

*THE MAHONEY LAKES AREA OF REVILLAGIGEDO
ISLAND, SOUTHEASTERN ALASKA:
A SENSITIVE SPECIES SURVEY*

A Report by

Michael Duffy

Alaska Natural Heritage Program

ENVIRONMENT AND NATURAL RESOURCES INSTITUTE

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Submitted to:

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October 27, 1994

Alaska Natural Heritage Program

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ACKNOWLEDGEMENTS

I'd like to thank Anne Leggett of HDR, Inc. for participating in the field surveys. Thanks also to Rob Lipkin of The Alaska Natural Heritage Program, Dr. David Murray and the staff at the University of Alaska Fairbanks Museum Herbarium, and Mary Stensvold of Tongass National Forest.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	i
INTRODUCTION.....	1
SURVEY METHODOLOGY.....	2
RESULTS OF THE MAHONEY LAKES AREA FIELD SURVEYS	
Discussion.....	4
Detailed site descriptions.....	6
SUMMARY.....	9
LITERATURE CITED.....	11
APPENDICES:	
Maps.....	12
Photos of selected survey sites and specimens.....	15
Element Occurrence records of <i>Platanthera chorisiana</i>	20
Element Occurrence records of <i>Carex lenticularis</i> var. <i>dolia</i>	24
Species lists for the Mahoney Lakes area.....	28

INTRODUCTION

The Cape Fox Corporation is proposing the development of a hydroelectric project at the Mahoney Lakes area, near the cities of Saxman and Ketchikan on Revillagigedo Island in southeast Alaska. The project involves producing power by diverting water from Upper Mahoney Lake, through a generation facility, to Lower Mahoney Lake. While the land around Lower Mahoney Lake is owned by the corporation, the upper lake, most of the area between the lakes, and a small parcel northeast of the lower lake are part of the Tongass National Forest.

HDR Engineering is assisting Cape Fox Corporation in the environmental assessment of the proposed hydropower project. Because the project will involve development on USFS lands, it must be determined if there would be any adverse impact on rare plants. The USFS has designated 22 plants in Alaska as sensitive taxa for which population viability is a concern (Stensvold, 1994). HDR has contracted the Alaska Natural Heritage Program (AKNHP) to perform a sensitive plant species survey of the proposed development site.

The Alaska Natural Heritage Program is a part of the University of Alaska's Environment and Natural Resources Institute, and its database is a primary resource for tracking rare plants and animals throughout the state. AKNHP, with the support of HDR staff, spent two days at the Mahoney Lakes site in late September, 1994. The following report details the findings of this survey.

SURVEY METHODOLOGY

The terrain of the Mahoney Lakes site is diverse. The elevation of the upper lake is 600 meters, and the creek that drains it drops to the lower lake, which is almost at sea level, in only 2 kilometers. The area contains a number of plant communities, from barely vegetated alpine slopes to wet coastal forest. Of the 22 plant taxa considered to be sensitive in the USFS Alaska region, several are known to occur in the southern Tongass, and the areas that would be affected by the hydroelectric project contain suitable habitat for many of them. The objective of this survey was to examine sites that would be impacted by the proposal and determine if any of the 22 rare taxa were to be found there. Vegetation communities were described and sensitive taxa, when found, were censused to determine population size. Detailed notes were taken on exact locations and other relevant information. Occurrences of other rare taxa were also noted, and lists of plant species were prepared for each area.

Before beginning the field work, we reviewed the literature describing the rare plants of the Tongass to determine which of the sensitive taxa were likely to be encountered at the Mahoney site. Several were considered unlikely to be found because the site did not contain suitable habitat or was well out of range for those species. The remaining plants that we considered likely to be found at the site were grouped according to habitat (Table 1.).

Three significant impacts to the site were identified: the lowering of the water level of the upper lake, the diversion of most of the water from the creek between the two lakes, and the actual construction of the facilities. Project construction on USFS lands would be concentrated at two sites: a flat section of the upper creek referred to as "the bowl", where tunnel excavation activity would be centered; and a road and power cable corridor that would cross USFS land northeast of Lower Lake Mahoney to access the lower lake power plant.

