road	Resurrection River,	60.19915	149.58958
Caprifoliace	Viburnum	edule		118	pp	Delight Lake, McCarty	northwest shore of sw	59.5461	150.3021
Caprifoliace	Viburnum	edule		158	pp	Chance Cove	south facing slope	59.4896	150.3119
Caprifoliace	Viburnum	edule		03-1304	pp	Exit Glacier Road	Resurrection River,	60.19823	149.58992
Violaceae	Viola	epipsila	ssp. repens	03-1112	u	Nuka Bay	East Arm, Delight Lake	59.5477	150.3333
Violaceae	Viola	epipsila	ssp. repens	03-1171	u	Two Arm Bay	Paguna Arm, east side	59.7022	150.08638
Violaceae	Viola	glabella		03-1218	pp	Harris Bay	Crater Bay, east side	59.6888	149.8038
Violaceae	Viola	langsdorffii		03-1157	p	Two Arm Bay	Paguna Arm, east side	59.70513	150.09009
Violaceae	Viola	langsdorffii		03-1159	p	Two Arm Bay	Paguna Arm, east side	59.70513	150.09009
Violaceae	Viola	langsdorffii		03-1186	p	Two Arm Bay	Paguna Arm, west side	59.6555	150.1005
Dryopterida	Woodsia	ilvensis		224	pp	Resurrection River valley	steep hillside above	60.27341233	149.7558527
Zosteraceae	Zostera	marina		138	a pp	Chance Cove	rocky intertidal of	59.4892	150.3129

## APPENDIX III

### Rare Plant Species List for Kenai Fjords National Park -

#### *Cochlearia* cf. *sessilifolia* Rollins (G1Q-S1)

A few individuals of the rare scurvy grass *Cochlearia sessilifolia* were collected at a beach at Beauty Bay on the west side of Ferum Creek (59.5423°N, 150.662°W). The site was a combination of mud flats and shingle beach in the upper intertidal zone, and halophytic grass forb meadow that was sparsely vegetated with *Puccinellia nutkaensis*, *Honckenya peploides*, and *Argentina egedii*. We estimated approximately 2,000 individuals. It is unknown whether this population is increasing, decreasing, or stable. *Cochlearia sessilifolia* is a Gulf of Alaska endemic, listed as imperiled globally and within the state (G1Q – S1 AKNHP rare plant tracking list, see Appendix IV). However, questions remain as to the validity of this taxon, and the AKNHP is currently conducting a taxonomic revision.

The putative sister species of *C. sessilifolia* is *C. groenlandica*, which was collected in a nearby flooded mining road in Beauty Bay (as well as other coastal sites in KEFJ). *Cochlearia groenlandica* is a widespread coastal circumboreal species that has significantly smaller fruits and seeds, and lacks sessile leaves. The rare species is known from a handful of sites on Kodiak and adjacent mainland beaches. We recommend ecological studies to determine habitat differentiation, potential for competition, and hybridization with its common congener.

#### *Platanthera chorisiana* (Cham.) Reichenb. (G3-S3)

We identified four small populations of the rare bog orchid, *Platanthera chorisiana* (Fig. 59) at mid-elevation, moist-acidic habitats. The site in the North Arm of Nuka Bay (59.5117°N, 150.505°W) was at a ridge crest above southeast side of Quartz Bay, and was characterized as moist graminoid - ericaceous dwarf shrub and forb tundra with scattered snowbeds and melt pools. The site at McCarty Fjord (59.4763°N, 150.3359°W), along a west facing slope above Roaring Cove, was a "hanging bog" of thin mats of saturated moss and humic soil over bedrock. The associated species at this site were with *Nephrophyllidium crista-galli*, *Trichophorum caespitosum*, *Drosera rotundifolia*, *Vaccinium uliginosum*, and *Gentiana douglasiana*. We collected this species in a subalpine meadow at Crater Bay (59.71805°N, 149.77694 °W) and a lush *Nephrophyllidium crista-galli* meadow at Coleman Bay (59.8588°N, 149.61083 °W). This species is listed by the AKNHP as a G3 - S3 (rare globally and within the state). Recent collections of this taxon in Glacier Bay National Park and Preserve, suggest that it is likely more common than previously believed, and its rank may be better reflected at G4-S4.

*Platanthera chorisiana* is distinguishable from other bog orchids in being less than 20 cm tall and having two basal leaves, but lacking developed cauline leaves. Its distribution globally is amphipacific, occurring in northern Japan, Kamchatka, and east to Alaska and British Columbia. It is known primarily from scattered sites in the Aleutians, Prince William Sound, and Southeast Alaska (Fig. 61). Because of its rarity, small population sizes, and narrow habitat specificity, we recommend more casual monitoring of the North Arm and McCarty Fjord populations.

