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**A FLORISTIC INVENTORY OF VASCULAR PLANT  
SPECIES  
on  
ELMENDORF AIR FORCE BASE, ALASKA**

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April 13, 2001



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## INTRODUCTION

In January 1999, the Alaska Natural Heritage Program (AKNHP) undertook a project to establish and characterize long-term vegetation monitoring plots (LTVMPs) on Elmendorf Air Force Base (EAFB), Alaska, under Contract Agreement No. DAMD17-99-2-9004 (Tande et al. 2001). The purpose of the project was to develop a method for monitoring long-term vegetation change and provide a baseline description of LTVMPs that Base personnel would use to periodically update the EAFB Integrated Natural Resource Management Plan (INRMP) as directed in AFI 327064 and 32 CFR 190.7, 16 USC5CSCII670a (Sikes Act).

In conjunction with this project, we conducted a limited survey of the vascular plants of EAFB with the following three main objectives:

1. Identify any rare vascular plants on EAFB (rare plants are defined in this report as those ranked S3 or rarer by the AKNHP).
2. Document any vascular plant taxa not previously known from EAFB.
3. Insure that the vascular flora of the monitoring plots is accurately and adequately documented.

A secondary objective was to conduct a preliminary survey for non-native vascular plant taxa in selected disturbed areas of EAFB.

## LOCATION

Elmendorf Air Force Base (EAFB) is situated on approximately 5,314 hectares (13,130 acres) in Southcentral Alaska at the head of Cook Inlet. The vascular plant inventory was limited to the 3,614 hectares (8,931 acres) of undeveloped land and 587 hectares (1,450 acres) of semi-developed land.

The Base is bounded by the Municipality of Anchorage to the south, the Knik Arm of Cook Inlet to the north and west, and Fort Richardson Army Base to the east. Elmendorf is located at 149 degrees, 48 minutes west longitude and 61 degrees, 15 minutes north latitude.

## METHODS

We compiled a preliminary list of plant taxa that were either known from EAFB (Tande 1983) or that could be expected to occur based on herbarium collections from adjacent areas (holdings of the University of Alaska Fairbanks Museum) and existing literature (Hultén 1940-50, 1967, 1968, Tande 1983, Tande et al. 1995). This list was used to highlight particular habitats to search for taxa not yet known from the Base. The list of expected taxa was also cross-referenced against the AKNHP databases to identify rare taxa ranked S1-S3. Bluffs and fresh water and estuarine wetlands received special attention as likely sources for range extensions and rare taxa.

### Field Data Collection

Field surveys of vascular plants were conducted between July and September 1999 and plants were opportunistically collected based on phenology and habitat. Specific collecting areas were selected based on previous vegetation studies (Tande 1983, Tande et al. 1995), aerial photography, and the

known or suspected habitat requirements of those taxa not yet known from the study area. Additional transects were added to provide adequate baseline coverage of other vegetation types and several LTVM plots were also surveyed. Voucher specimens were made of critical taxa and range extensions but were not made for new records of common taxa known from adjacent areas on Fort Richardson (Tande et al. 1995). Element Occurrence Records (EOR's) were constructed for all rare plants and were entered into the AKNHP databases and associated GIS.

A brief survey was made of non-native taxa on selected roads and trails and all non-native taxa were listed.

Collections were identified using standard herbarium techniques and all collections will be archived at ALA and AKNHP. Nomenclature generally follows that of the Biota of North America Program (1999), with exceptions cross-referenced to that list.

## RESULTS and DISCUSSION

Elmendorf Air Force Base lies near the geographic and climatic boundaries between Pacific maritime Southcoastal Alaska and continental Interior Alaska. Although the flora of EAFB is most closely allied with the boreal spruce-birch forests of the Interior, the coastal influence is seen in the presence of *Populus balsamifera* ssp. *trichocarpa* as well as many of the understory and wetland species such as *Carex aquatilis* var. *dives*, *C. mertensii*, *C. pauciflora*, *C. pluriflora*, *Oplopanax horridus*, and *Menziesia ferruginea*. The Base contains a number of distinct plant communities ranging from fens, marshes and riparian areas to boreal forests as well as azonal grasslands, bluffs and small areas of estuarine mudflats and saltmarsh. It lacks the dramatic elevation gradient found on adjacent Ft. Richardson and consequently does not have the varied alpine and subalpine communities found on that Army Base.

Although the Anchorage vicinity is the center of activity for most of Alaska's population, there have been few attempts to produce floras for southcentral Alaska. Tande (1983) documented some of the flora of EAFB and several additional, limited species lists have been provided for the Cook Inlet area in the course of vegetation studies (Batten et al. 1978, McCormick and Pinchon 1978, Ritchie et al. 1981, Hogan and Tande 1982). Tande et al. (1995) conducted an extensive inventory of the flora of Ft. Richardson, including areas immediately adjacent to EAFB.