The survey was prioritized to examine representative areas that fit two criteria: those with a likelihood of containing sensitive taxa and which would also receive significant impact during construction and/or operation of the power plant. We grouped these areas according to the difficulty of reaching them, and planned our field surveys as follows:

Lower Mahoney Lake forest area: This was the easiest area to access. This area consisted of cedar-hemlock forest with wet cliff faces. The survey examined the site of the proposed road and powerline and also the section of the creek that flows into Lower Mahoney Lake, from the bottom of the waterfalls to the USFS boundary.

Upper Mahoney Lake area: The higher elevation areas required helicopter support to survey. They consisted of the upper lake and a little less than one kilometer of the creek that flows out of it. The creek itself is a rapid whitewater flowing through a narrow canyon

with steep rocky walls. The creek opens up to a fairly level area of a few acres in size before the steep waterfalls begin. This open area is referred to as "the bowl" and consists of a riparian scrub with steep, vegetated slopes as its border. This area is where most of the proposed tunnel construction activity would take place.

The lowered water level of the upper lake would affect aquatic species of the lake margin; shoreline plants could be affected by the lowering of the water table and the absence of seasonal flooding. The survey examined a strip of land 5 meters wide along the shoreline and the immediate submerged zone. Reduced water flow along the creek would affect aquatic plants in the creekbed and plants along the spray area at the edge of the creek. Construction of the tunnels would eliminate most of the riparian zone and vegetation approximately 30 meters up the eastern slope. Representative areas of the flat riparian zone and slope were examined.

Mahoney Creek Waterfalls Area: Approximately 100 meters downstream from the flat area known as "the bowl", Upper Mahoney Creek begins a steep series of waterfalls. The creekbed and adjacent spray area were impossible to survey without climbing equipment and the area was not surveyed.

Because the surveys were done late in the season, we expected many plants to have senesced and to be difficult to accurately identify. Any plant resembling one of the sensitive taxa was closely examined and, if necessary, collected for further identification. Some plants may not have been visible at all at this late date.

Table 1. POSSIBLE SENSITIVE PLANT TAXA (adapted from Stensvold, 1994.):

<i>Carex lenticularis</i> var. <i>dolia</i>	W, S
<i>Cirsium edule</i>	FE, S
<i>Hymenophyllum wrightii</i>	F, FE
<i>Isoetes truncata</i>	A
<i>Glyceria leptostachya</i>	S, W
<i>Ligusticum calderi</i>	FE, R
<i>Platanthera chorisiana</i>	W
<i>Platanthera gracilis</i>	W
<i>Poa laxiflora</i>	F, W
<i>Ranunculus orthorhynchus</i> var. <i>alaschensis</i>	S, W
<i>Romanzoffia unalaschensis</i>	FE, S, R
<i>Stellaria ruscifolia</i> ssp. <i>aleutica</i>	S, R

F=forest, FE=forest edge, W=wetland and wet meadows, S=streamside and lake margin, A=aquatic, R=rock outcrops.

RESULTS

Surveys were performed on the 22, 23, and 24 of September, 1994. The Mahoney Lakes area is described in the map below; specific routes and survey sites are detailed on maps 2 and 3. Photos of the sites are presented in the appendix. Two sensitive taxa were found during the survey. The surveys are described below, followed by detailed site descriptions of the sensitive plant populations.

MAP 1. THE MAHONEY LAKES AREA

Upper Mahoney Lake Area

Upper Mahoney Lake. From our review of the aerial photos we expected a mostly

barren shoreline with steep submerged slopes. The only aquatic vegetation found growing in the lake margin was aquatic moss. The flat alluvial areas at the mouths of the few creeks that feed the lake were the most likely spots for shoreline and aquatic vegetation. The southern lake margins were steep and alluvial areas were for the most part dry, sparsely vegetated talus slopes. One alluvial fan supported a mesic graminoid meadow. No sensitive taxa were observed on the southern shoreline. The northern shoreline, however, contained wet meadow/bogs. These bog meadows contained populations of *Platanthera chorisiana*.

Upper Mahoney Creek. The only plants growing in the fast flowing creekbed itself were aquatic mosses. The creek margin and canyon slopes were mostly rocky but in places supported a wet graminoid-forb community. This vegetation zone was supported more by side drainage into the creek than by the spray of the creek. *Platanthera chorisiana* was found growing in this vegetation zone, immediately adjacent to the creek.