#### *Papaver alboroseum* Hultén (G3G4-S3)

*Papaver alboroseum* is rare poppy with two population centers: one in Kamchatka and the other in southcentral Alaska. We collected this taxon at two locations in KEFJ. One was in the mountains around Exit Glacier (60.18139°N, 149.70142°W) at 1080 m, growing on exposed rounded scree mounds below the icefield. The other location was along exposed gravel bars on the Upper Nuka River

(59.6642°N, 150.6798°W). In both locations *Chamerion latifolia* (*Epilobium latifolium*) was a dominant associate. Population sizes were estimated at approximately 300 plants at the Exit Glacier site and 20 at the Nuka River Pass site.

This species is a distinctive small (<15 cm tall) poppy with white to rose-colored petals with a yellow spot at the base. It is somewhat more difficult to identify while not in flower, but it has heavily pubescent leaves with a broad, ovate to globose capsule. A photo of the species is shown in Figure 62.

*Papaver alboroseum* is found on sandy, gravelly, as well as moderately sized talus substrates in heavily glaciated mountains, typically above 600 m. This species has been collected across a range of locations in Alaska, Yukon, and British Columbia. Most populations are centered in the Kenai Mountains and radiating into the Alaska, Chugach, and Wrangell Ranges (Fig. 61), extending west and south into Yukon and British Columbia. It has proven to be more common in the Coastal Mountains than initially indicated by Hultén (1968) and more populations likely exist. However, the steep, remote, and glaciated mountains inhabited by this poppy limit collecting opportunities. No survey or monitoring actions are recommended for this taxon.

#### ***Carex phaeocephala* Piper (G4-S1S2)**

We made two collections of the state imperiled sedge, *Carex phaeocephala* (G4-S1S2). One collection was above the Upper Nuka River (59.6667°N, 150.6623°W) on a steep slope at 550 m elevation. The other collection was above Exit Glacier at 60.18094°N, 149.70381°W and 1080 m elevation.

This species is found throughout rocky high montane regions of the west (Mastrogriuseppe et al. 2002), but is confined to a handful of populations in the Coastal, Wrangell, and Chugach Mountains. A single site is known in the western Alaska Range. The collection in KEFJ is a significant range-filler, linking the highly disjunct western Alaska Range collection with the greater concentration of populations in the southeastern Alaska and Yukon Territory.

This species was growing on a very steep and eroding slope of a mixture of fine and coarse sediments at the Nuka River. The site was mostly bare ground and very few other vascular plants were associated with it (Fig. 54). *Chamerion latifolium*, *Oxytropis campestris* var. *varians*, *Astragalus alpinus*, and *Equisetum variegatum* were found growing with *C. phaeocephala*. We noted only a few other individuals of this species (< 20) at the site. It is possible it is more numerous on other slopes in the Upper Nuka River valley. The habitat in where *C. phaeocephala* was collected near Exit Glacier was quite similar: largely barren, eroding scree mounds at high elevation.

Identification of this species is difficult, as with most members of *Carex* sect. *ovales*. It is distinguishable by a combination of traits: a dense tawny-colored head, with inconspicuous, winged perigynia, a small lower bract, and staminate flowers clustered at the base.

While this species is relatively common globally, it is quite restricted in Alaska and its presence in KEFJ is an important contribution to the biodiversity of the park and the Kenai Peninsula. We recommend additional surveys of high-elevation regions of the park to identify more populations of this and other rare alpine species.

#### ***Carex lenticularis* var. *dolia* (M.E. Jones) L. A. Standley (G5T3Q-S3)**

We made multiple collections of *Carex lenticularis* var. *dolia* (= *C. enanderi* sensu Hultén, 1968; G5T3Q-S3) in KEFJ. One collection was from the Upper Nuka River valley (59.65422°N, 150.6694°W) at 410 m elevation along the margins of a flooded subalpine stream in gravel and moss.

The associated species were *Salix barclayi*, *Vahlodea atropurpurea*, *Carex nigricans*, *C. anthoxanthea*. We also collected *C. lenticularis* var. *dolia* near Exit Glacier (60.18314°N, 149.669°W) at 750 m. This site was very similar to the Nuka River site. Two populations of this species were found along alpine stream sides in the Coastal Region: one at the North Arm of Nuka Bay (59.5117°N, 150.5052°W) and one at Harris Bay (59.7164°N, 149.7831°W). These sites were at mid-elevations (130 to 400 m) in moist herbaceous meadows or snowmelt ponds.