Appendix A lists the known flora of EAFB, totaling 301 taxa. Although the floristic survey should not be considered complete, the species list presented is a good basis for describing the vascular flora of Elmendorf Air Force Base. The 301 taxa are distributed among 163 genera and represent more than 15% of Alaska's vascular flora. The survey added 99 taxa to the previously known flora of EAFB (Appendix B), nearly all of which were already known from the adjacent flora of Ft. Richardson.

The flora of Ft. Richardson (Tande et al. 1995) includes approximately 588 taxa, nearly twice the number of taxa found on EAFB. The great range in elevation found on Ft. Richardson, including alpine and subalpine habitats, explains much of this difference. Nearly 180 of the Ft. Richardson taxa were restricted to these high elevation habitats. Ft. Richardson is also nearly four times the size of EAFB and was surveyed intensively over two seasons by more than six botanists. Adjusting for these differences, the flora of the boreal forest and wetlands on EAFB is

comparable to that of Ft. Richardson. Approximately 120 lowland taxa of Ft. Richardson were not found on EAFB and 22 taxa of EAFB are not yet known from Ft. Richardson. These include:

- Arabis divaricarpa*
- Arnica ovata*
- Calla palustris*
- Carex aquatilis* var. *dives*
- Carex atherodes*
- Carex capitata*
- Carex disperma*
- Carex echinata* ssp. *phyllomanica*
- Carex microglochin*
- Cypripedium guttatum*
- Dracocephalum parviflorum*
- Epilobium ciliatum* ssp. *ciliatum*
- Epilobium lactiflorum*
- Eriophorum angustifolium* ssp. *scabriusculum*
- Eriophorum scheuchzeri*
- Honckenya peploides*
- Juncus supiniformis*
- Lycopus uniflorus*
- Nymphaea tetragona*
- Pyrola grandiflora*
- Ribes glandulosum*
- Salix myrtillifolia*

### Rare Vascular Plants

None of the vascular plant taxa found on EAFB are listed by the U. S. Fish and Wildlife Service as Endangered, Threatened or Candidate species. Rare taxa were defined for this study as those plants ranked S1-S3 by the AKNHP. The ranking system (developed by The Nature Conservancy and the Natural Heritage Network) assigns each taxon a global and a state rank from 1 - 5 based on several factors such as abundance, range, degree of threat, existing protection, and the number of occurrences. These ranking categories are listed below.

#### Alaska Natural Heritage Program Global Rankings

- G1:** Critically imperiled globally (typically 5 or fewer occurrences, or very few remaining individuals or acres).
- G2:** Imperiled globally (typically 6 - 20 occurrences, or few remaining individuals or acres).
- G3:** Either very rare and local throughout its range or found locally in a restricted range (typically 21 - 100 occurrences).
- G4:** Apparently secure globally.
- G5:** Demonstrably secure globally.
- G#Q:** Taxonomically questionable.
- G#T#:** Global rank of species and global rank of the described variety or subspecies.
- G#G#:** Global rank of species uncertain, best described as a range between the two ranks.

### Alaska Natural Heritage Program State Rankings

- S1:** Critically imperiled in state because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation from the state (typically 5 or fewer occurrences, or very few remaining individuals or acres).
- S2:** Imperiled in state because of rarity or because of some factor(s) making it very vulnerable to extirpation from the state (typically 6 - 20 occurrences, or few remaining individuals or acres).
- S3:** Rare or uncommon in the state (typically 21 - 100 occurrences).
- S4:** Apparently secure in state, with many occurrences.
- S5:** Demonstrably secure in state, with many occurrences.
- SE:** Exotic
- SR#:** Reported from the state, but not yet verified.
- SP:** Occurring in nearby state or province; not yet reported in state, but probably will be encountered with further inventory.
- S#S#:** State rank of species uncertain, best described as a range between the two ranks.

Five rare vascular plant species were found on EAFB. Although these species are considered rare within Alaska, they are all more common elsewhere and none of them are globally rare.

*Lycopus uniflorus* (northern bugleweed) is new to the flora of both EAFB and Ft. Richardson, as well as to Southcentral AK. This species is known from a number of locations in Southeast Alaska where it can be locally abundant. In Alaska it is otherwise known from only a few locations in the interior including Ft. Wainwright, Ruby, and Minto Lakes and has a rank of G5 S3. This mint is typically found on wet locations and on EAFB it was found on wet lakeshores of Tuomi and Six-mile Lakes.