The flat riparian area was a mostly well drained community of alder, dwarf ericaceous scrub and small graminoid-forb meadows, some of which were wet. The adjoining mountain slopes contained open hemlock-cedar forest with low alder-copperbush scrub, dwarf ericaceous scrub and small wet sedge meadows.

The riparian creek bottom contained a small population of *Platanthera chorisiana*. No sensitive taxa were observed on the slope, but a similar slope just downstream contained a small wet sedge meadow draining into the creek. *Carex lenticularis* var. *dolia* was observed growing there, as well as *Platanthera chorisiana*.

Lower Mahoney Lake forest area

The section of the creek that flows from the base of the cataracts to the USFS boundary, and beyond to the lower lake, was rocky and fast moving. It flowed through an old growth hemlock forest and contained no vascular aquatics. No sensitive taxa were observed in this area.

The small piece of land under consideration for road and power line construction contained open and closed western hemlock-red cedar forest with an understory of high bush blueberry, rusty menziesia and salal, with thick feather moss. Exposed rocky cliffs supported mosses, lichens and ferns. No sensitive species were observed in this area.

DETAILED SITE DESCRIPTIONS

Survey area: UPPER MAHONEY CREEK.

Site number: 1.

Date: 23 September 1994.

Observers: Mike Duffy (AKNHP), Anne Leggett (HDR).

Location: Ketchikan B-5 T74S R91E Sec 26 SW4SW4.

Elevation: 1850 feet (565 meters).

Directions: NE side of the "bowl", on the edge of the small moist creek bed that contains water during floods, at base of slope.

Sensitive taxon: *Platanthera chorisiana*.

Population size: 3 plants.

Phenology: plants in fruit.

Habitat: muddy bottom of slope, at edge of wet meadow/scrub margin.

Photo: 3.

Survey area: UPPER MAHONEY CREEK.

Site number: 2 (note: this site outside of the study area).

Date: 23 September 1994.

Observers: Mike Duffy, Anne Leggett.

Location: Ketchikan B-5 T74S R91E Sec 26 SW4SW4.

Elevation: 1850 feet (565 meters).

Directions: small wet meadow that drains into Upper Mahoney Creek, 20 meters downstream from the "bowl", E side.

Sensitive taxon: *Platanthera chorisiana*.

Population size: 12 plants.

Phenology: plants in fruit.

Habitat: wet meadow.

Photo: 6.

Collections: MD94-M54.

Survey area: UPPER MAHONEY CREEK.

Site number: 2 (note: this site outside of the study area).

Date: 23 September 1994.

Observers: Mike Duffy, Anne Leggett.

Location: Ketchikan B-5 T74S R91E Sec 26 SW4SW4.

Elevation: 1850 feet (565 meters).

Directions: small wet meadow that drains into Upper Mahoney Creek, 20 meters downstream from the "bowl", E side.

Sensitive taxon: *Carex lenticularis* var. *dolia*.

Population size: approximately 500 plants.

Phenology: plant in fruit.
Habitat: wet meadow.
Photos: 8, 9.
Collections: MD94-M51.

Survey area: UPPER MAHONEY CREEK.
Site number: 3.
Date: 23 September 1994.
Observers: Mike Duffy, Anne Leggett.
Location: Ketchikan B-5 T74S R91E Sec 26 SW4SW4.
Elevation: 1850 feet (565 meters).
Directions: 10 meters downstream from site 2, E side of creek.
Sensitive taxon: *Platanthera chorisiana*.
Population size: 4 plants.
Phenology: plants in fruit.
Habitat: creek margin/wet meadow, 20% slope, W aspect, thin wet soil.
Collections: MD94-M55.

Survey area: UPPER MAHONEY LAKE.
Site number: 4.
Date: 23 September 1994.
Observers: Mike Duffy, Anne Leggett.
Location: Ketchikan B-5 T74S R91E Sec 34 SW4NE4.
Elevation: 1954 feet (600 meters).
Directions: NW shoreline of upper lake.
Sensitive taxon: *Platanthera chorisiana*.
Population size: 27 plants.
Phenology: plants in fruit.
Habitat: wet meadow/bog.
Photo: 1.
Collections: MD94-M56.