This species is found in the mountains of Alaska, Yukon, British Columbia, Alberta, and Montana (Fig. 65). It ranges throughout southern Alaska, and is relatively common. This species does not appear rare enough to warrant future directed research.

## APPENDIX IV

### List of Alaska Natural Heritage Program rare plant ranks –

#### Species Global Rankings

- G1: Critically imperiled globally.
- G2: Imperiled globally.
- G3: Rare or uncommon globally.
- G4: Apparently secure globally, but cause for long-term concern.
- G5: Demonstrably secure globally.
- G?: Unranked.
- G#G#: Global rank of species uncertain, best described as a range between the two ranks.
- G#Q: Taxonomically questionable.
- G#T#: Global rank of species and global rank of the described variety or subspecies of the species.
- GU: Unrankable.
- GH: Historical Occurrence.
- GX: Extinct.
- HYB: Hybrid.

#### Species State Rankings

- S1: Critically imperiled in state.
- S2: Imperiled in state.
- S3: Rare or uncommon in state.
- S4: Apparently secure in state, but with cause for long-term concern.
- S5: Demonstrably secure in state.
- S#S#: State rank of species uncertain, best described as a range

between the two ranks.

S?: Unranked.

SU: Unrankable.

SA: Accidental.

SR: Reported from the state, but not yet verified.

SRF: Reported falsely.

SP: Potential to occur in the state.

HYB: Hybrid.

SSYN: Synonym.

**Qualifiers:**

B: Breeding status.

N: Non-breeding status.

?: Inexact.

Q: Questionable taxonomy.

**APPENDIX V**

**User's Guide for GIS Attributes and Data Layers with Links to Plant Data Bases -**





**The National Park Service**  
**Inventory and Monitoring**



**USER'S GUIDE**

**FOR**

**Floristic Survey of Glacier Bay NP & Preserve  
GIS Database**

**Prepared for Southeast Alaska Area Network – National Park Service**

**By**

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## INTRODUCTION

In 2001, the Alaska Natural Heritage Program (AKNHP) entered into a Cooperative agreement with the National Park Service (NPS) Inventorying and Monitoring program to provide a floristic survey for Glacier Bay National Park. As a result of this study, a Geographic Information System (GIS) based data-system was developed to store the results of this floristic survey and integrate these data with historical plant collections. This simple GIS application was developed by the Alaska Natural Heritage Program and allows users to view and query plant collections in a spatial context while providing all associated site data. The global positioning data collected at each 2001 and 2003 collection site serves as the basis for the spatial depiction of survey data. Spatial data for historical collections is limited to location coordinates obtained from the collection records and herbarium labels. The spatial accuracy and depiction of the historical records have a wider variation of accuracy than that of the 2001 and 2003 surveys which was collected in a more precise and standardized format. This GIS database is a self contained ArcView interface that allows easy access to botanical data and thus integrates floristic collections for Glacier Bay National Park and Preserve. The associated project report provides background for the 2001-03 project and explains data collection methodology.

Database, information for the 2001 and 2003 survey has been separated into three formats:

- 1) **Collection spreadsheets** for each 2001 (Parkwide Landcover Survey) and 2003 (Alsek Survey) collection sites. These contain site information, species collected, habits in which they occurred, and associated species information.
- 2) **GIS Data Layers** that depict collection site locations and provide background coverages for collection regions. Historical collections include those from the University of Fairbanks Herbarium.
- 3) **Digital field photos** that were taken at the collection sites during the 2001 and 2003 survey seasons and provide an overview of the specimen collection areas.

The Glacier Bay database summarizes all botanical collections for the area and provides access to the products generated from the 2001 and 2003 surveys. These surveys were aimed at collecting specimens that would document the occurrence of additional taxa for the park. These collections were made after a review of existing vouchered specimens and survey locations were chosen to expand data collection into areas not previously surveyed. It is our intent that this CD database application be made available to a wide audience and is intended to provide land resource managers with a data tool to better assess the floristic data of these areas, which contribute to a better understanding of the botanical character of land units managed by the National Park Service.

This User's Guide describes the structure, usage, and navigation of the ArcView GIS database application developed for this floristic inventory. This document will accompany the database application as it is distributed to assist the users in understanding the technical and organizational aspects and component data layers of the CD application. An additional CD contains the raw data layers used to construct this application and has been delivered as a separate product to the Southeast Alaska Area Network of the Alaska National Park System.