*Malaxis paludosa* (bog adder's-mouth), G4 S3. This small, easily overlooked orchid is known from nearly twenty bog or fen locations scattered across Southeast, Southcentral, Southwest, and Interior Alaska, and is known from many more sites outside of Alaska. It is known from fens on Ft. Richardson and was previously reported from EAFB (Tande 1983). During the present survey it was seen at the Triangle Lake fen, in sphagnum mats.

*Salicornia maritima* (sea saltwort), G5 S2, is known in Alaska from only a few scattered locations in the Southcentral region. It is locally common in the salt marshes where it occurs and is a distinctive halophyte. On EAFB it is only found on the small salt marsh below the bluffs adjacent to the Port of Anchorage. It is also known from Eagle River Flats on Ft. Richardson.

*Scheuchzeria palustris* (pod grass), G5 S3, is known from Southeast Alaska (where it is somewhat peripheral to its main range outside of Alaska) and disjunctly to scattered bogs in Interior and Southcentral Alaska. On EAFB it is known from several bogs or fens including the fens adjacent to Triangle Lake where it was found on floating sphagnum mats.

*Scirpus maritimus* (saltmarsh bulrush), G5 S2SE, is widespread globally, but is known in Alaska from only a few scattered locations in Southeast and Southcentral. It is locally common in a few of the salt marshes (or brackish waters) where it occurs. On EAFB it is only found on the small salt marsh below the bluffs adjacent to the Port of Anchorage. It is also known from Eagle River Flats on Ft. Richardson. Hultén (1968) felt this species was “probably not native” in Alaska, but gave no supporting evidence, and it is not clear that it is introduced.

No other rare taxa were found on EAFB. The small salt marsh areas of EAFB contain a distinctive array of halophytic species that are not found elsewhere on the Base. These include:

*Carex lyngbyaei*  
*Carex ramenskii*  
*Glaux maritima*  
*Hippuris tetraphylla*  
*Plantago maritima*  
*Poa eminens*  
*Potentilla egedii*  
*Puccinellia nutkaensis*  
*Puccinellia phryganodes*  
*Ranunculus cymbalaria*  
*Salicornia maritima*  
*Triglochin maritimum*

### **Non-native Vascular Plants**

Due to limitations of time, only a very limited survey of non-native plants was made. Roadsides and parking pullouts were surveyed in the course of the main survey, and the powerline behind the Beluga power plant was surveyed as well. Housing and developed areas were not surveyed. The following non-native vascular plants were observed:

*Achillea millefolium*  
*Brassica rapa*  
*Cerastium fontanum*  
*Crepis tectorum*  
*Erysimum cheiranthoides*  
*Lolium multiflorum*  
*Medicago falcata*  
*Melandrium noctiflorum*  
*Matricaria matricarioides*  
*Phleum pratense*  
*Plantago major var. major*  
*Poa annua*  
*Poa pratensis*  
*Stellaria media*  
*Taraxacum officinale*  
*Trifolium hybridum*  
*Trifolium repens*  
*Tripleurospermum perforata*

Non-native plants were not seen to be invading undisturbed habitats, and were generally concentrated within a few meters of the disturbed sites.

Along the powerline transect the following non-native plants were seen:

*Achillea millefolium*  
*Cerastium fontanum*  
*Crepis tectorum*  
*Matricaria matricarioides*  
*Phleum pratense*  
*Plantago major var. major*  
*Poa annua*  
*Poa pratensis*  
*Stellaria media*  
*Taraxacum officinale*  
*Trifolium hybridum*  
*Trifolium repens*

The two clovers (*Trifolium hybridum* and *T. repens*), the dandelion (*Taraxacum officinale*), and the yarrow (*Achillea millefolium*) were locally abundant and had between 5-25% cover in patches. The remaining species generally had less than 5% cover or were found only as isolated plants.