Survey area: UPPER MAHONEY LAKE.
Site number: 7.
Date: 23 September 1994.
Observers: Mike Duffy, Anne Leggett.
Location: Ketchikan B-5 T74S R91E Sec 34 SE4NE4.
Elevation: 1954 feet (600 meters).
Directions: NE shore of upper lake, 50 meters S of outlet.
Sensitive taxon: *Platanthera chorisiana*.
Population size: 9.

Phenology: plants in fruit.
Habitat: wet meadow/bog.

Survey area: UPPER MAHONEY LAKE.

Site number: 9.

Date: 23 September 1994.

Observers: Mike Duffy, Anne Leggett.

Location: Ketchikan B-5 T74S R91E Sec 34 NW4NE4.

Elevation: 1954 feet (600 meters).

Directions: bog below small waterfall, N shore of upper lake, W of outlet.

Sensitive taxon: *Platanthera chorisiana*.

Population size: 57 plants.

Phenology: plants in fruit.

Habitat: wet meadow/bog.

Collections: MD94-M56.

SUMMARY

Due to favorable weather conditions, the sensitive species survey of the Mahoney Lakes area was completed on schedule in September. Representative sites of two areas—the upper lake shore and creek, and lower lake forest—were accessed and inventoried. Species lists were compiled and are presented in Appendix E.

Two plants from the USFS sensitive species list were found during the Mahoney Lakes survey. *Platanthera chorisiana* was found in boggy areas around Upper Mahoney Lake and in wet areas of "the bowl" section of Upper Mahoney Creek. Development of the proposed project could adversely affect the populations of the plants observed during this survey. *Carex lenticularis* var. *dolia* was also found during the survey in a small wet meadow draining into Upper Mahoney Creek. This site was not in the footprint of the development project, and no populations of this plant were observed in the proposed development area. Because habitat for these plants may be only a few square meters in area, there is a chance that this plant might exist in small wet depressions of the upper east slope of the "bowl".

There is a possibility that other sensitive taxa exist at the Mahoney site. The umbelliferous plant, *Conioselinum pacificum*, was identified. This plant superficially resembles *Ligusticum calderi*, and plants that were found were examined for the fibrous root crown indicative of *Ligusticum*. None were observed in the area, but not all plants could be closely examined. Because of its size, *Hymenophyllum wrightii* might not have been observed. In Alaska, the most visible portion of the plant, its spore-bearing fronds, have not been seen. Only the gametophyte has been recorded. These are extremely small and accurately determining their presence or absence would require a more intensive survey.

Two significant limitations to this survey, the difficulty of access and late stage of phenology of the plants, may have prevented some sensitive plants from being observed. The waterfalls were the areas most affected by spray. These steepest parts of Mahoney Creek could only be reached with climbing gear and were not surveyed, although similar creekbed habitats were observed above and below the falls. The only sensitive taxon likely to be observed would be *Romanzoffia unalaschcensis*. No *Romanzoffias* of either species were observed during the survey.

The more significant limitation was phenology. Graminoids, especially the grasses, were well past flowering. Withered stalks of some tall *Platantheras* could not be identified to species. They appeared to be *Platanthera dilatata*, which is commonly seen at such sites. This species and the rare taxon *Platanthera gracilis* are distinguished by their flowers which by this time were completely withered. While it is unlikely that there are other rare taxa at the Mahoney Lakes site, a mid-summer survey would provide more conclusive results.

The voucher specimens collected will be sent to the USFS regional botanist for curation and distribution. Element occurrences of the sensitive plants are recorded in the AKNHP Biological and Conservation Database.

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APPENDICES

APPENDIX A: MAPS OF THE MAHONEY LAKES AREA SURVEYS

Map 2. Upper Mahoney Lake survey sites. survey routes sensitive taxa sites

Map 3. Lower Mahoney Lake survey sites. survey routes

APPENDIX B: PHOTOS OF SELECTED SURVEY SITES AND SPECIMENS

PHOTO 1. SITE 4.
Upper Mahoney Lake.
Northwestern boggy
lake margin.

PHOTO 2. SITE 6.
Upper Mahoney Lake.
Southeastern rocky
lake margin.