## SOFTWARE REQUIREMENTS AND INSTALLATION

Software required for successful use of this product includes ArcView 3.1 or higher, Powerlink Extension for ArcView, and Microsoft Excel. Collection spreadsheets are accessible using Microsoft Excel alone. However, no spatial data can be accessed without ArcView 3.1 or higher and Powerlink extension is needed to access the connection of excel files and field photos within the ArcView application.

This CD-ROM was designed to operate from a C:\sean drive/folder of any computer with required software. It is recommended to increase viewing speed, that you copy the entire project (folder: "GLBA") to a C:\sean drive. The sean folder was created to allow additions of other parks applications within the Southeast park network to be stored together. It is very important to **copy the entire folder with subfolders**.

**\*\* Please note:** To operate properly, the file **MUST be placed directly on the selected drive**, not as a subfolder of any other directory.

## CD-ROM CONTENTS

The Species of Concern database contains spatial and spreadsheet information regarding historical botanical collections, and 2001 and 2003 floristic studies for Glacier Bay. The 2001 and 2003 survey data has been organized into eight regional survey areas that include, Fairweather Outer Coast, Alsek River, Cape Spencer Fjords, Dundas River Flats, Salmon Hills, Adams Inlet, Tarr Inlet, and Dry Bay Foreland collection sites. These areas or regional survey units were depicted using the existing ecoregional mapping for the park as a guide. The boundaries vary to accommodate the survey collection areas dictated in part by logistical access considerations and terrain. The database is completely accessible through the ArcView GIS application. Spreadsheet information may also be accessed directly using Microsoft Excel. Within the ArcView database ('GLBA1.apr') there are a total of 9 **Views** (pages): an individual **View** for each regional survey area and a separate summary **View** for all historical plant collections. In each regional survey **View** the user is able to link to spreadsheet information for a specific collection site and to a field photograph taken from each location. A few collections sites do not have associated field photos. Each collection site spreadsheet contains a listing of each species collected at that location, habitat information, associated species at that site, a variety of locational data as well as basic collection information (Collector name, date, number, etc.).

This CD-ROM contains a User's Guide for the Floristic Survey for Glacier Bay National Park database (glba\_user.doc). Additionally, a separate CD containing all products including, field photos, site locations, and collection information has been provided for those users of the data that may not wish to access the data by way of the ArcView application .

Table A1. Glacier Bay National Park and Preserve Survey Units Regional survey units established for floristic survey

---

***Regional Survey Area Name***

- ◆ Fairweather Outer Coast
- ◆ Alsek River Corridor
- ◆ Cape Spencer Fjords
- ◆ Dundas River
- ◆ Salmon River Hills
- ◆ Adams Inlet
- ◆ Tarr Inlet
- ◆ Dry Bay Forelands

**USER GUIDELINES**

**A. Data Sources**

The collection spreadsheets and GIS distribution layers reflect a compilation of existing floristic collections provided by the University of Alaska Fairbanks Herbarium (ALA). This historical collection consists of a variety of collections both inside and adjacent to the park and preserve. Additional information consists of recently acquired data from Alaska Natural Heritage Program ground surveys sponsored by NPS in the summers of 2001 (landcover mapping effort) and 2003 (Alsek River Botanical Survey). Carolyn Parker, botanist with University of Alaska Herbarium, provided verification for specimens collected in the 2001 and 2003 surveys.

**B. Collection Site Spreadsheets and Field Photos**

Spreadsheets have been provided both individually for each 2001 and 2003 collection sites, as well as a spreadsheet summary of the entire 2001-2003 collection. The 2001 collection was part of the landcover mapping effort for the park and these collection spreadsheets are distinguished by the naming convention (GLBA-ID)\_glba.xls. The 2003 alsek collection naming convention is (site#)\_alsek03.xls. These are accessible in Excel format and through the ArcView application. Historical collections from ALA are presented as spreadsheets (\*.xls) and spatially through ArcView application. No attempts were made to standardize attribute information between the NPS collections and historic data sets.