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## APPENDICES

## APPENDIX A

### CHECKLIST OF VASCULAR PLANT SPECIES FOR ELMENDORF AIR FORCE BASE APRIL 2001

*Achillea millefolium* L.  
*Aconitum delphinifolium* DC.  
*Actaea rubra* (Ait.) Willd.  
*Adoxa moschatellina* L.  
*Agrostis scabra* Willd.  
*Alnus incana* ssp. *tenuifolia* (Nutt.) Breitung [=*A. tenuifolia* Nutt.]  
*Alnus viridis* ssp. *fruticosa* (Rupr.) Nyman [=*A. crispa* (Ait.) Pursh ssp. *crispa*]  
*Alnus viridis* ssp. *sinuata* (Regel) A. & D. Löve [=*A. crispa* (Ait.) Pursh ssp. *sinuata* (Regel) Hult.]  
*Andromeda polifolia* L.  
*Anemone parviflora* Michx.  
*Anemone richardsonii* Hock.  
*Angelica lucida* E. Nels.  
*Antennaria rosea* (D.C. Eaton) E. Greene  
*Aquilegia formosa* Fisch.  
*Arabis divaricarpa* A. Nels.  
*Arabis holboellii* Hornem.  
*Arabis kamchatica* (Fisch. ex DC.) Ledeb. [=*A. lyrata* L. ssp. *kamchatica* (Fisch.) Hult.]  
*Arctagrostis latifolia* (R. Br.) Griseb.  
*Arctagrostis poaeoides* Nash  
*Arctostaphylos uva-ursi* (L.) Sprengel  
*Arctous rubra* (Rehd. & Wilson) Nakai [=*Arctostaphylos rubra* (Rehd. & Wilson) Fern.]  
*Arnica ovata* E. Greene  
*Artemisia tilesii* Ledeb.  
*Aster junciformis* Rydb.  
*Athyrium filix-femina* (L.) Roth  
*Barbarea orthoceras* Ledeb.  
*Beckmannia erucaeformis* (L.) Host ssp. *baicalensis* (Kusn.) Hult.  
*Betula glandulosa* Michx.  
*Betula hybrids*  
*Betula kenaica* Evans  
*Betula papyrifera* Marshall [=*B. neoalaskana*]  
*Bistorta vivipara* (L.) Gray [=*Polygonum viviparum* L.]  
*Boschniakia rossica* (Cham & Schldl.) B. Fedtsch.  
*Brassica rapa* L.  
*Bromopsis inermis* (Leys.) Holub [=*Bromus inermis* Leys.]  
*Bromus tectorum* L.  
*Calamagrostis canadensis* (Michx.) Beauv.  
*Calamagrostis inexpansa* Gray  
*Calamagrostis lapponica* (Wahlenb.) Hartman. F.  
*Calla palustris* L.  
*Capsella bursa-pastoris* (L.) Medic.

*Capsella rubella* Reut.  
*Carex aquatilis* var. *dives* (Holm) Kükenth. [= *C. sitchensis* Prescott ex Bong.]  
*Carex aquatilis* Wahlenb. ssp. *aquatilis*  
*Carex atherodes* Spreng.  
*Carex bigelowii* Torr.  
*Carex buxbaumii* Wahlenb.  
*Carex canescens* L.  
*Carex capitata* L.  
*Carex chordorrhiza* Ehrh.  
*Carex diandra* Schrank  
*Carex disperma* Dewey  
*Carex echinata* ssp. *phyllomanica* (W. Boott) Reznicek [= *C. phyllomanica* W. Boott]  
*Carex lasiocarpa* Ehrh. ssp. *americana* (Fern.) Hult.  
*Carex lenticularis* var. *lipocarpa* (Holm) L.A. Standley [= *C. kelloggii* W. Boott]  
*Carex limosa* L.  
*Carex livida* (Wahlenb.) Willd.  
*Carex loliacea* L.  
*Carex lyngbyaei* Hornem.  
*Carex magellanica* Lam. ssp. *irrigua* (Wahlenb.) Hult.  
*Carex membranacea* Hook.  
*Carex mertensii* Prescott  
*Carex microglochin* Wahlenb.  
*Carex oederi* Retz.  
*Carex pauciflora* Lightf.  
*Carex pluriflora* Hult.  
*Carex ramenskii* Kom.  
*Carex rariflora* (Wahlenb.) Smith  
*Carex rostrata* Stokes  
*Carex rotundata* Wahlenb.  
*Carex tenuiflora* Wahlenb.  
*Carex utriculata* F. Boott  
*Cerastium fontanum* Baumg.  
*Chamaedaphne calyculata* (L.) Moench  
*Chenopodium album* L.  
*Chrysanthemum leucanthemum* L.  
*Cicuta douglasii* (DC.) J. Coulter & Rose  
*Cicuta virosa* L. [= *C. mackenzieana* Raup]  
*Circaea alpina* L.  
*Comarum palustre* L. [= *Potentilla palustris* (L.) Scop.]  
*Conioselinum pacificum* (S. Wats.) Coult. & Rose [= *C. chinense* (L.) BSP.]  
*Corallorrhiza trifida* Chatel.  
*Cornus canadensis* L.  
*Cornus suecica* L.  
*Corydalis sempervirens* (L.) Pers.  
*Crepis tectorum* L.  
*Cypripedium guttatum* Sw.  
*Delphinium glaucum* S. Wats.  
*Deschampsia caespitosa* (L.) P. Beauv. ssp. *caespitosa*  
*Descurainia sophioides* (Fisch.) O.E. Shultz

*Dracocephalum parviflorum* Nutt.  
*Drosera anglica* Huds.  
*Drosera rotundifolia* L.  
*Dryopteris dilatata* (Hoffm.) A.Gray  
*Eleocharis palustris* (L.) Roem. & Schult.  
*Eleocharis quinquefolia* (F. Hartmann) O. Schwarz  
*Elymus alaskanus* (Scribn. & Merr.) A. Loeve ssp. *alaskanus* [=*Agropyron violaceum*]  
*Elymus trachycaulis* (Link) Gould ex Shinnery ssp. *trachycaulis* [=*A. pauciflorum* (Schwein.) A.S. Hitchc.]  
*Elytrigia repens* (L.) Nevski [=*Agropyron repens* (L.) Beauv.]  
*Empetrum nigrum* L.  
*Epilobium angustifolium* L.  
*Epilobium ciliatum* ssp. *ciliatum* [=*E. adenocaulon* Hausskn.]  
*Epilobium hornemannii* Reichb. ssp. *hornemannii*  
*Epilobium lactiflorum* Hausskn.  
*Epilobium latifolium* L.  
*Epilobium palustre* L.  
*Equisetum arvense* L.  
*Equisetum fluviatile* L. ampl. Ehrh.  
*Equisetum pratense* L.  
*Equisetum sylvaticum* L.  
*Equisetum variegatum* Schleich.  
*Eriophorum angustifolium* Honck. ssp. *subarcticum* (V. Vassiljev) Hult.  
*Eriophorum angustifolium* ssp. *scabriusculum* Hultén  
*Eriophorum gracile* Koch  
*Eriophorum russeolum* Fries  
*Eriophorum russeolum* Fries var. *albidum* W. Nyl.  
*Eriophorum scheuchzeri* Hoppe  
*Eriophorum scheuchzeri* Hoppe  
*Eriophorum viridi-carinatum* (Englem.) Fern.  
*Erysimum cheiranthoides* L.  
*Festuca rubra* L.  
*Galium boreale* L.  
*Galium trifidum* L. ssp. *trifidum*  
*Galium triflorum* Michx.  
*Geocaulon lividum* (Richards.) Fern.  
*Geranium erianthum* DC.  
*Geum macrophyllum* Willd. ssp. *macrophyllum*  
*Geum perincisum* Rydb. [=*G. macrophyllum* Willd. ssp. *perincisum* (Rydb.) Raup.]  
*Glaux maritima* L.  
*Goodyera repens* (L.) R. Br. var. *ophioides* Fern.  
*Gymnocarpium dryopteris* (L.) Newm.  
*Hedysarum alpinum* L.  
*Heracleum lanatum* Michx.  
*Hierchloe odorata* (L.) P. Beauv.  
*Hippuris montana* Ledeb.  
*Hippuris tetraphylla* L.F.  
*Honckenya peploides* (L.) Ehrh.  
*Hordeum jubatum* L.  
*Iris setosa* Pall. ssp. *setosa*

*Juncus alpinus* Villers  
*Juncus bufonius* L.  
*Juncus castaneus* Sm. ssp. *castaneus*  
*Juncus stygius* L. ssp. *americanus* (Buchenau) Hult.  
*Juncus supiniformis* Engelm. [=*J. oregonus* S. Wats.]  
*Juncus triglumis* L.  
*Juniperus communis* L.  
*Lathyrus palustris* L. ssp. *pilosus* (Cham.) Hult.  
*Ledum groenlandicum* Oeder [=*L. palustre* L. ssp. *groenlandicum* (Oeder) Hult.]  
*Ledum palustre* L. ssp. *decumbens* (Ait.) Hult.  
*Lemna minor* L.  
*Lepidium densiflorum* Schrad.  
*Leymus mollis* (Trin.) Hara ssp. *mollis* [=*Elymus arenarius* L. ssp. *mollis* (Trin.) Hult.]  
*Ligusticum scoticum* L. ssp. *hultenii* (Fern.) Cald. & Tayl.  
*Linaria vulgaris* Mill.  
*Linnaea borealis* L.  
*Listera cordata* (L.) R. Br.  
*Lolium multiflorum* Lam.  
*Lupinus nootkatensis* Donn  
*Lupinus polyphyllus* Lindl.  
*Luzula multiflora* (Retz.) Lej. var. *frigida* (Buchenau) Hult.  
*Lycopodium alpinum* L. [=*Diphasiastrum alpinum* (L.) Holub In: FNA\*]  
*Lycopodium annotinum* L.  
*Lycopodium clavatum* L. ssp. *monostachyon* (Grev. & Hook.) Sel. [=*L. lagopus* (Laest. Ex C. Hartman)]  
*Lycopodium complanatum* L. [=*Diphasiastrum complanatum* (L.) Holub In: FNA\*]  
*Lycopus uniflorus* Michx.  
*Malaxis paludosa* (L.) Sw. [= *Hammarbya paludosa* (L.) Ktze.]  
*Matricaria matricarioides* (Less.) Porter  
*Medicago falcata* L.  
*Melandrium noctiflorum* (L.) Fries  
*Menyanthes trifoliata* L.  
*Menziesia ferruginea* Sm.  
*Mertensia paniculata* (Ait.) G. Don  
*Mimulus guttatus* DC.  
*Moehringia lateriflora* (L.) Fenzl  
*Moneses uniflora* (L.) Gray  
*Myrica gale* L.  
*Myriophyllum exalbescens* Fern. [=*M. spicatum* L.]  
*Nuphar polysepalum* Engelm.  
*Nymphaea tetragona* Georgi  
*Oplopanax horridum* (Smith) Miquel [=*Echinopanax horridum* (Sm.) Decne. & Planch.]  
*Orthilia secunda* (L.) House [=*Pyrola secunda* L. ssp. *secunda*]  
*Osmorhiza depauperata* Phill.  
*Oxycoccus microcarpus* Turcz. ex Rupr.  
*Papaver nudicaule* L.  
*Parnassia palustris* L.  
*Parnassia palustris* L. ssp. *neogaea* (Fern.) Hult.  
*Pedicularis capitata* Adams.  
*Pedicularis labradorica* Wirsing