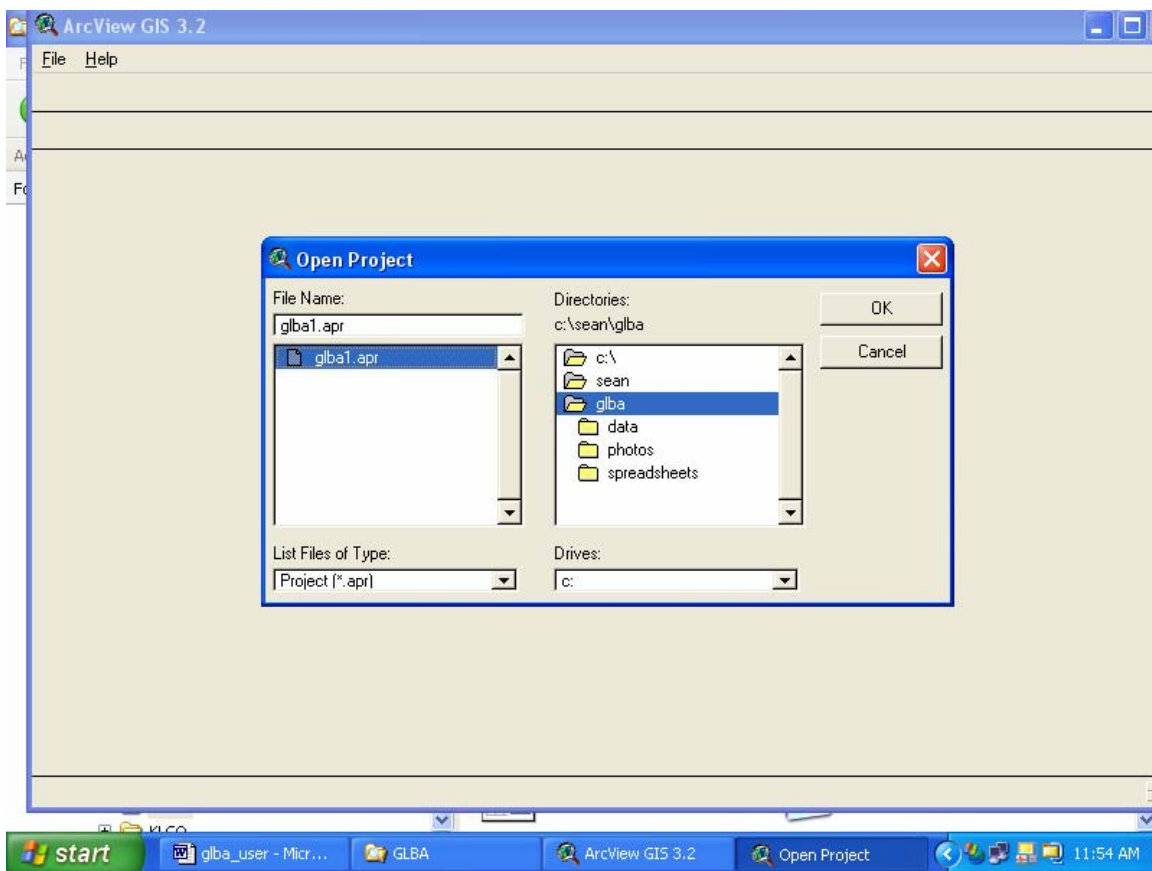
**C. ARCVIEW GIS Database: ‘GLBA1.apr’**