*Pentaphylloides floribunda* (Pursh.) Loeve [=*Potentilla fruticosa* L.]  
*Phalaris arundinacea* L.  
*Phleum pratense* L.  
*Picea glauca* (Moench) Voss  
*Picea mariana* (Mill.) Britt., Sterns & Pogg  
*Plantago major* L. var. *major*  
*Plantago maritima* L. ssp. *juncoides* (Lam.) Hult.  
*Platanthera dilatata* Pursh  
*Platanthera hyperborea* (L.) Lindl. var. *hyperborea*  
*Poa alpigena* (E. Fries) Lindm.  
*Poa annua* L.  
*Poa eminens* Presl  
*Poa glauca* M. Vahl.  
*Poa palustris* L.  
*Poa pratensis* L.  
*Polemonium acutiflorum* Willd.  
*Polygonum aviculare* L.  
*Polygonum fowleri* Robins.  
*Populus balsamifera* L.  
*Populus balsamifera* L. ssp. *trichocarpa* (Torr. & Gray) Brayshaw  
*Populus tremuloides* Michx.  
*Potamogeton alpinus* Balb.  
*Potamogeton epihydrus* Raf.  
*Potamogeton filiformis* Pers. [=*Stuckenia filiformis* (Pers) Boerner]  
*Potamogeton gramineus* L.  
*Potamogeton natans* L.  
*Potamogeton pectinatus* L. [=*Stuckenia pectinata* (L.) Boerner]  
*Potamogeton richardsonii* (A. Bennett) Rydb. [=*P. perfoliatus* L. ssp. *richardsonii* (A. Bennett) Hult.]  
*Potamogeton vaginatus* Turcz. [=*Stuckenia pectinata* (L.) Boerner]  
*Potentilla egedii* Wormsk. ssp. *grandis* (Torr. & Gray) Hult.  
*Potentilla norvegica* L.  
*Puccinellia nutkaensis* (Presl) Fern. & Weath.  
*Puccinellia phryganodes* (Trin.) Scribner & Marr.  
*Pyrola asarifolia* Michx.  
*Pyrola chlorantha* Sw.  
*Pyrola grandiflora* Radius  
*Pyrola minor* L.  
*Ranunculus cymbalaria* Pursh  
*Ranunculus gmelini* DC. ssp. *gmelini*  
*Ranunculus lapponicus* L.  
*Ranunculus trichophyllus* Chaix var. *trichophyllus*  
*Rhinanthus minor* L.  
*Ribes glandulosum* Grauer  
*Ribes hudsonianum* Richards.  
*Ribes laxiflorum* Pursh  
*Ribes triste* Pall.  
*Rorippa palustris* (L.) Besser ssp. *hispida* (Desv.) Jonsell  
*Rosa acicularis* Lindl.  
*Rosa nutkana* Presl

Rubus arcticus L.  
Rubus chamaemorus L.  
Rubus idaeus L.  
Rubus pedatus Sm.  
Rumex acetosella L.  
Rumex arcticus Trautv.  
Sagina saginoides (L.) Karst.  
Salicornia maritima Wolff & Jefferies [=S. europaea auct. non L.]  
Salix alaxensis (Anderss.) Cov.  
Salix barclayi Anderss.  
Salix bebbiana Sarg. [=S. depressa L. ssp. rostrata (Anderss.) Hiitonen]  
Salix fuscescens Anderss.  
Salix glauca L.  
Salix lucida Muhl. ssp. lasiandra (Benth.) Argus [=S. lasiandra Benth.]  
Salix myrtillofolia Anderss.  
Salix niphoclada Rydb. [=S. brachycarpa Nutt. ssp. niphoclada (Rydb.) Argus]  
Salix ovalifolia Trautv.  
Salix pulchra Cham. [=S. planifolia Pursh ssp. pulchra (Cham.) Argus]  
Salix scouleriana Barratt  
Salix sitchensis Sanson  
Sambucus racemosa L.  
Sanguisorba stipulata Raf.  
Scheuchzeria palustris L.  
Scirpus maritimus L. [=S. paludosus Nels].  
Scirpus validus M. Vahl  
Senecio pauciflorus Pursh  
Shepherdia canadensis (L.) Nutt.  
Sorbus scopulina Greene  
Sparganium angustifolium Michx.  
Sparganium hyperboreum Laest.  
Sparganium minimum (Hartm.) E. Fries  
Spiraea beauverdiana Schneid.  
Spiranthes romanzoffiana Cham.  
Stellaria media (L.) Villars  
Streptopus amplexifolius (L.) DC.  
Swertia perennis L.  
Taraxacum officinale Weber  
Thalictrum alpinum L.  
Thalictrum sparsiflorum Trucz.  
Thelypteris phegopteris (L.) Solsson  
Tofieldia coccinea Richards.  
Tofieldia glutinosa (Michx.) Pers.  
Tofieldia pusilla (Michx.) Pers.  
Trichophorum alpinum (L.) Pers.  
Trichophorum caespitosum (L.) Hartm.  
Trientalis europaea L.  
Trifolium hybridum L.  
Trifolium repens L.  
Triglochin maritimum L.

Triglochin palustris L.  
Tripleurospermum perforata (Merat) M. Lainz [=T. inodoratum (L.) Schultz-Bip.]  
Trisetum spicatum (L.) Richter  
Typha latifolia L.  
Urtica dioica L. ssp. gracilis (Aiton) Selander  
Utricularia intermedia Hayne  
Utricularia minor L.  
Utricularia vulgaris L. ssp. macrorhiza (LeConte) Clauson  
Vaccinium ovalifolium Sm.  
Vaccinium uliginosum L.  
Vaccinium vitis-idaea L.  
Valeriana capitata Pall.  
Viburnum edule (Michx.) Raf.  
Viola epipsila Ledeb.  
Viola renifolia Gray

## APPENDIX B

### TAXA NEW TO ELMENDORF AIR FORCE BASE APRIL 2001

*Aconitum delphinifolium* DC.  
*Adoxa moschatellina* L.  
*Alnus viridis* ssp. *fruticosa* (Rupr.) Nyman [=*A. crispa* (Ait.) Pursh ssp. *crispa*]  
*Alnus viridis* ssp. *sinuata* (Regel) A. & D. Löve [=*A. crispa* (Ait.) Pursh ssp. *sinuata* (Regel) Hult.]  
*Angelica lucida* E. Nels.  
*Antennaria rosea* (D.C. Eaton) E. Greene  
*Arabis holboellii* Hornem.  
*Arabis kamchatica* (Fisch. ex DC.) Ledeb. [=*A. lyrata* L. ssp. *kamchatica* (Fisch.) Hult.]  
*Arctagrostis latifolia* (R. Br.) Griseb.  
*Arctagrostis poaeoides* Nash  
*Arnica ovata* E. Greene  
*Artemisia tilesii* Ledeb.  
*Barbarea orthoceras* Ledeb.  
*Beckmannia erucaeformis* (L.) Host ssp. *baicalensis* (Kusn.) Hult.  
*Betula* hybrids  
*Betula kenaica* Evans  
*Boschniakia rossica* (Cham & Schldl.) B. Fedtsch.  
*Brassica rapa* L.  
*Bromopsis inermis* (Leyss.) Holub [=*Bromus inermis* Leyss.]  
*Bromus tectorum* L.  
*Calamagrostis inexpansa* Gray  
*Calamagrostis lapponica* (Wahlenb.) Hartman. F.  
*Capsella rubella* Reut.  
*Carex diandra* Schrank  
*Carex loliacea* L.  
*Carex ramenskii* Kom.  
*Carex utriculata* F. Boott  
*Cerastium fontanum* Baumg.  
*Chrysanthemum leucanthemum* L.  
*Circaea alpina* L.  
*Comarum palustre* L. [=*Potentilla palustris* (L.) Scop.]  
*Conioselinum pacificum* (S. Wats.) Coult. & Rose [=*C. chinense* (L.) BSP.]  
*Cornus suecica* L.  
*Crepis tectorum* L.  
*Delphinium glaucum* S. Wats.  
*Deschampsia caespitosa* (L.) P. Beauv. ssp. *caespitosa*  
*Descurainia sophioides* (Fisch.) O.E. Shultz  
*Eleocharis palustris* (L.) Roem. & Schult.  
*Eleocharis quinquefolia* (F. Hartmann) O. Schwarz  
*Elymus alaskanus* (Scribn. & Merr.) A. Loeve ssp. *alaskanus* [=*Agropyron violaceum*  
*Elymus trachycaulis* (Link) Gould ex Shinnars ssp. *trachycaulis* [=*A. pauciflorum* (Schwein.) A.S. Hitchc.]  
*Elytrigia repens* (L.) Nevski [=*Agropyron repens* (L.) Beauv.]