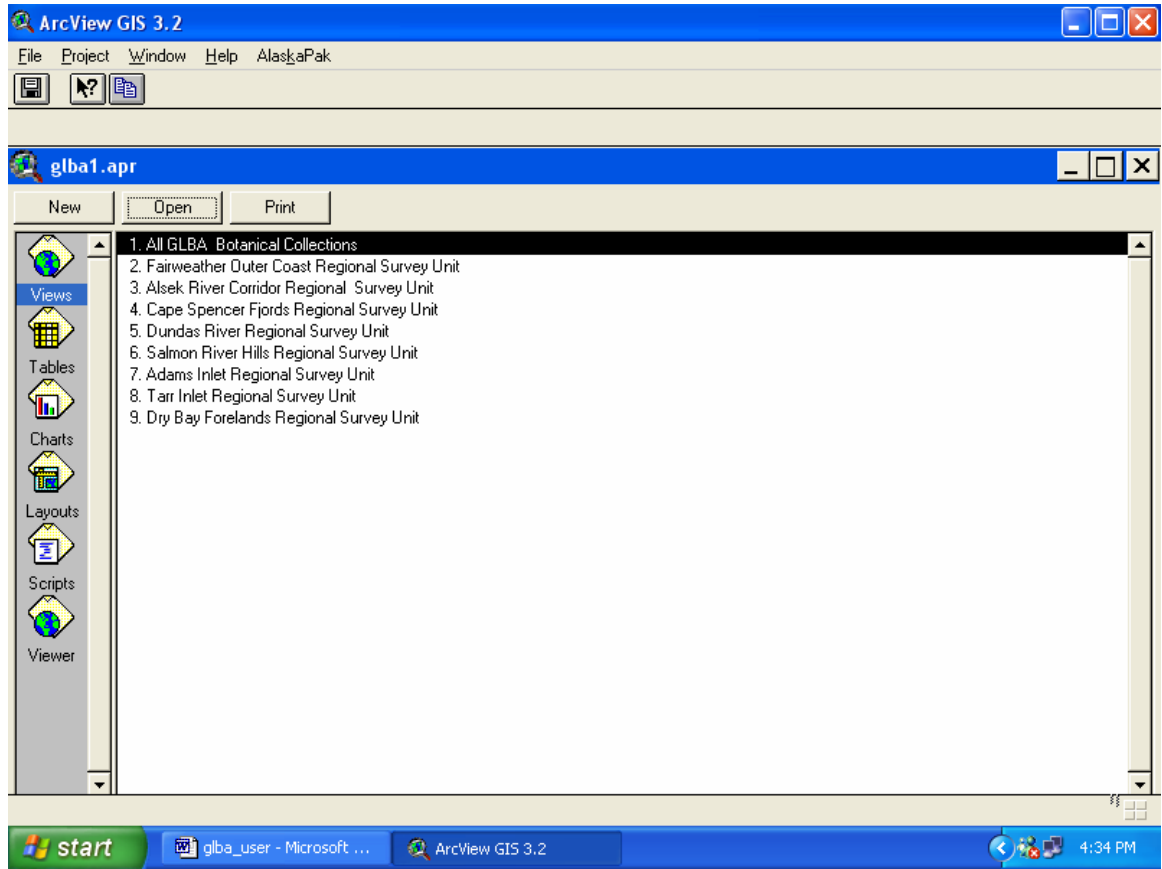
How to Open the Project

The database was designed for use by those with a basic level of ArcView proficiency. Very basic instructions for opening the program and use of the Powerlink feature are included in this User’s Guide. In addition to the built-in help files in ArcView, more detailed information and support can be found on-line at <http://support.esri.com/>; to

purchase an on-line course in using ArcView, visit ESRI's virtual campus at <http://campus.esri.com/>. Powerlink is an extension for Arcview provided online through <http://www.benchmarkgis.com>. This extension is provided for a free 15 day download at this site or purchase for \$69. This extension must be activated for the application to operate correctly. Before accessing the database, Powerlink extension must be loaded in the ArcView extension folder.

Load GLBA folder to your C:\sean drive and folder. This CD-ROM is designed to operate in C:\ disk drive, and the contents may also be copied to a hard-drive to increase viewing speed (see **SOFTWARE REQUIREMENTS AND INSTALLATION**). To open the project activate ArcView Files open project, choose c:\sean\GLBA and click on 'GLBA1.apr' as shown in the example below.





Once the ArcView project opens, the first page should appear as in the example above. Note that the icon for “Views” is highlighted in the blue bar on the left side of the screen; this icon must be active to access views.

### How to Open a View

To open the desired **View**, click on the name of **View** (it should appear highlighted in black, as in the All Botanical Collections GLBA example above). Then click the “Open” button or simply double-click the desired **View**, and the **View** will appear on your screen. There are 9 separate views one each for all regional survey units designed for this project.

### How to Open an Attribute Table

Each **View** consists of several data layers or **Themes**. To view the attribute table for a **Theme**, the **Theme** must first be made active. To activate a **Theme**, simply click once on the **Theme** name.

Once the **Theme** is active, click the “Table” icon on the toolbar at the top of the **View**, or use the “Theme” pull-down menu and select “Table”:

Refer to Section **E. Database Contents** for an explanation of data and field names presented in these tables.

### How to Use Powerlinks

To access the spreadsheets and field photos via ArcView, use the regional area polygon shape file available for each regional area unit and sub-unit. Click on the **Theme** labeled (regional Survey Unit Name).shp to activate it (Step 1), then click on the Hotlink button (black lightning bolt) (Step 2). With the Hotlink button active, click anywhere in the polygon (Step 3). This will automatically start Excel and bring up the appropriate spreadsheet for that collection point and activate the image viewer and display the field photos associated with that collection site.

## **D. Database Structure**

The project 'GLBA1.apr' consists of 9 separate **Views** (pages). In addition to one **View** per regional survey site, there is also one **View** containing all historical plant collections from Glacier Bay corridor. Each species' **View** contains the **Themes** (data layers) developed for that regional survey area. (see table #2 for a complete list of the data layers or themes for each survey area).