Equisetum variegatum Schleich.  
 Erysimum cheiranthoides L.  
 Festuca rubra L.  
 Galium trifidum L. ssp. trifidum  
 Geum perincisum Rydb. [=G. macrophyllum Willd. ssp. perincisum (Rydb.) Raup.]  
 Glaux maritima L.  
 Hedysarum alpinum L.  
 Hierchloe odorata (L.) P. Beauv.  
 Hippuris tetraphylla L.F.  
 Juncus triglumis L.  
 Lepidium densiflorum Schrad.  
 Leymus mollis (Trin.) Hara ssp. mollis [=Elymus arenarius L. ssp. mollis (Trin.) Hult.]  
 Ligusticum scoticum L. ssp. hultenii (Fern.) Cald. & Tayl.  
 Lolium multiflorum Lam.  
 Luzula multiflora (Retz.) Lej. var. frigida (Buchenau) Hult.  
 Lycopodium alpinum L. [=Diphasiastrum alpinum (L.) Holub In: FNA\*]  
 Lycopodium clavatum L. ssp. monostachyon (Grev. & Hook.) Sel. [=L. lagopus (Laest. Ex C. Hartman)]  
 Lycopodium complanatum L. [=Diphasiastrum complanatum (L.) Holub In: FNA\*]  
 Lycopus uniflorus Michx.  
 Medicago falcata L.  
 Melandrium noctiflorum (L.) Fries  
 Myriophyllum exalbescens Fern. [=M. spicatum L.]  
 Parnassia palustris L.  
 Phalaris arundinacea L.  
 Phleum pratense L.  
 Plantago maritima L. ssp. juncoides (Lam.) Hult.  
 Poa alpigena (E. Fries) Lindm.  
 Poa annua L.  
 Poa eminens Presl  
 Poa pratensis L.  
 Polygonum aviculare L.  
 Polygonum fowleri Robins.  
 Potamogeton vaginatus Turcz. [=Stuckenia pectinata (L.) Boerner]  
 Potentilla egedii Wormsk. ssp. grandis (Torr. & Gray) Hult.  
 Potentilla norvegica L.  
 Puccinellia nutkaensis (Presl) Fern. & Weath.  
 Puccinellia phryganodes (Trin.) Scribner & Marr.  
 Pyrola asarifolia Michx.  
 Ranunculus cymbalaria Pursh  
 Ranunculus trichophyllus Chaix var. trichophyllus  
 Ribes hudsonianum Richards.  
 Rosa nutkana Presl  
 Rumex acetosella L.  
 Rumex arcticus Trautv.  
 Sagina saginoides (L.) Karst.  
 Salicornia maritima Wolff & Jefferies [=S. europaea auct. Non L.]  
 Salix alaxensis (Anderss.) Cov.  
 Salix ovalifolia Trautv.  
 Salix sitchensis Sanson

Sanguisorba stipulata Raf.  
Scheuchzeria palustris L.  
Scirpus maritimus L. [=S. paludosus Nels].  
Tripleurospermum perforata (Merat) M. Lainz [=T. inodoratum (L.) Schultz-Bip.]  
Trisetum spicatum (L.) Richter  
Urtica dioica L. ssp. gracilis (Aiton) Selander  
Utricularia minor L.

## LIST OF PERSONNEL RECEIVING COMPENSATION FROM THE RESEARCH EFFORT

Rob Lipkin	(RL)	Botanist
Julie Michaelson	(JM)	Field Botanist/Ecologist/Data Manager/GIS Specialist
Gerald (Jerry) Tande	(JT, TA)	Principal Investigator/Vegetation Ecologist

Abbreviations are provided for future reference to notations in the field data.