### Basemap Descriptions

The basemap provided for the regional survey views database was the U.S. National Park Service Landsat Thematic Mapper digital mosaic covering the park and Preserve (glba321.img). This is an Erdas Imagine formatted file in an UTM Zone 8 projection and was provided by the NPS Alaska Regional Office GIS Division. All shape files were geo-referenced using the UTM zone 8 projection (unit class = meters). All spatial point features representing collection sites were converted from their original projections for display on this layer. The boundary of Glacier Bay NPS coverage (Glba\_bd\_utm8.shp) provided by the NPS GIS division was re-projected into the UTM projection for purposes of this project. The regional survey area theme (lfinal\_reg\_units.shp) was created using the Glacier Bay ecoregion as a guide. This layer was used to divide the entire park into survey areas and for display of collection areas in ArcView. Shape files were created using the coordinate locations obtained from the Global positioning system in the field. These coordinates were re-projected to UTM to fit the base maps. These maps were then divided by regional survey units and individual shape files for each survey unit was created. All collection site locations in these regional shape files were then buffered to create a polygon coverage from which links to associated spreadsheets and field photos could be established.

### Map Projection

All shape files were created and displayed using an UTM NAD 1927, Zone 8 map projection. This was chosen as the majority of park data is stored in this projection to facilitate overlay with other data themes.



Data Formats

**Shape files** for each regional survey site are located under the folder labeled *c:\sean\GLBA\data* and are in ArcView file format. Each shapefile has 3-5 associated files in an ArcView format (extensions include \*.shp, \*.dbf, \*.shx, \*.sbn, and \*.sbx) that can be used by all versions of ArcView. Shape files are stored as polygon features. For the 2001 landcover study and the 2003 Alsek river botanical study there are polygon shape files showing the collection location as derived from the GPS point taken at each site. Site locations were buffered to create these polygons around the collection location sites. Other basemaps to include the park boundary is also stored as a polygon coverage in the ArcView folder under the associated regional survey unit. This folder also contains the historical collection point locations contributed by the Northern Plant Data Center at the University of Alaska Fairbanks.

**Spreadsheet files** for each regional survey are organized under *c:\sean\GLBA\Spreadsheets*. Spreadsheets are in MS Excel format (.xls extension).

**Field Photo Image Files** are located in *c:\sean\GLBA\photos* for each regional survey area. These files have a .jpg extension and are easily open using any image viewer and a variety of other software applications.

**Base maps** are stored together in the *c:\sean\GLBA\data* folder. These base maps contain the Glacier Bay National Park and Preserve boundary, the regional survey unit boundaries that follow approximately the ecoregional delineations of the park and preserve. The mosaiced Landsat Thematic Mapper image produced for GLBA was used as a basemap for each regional view in this ArcView project.

**E. Database Contents and Development of GIS Data Layers**

A total of 24 data layers (**Themes**) were developed for this database. For a complete list of **Themes** included for each view and regional survey unit please see table 2. There are an additional base layers included to facilitate viewing of the floristic data. The floristic base layers are described below:

University of Alaska Fairbanks Northern Plant Data Center: (*Ala\_glbapr\_k utm.shp* and *Ala\_glbabuf utm.shp*)

This base layer was developed as an event theme using ArcView software. The original electronic data received from the University of Alaska herbarium (ALA) was imported into Excel and adjusted to fit the desired format. These data were transferred from Excel to ArcView via a comma delimited text file. All associated information is stored in the point feature attribute table and is accessible through the ‘**Identity**’ function of ArcView. Collections occurring in the Glacier Bay NP were separated from those adjacent to the park boundary. Two shape files were created one for collections within the park and one with collections within 100km from the park boundary.

The core set of attributes used for this layer includes, taxonomic name, location, habitat and collection information. A complete list of attribute field definitions is available in Table 3.

2001-2003 AKNHP Botanical Surveys (*All collections 2001-2003.shp*)

This theme was developed as an event theme using Arcview software. The original electronic data was compiled from survey data collected by AKNHP staff and put in Excel spreadsheet format, after specimen verification by Carolyn Parker at the UAF herbarium.

On the summary spreadsheet, each collection site was assigned a unique number referred to as the GLBA-ID. The Alsek River 2—3 collection was assigned a Site# as a unique identifier. This summary spreadsheet was edited and transferred from Excel to ArcView via a comma delimited text file. This summary table was used to create a point feature theme for the entire survey to include all collection sites. All data were edited and regional units and sub-units were divided to create themes for each of the 8 regional survey areas. These layers were assembled with their base layers into separate views and a polygon shape file was created for each regional survey unit and sub-unit. The polygon shape file was used to store site identification and pathways necessary to establish links to the collection spreadsheets and field photos. The original summary spreadsheet was then divided into separated Excel sheets according to regional survey units.

The point feature file for each site contains attributes for the following general areas; location, taxonomic names, habitat, site characteristics, and collection notes. See Table 3 for a full listing of attributes and their definitions.

The polygon coverages for each regional survey unit and sub-unit were attributed with those features that allowed linkage to appropriate spreadsheets and field photos. See table 3 for a full listing of these attributes.

## **F. Database Assemblage**

All theme layers as described above, were then assembled and organized in ArcView for each of the eight regional survey areas. Field photos were scanned, formatted as .jpg files, and named according to the associated collection site survey name and number. The Powerlink ArcView extension was used to assemble pathways which were automatically inserted into the regional survey unit and sub-unit a polygon attribute tables. Field photos were connected to appropriate field collection sites. A final edit was made of all data and application function tested.

**CONTACTS**

Any comments that would help enhance the quality of this project or aid in the use of these data should be directed to:

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Table A2. Database Content for the Glacier Bay NP&P Floristic Survey.

<b>View</b>	<b>Shape File Name</b>	<b>Feature Class</b>
1. All Botanical Collections - GLBA	All_collections_2001-2003.shp Ala_glbaprkm_utm.shp Ala_glbabuf_utm.shp 1final_reg_units.shp GLBA_bd_utm8.shp	point point point polygon polygon
2. Fairweather Outer Coast	1_fairweather_outer_coast.shp RSU_fairweather_oc.shp GLBA321.img	polygon point image
3. Alsek River Corridor	2_alsek.shp Alsek_new.shp Alsek_routes_2003.shp GLBA321.img	polygon point image
3. Cape Spencer	3_cspencer_fjord.shp Capespencer_new.shp GLBA321.img	polygon point image
4. Dundas River Flats	4_dundasriver_flats.shp Rsu_dundas.shp GLBA321.img	polygon point image
5. Salmon River Hills	5_salmonriver_hills.shp Rsu_salmonriver.shp GLBA321.img	polygon point image
6. Adams Inlet	6_adamsinlet.shp 3adams_all_edit.shp GLBA321.img	polygon point image
7. Tarr Inlet	7_tarrinlet.shp Rsu_tarr.shp GLBA321.img	polygon point image
8. Dry Bay Forelands	8_drybay_forelands1.shp Dry_bay_route_2003.shp Drybay_new.shp GLBA321.img	polygon point image

Table A3. Field Definitions for Theme Attribute Tables.

**Theme: 2001-2003 Floristic Survey Site Point feature themes and excel spreadsheets  
(April\_edit\_all\_utm8 and point coverages)**

<b>Field Name</b>	<b>Description</b>
GLBA_ID	Glacier Bay Identification Number
Collect_nu	Collection Number
Family	Taxonomic Family
Genus	Taxonomic Genus
Species	Scientific Name
Infrank	Infra rank
Infname	Subspecies Name
Quad250	USGS 1:250K Quadrangle Name
Quad63	USGS 1:63K Quadrangle Name
Gen_local	General Locality
Spec_local	Specific Locality
ITIS_name	IT IS taxonomic designation
Elev	Elevation
Elev_unit	Elevation Unit
Topog	Topography
Aspect	Aspect
Slope_deg	Degrees slope
Habitat	Habitat Description
Veg_cov	Percent Vegetation Cover
Substrate	Substrate
Abundance	Abundance
Assoc_sp	Associated Species
Day	Collection Day
Month	Month Collected
Year	Year Collected
Photo_num	Field Photo Number
Collectors	Name of Collectors
Numorig	Original Number (in Regional Coverages)
Lat_dd	Latitude (decimal degrees)
Long_dd	Longitude (decimal degrees)

**Theme: All Regional Survey Unit Polygon Themes**

<b>Field Name</b>	<b>Description</b>
Buff_dist	Buffer distance from centrum point. Application generated
Buff_area	Buffer area of polygon. Application generated
Giba-id	Collection Site unique number
Site_num	Collection Site unique number Alsek River Corridor survey unit only
Lphoto	Associated field photos
Lssheet	Associated Collection information spreadsheet

**Theme: UAF Herbarium Northern Plant Data Center GLBA and adjacent area Collection (Ala\_glbaprkm\_utm.shp and Ala\_glbabuf\_utm.shp)**

<b>Field Name</b>	<b>Description</b>
Famcode	ALA Family Code
Sci_name	Scientific Name
Genus	Genus Name
Species	Species Name
Infrank	Infra rank code
Infraspeci	Infra species Name
Lmu	Land Management Unit
Quad	USGS Quadrangle 1:250000
Locality	General locality
Lat_dd	Latitude in Decimal Degrees
Long_dd	Longitude in Decimal Degrees
Elev	Elevation and units of measure
Habitat	General habitat comments
Collector	Collectors Name
Col_date	Collection Date
Col_num	Collection Number
Ala_acc	ALA Accession Number
Citation	Source