PHOTO 3. SITE 3.
Upper Mahoney Creek.
Riparian area and

slopes.

PHOTO 4. SITE 2.
Upper Mahoney Creek.
Creekbed and canyon
slopes.

PHOTO 5. SITE 11.
Lower Mahoney Lake.
Northeastern forest

site.

PHOTO 6. SITE 1.
Platanthera chorisiana.

PHOTO 7. SITE 4.
Upper Mahoney Lake.
Platanthera chorisiana
in boggy lakeshore

habitat.

PHOTO 8. SITE 1.
Carex lenticularis var.
dolia.

PHOTO 9. SITE 1.
Upper Mahoney Creek
area. *Carex lenticularis*
var. *dolia* in boggy

streamside habitat.

**APPENDIX C: ELEMENT OCCURRENCES OF PLATANThERA CHORISIANA
SOUTH OF JUNEAU**

002

PLATANThERA CHORISIANA

GRANK: G2G3
SRANK: S2
SURVEYSITE: MITE COVE, YAKOBI ISLAND
QUADNAME: MT FAIRWEATHER A2
LAT: 58 04 14N
LONG: 136 26 42W
TOWN/RANGE: T44S R55E
SECTION: 8
MERIDIAN: Copper River
DIRECTIONS: Mite Cove, on N coast of Yakobi Island.
GENDESC: Not available.
ELEVATION: 61M
MANAME: Tongass National Forest
Chatham Area - Tongass National Forest
Hoonah Ranger District - Tongass National Forest
COMMENTS:Record from B41HUL01AKUS; specimen: Williams.
SPECIMENS: 1942 WILLIAMS, M.

003

PLATANThERA CHORISIANA

GRANK: G2G3
SRANK: S2
SURVEYSITE: DOUGLAS ISLAND
QUADNAME: JUNEAU B2
LAT: 58 19 12N
LONG: 134 37 31W
TOWN/RANGE: T41S R66E
SECTION: 16
MERIDIAN: Copper River
DIRECTIONS: Douglas Island.
GENDESC: Not available.
ELEVATION: 5M
MANAME: Tongass National Forest
Chatham Area - Tongass National Forest

Juneau Ranger District - Tongass National Forest
COMMENTS:Record from B41HUL01AKUS; specimen: Anderson.
SPECIMENS: 1941 ANDERSON, J.P. SN.

004

PLATANThERA CHORISIANA

GRANK: G2G3
SRANK: S2
SURVEYSITE: LISIANSKI INLET, CHICHAGOF ISLAND
QUADNAME: SITKA D7
LAT: 57 57 45N
LONG: 136 16 09W
TOWN/RANGE: T45S R56E
SECTION: 13
MERIDIAN: Copper River
DIRECTIONS:NW part of Chichagof Island, W side of Lisianski Inlet, across from Pelican, along Cann Creek.
GENDESC: Muskeg.
ELEVATION: 15M
MANAME: Tongass National Forest
Chatham Area - Tongass National Forest
Sitka Ranger District - Tongass National Forest
COMMENTS:Occurrence based on WTU herbarium specimen 282031: Mary Clay Muller 3294, 24AUG1979, in fruit.
SPECIMENS: 1979 MULLER, M.C. 3294. WTU

006

PLATANThERA CHORISIANA

GRANK: G2G3
SRANK: S2
SURVEYSITE: FROSTY BAY
QUADNAME: Not available.
LAT: Not available.
LONG: Not available.
TOWN/RANGE: Not available.
SECTION: Not available.
MERIDIAN: Not available.
DIRECTIONS:Frosty Bay, Cleveland Peninsula, south of Wrangell, Southeast Alaska.
GENDESC:"Alpine muskeg, 2000 ft." according to collection label (Verhoef 668, FS-Sitka).
ELEVATION: 612M

MANAME: Not available.
COMMENTS:From M. Muller, FS Sitka. She found specimen at Wrangell herbarium and transferred it to Sitka, regional FS herbarium.
SPECIMENS: 1982 VERHOEF, JAY. 668. USFS SITKA

013

PLATANThERA CHORISIANA

GRANK: G2G3
SRANK: S2
SURVEYSITE: NAKAT INLET CREEKSIDE
QUADNAME: PRINCE RUPERT D3
LAT: 54 55 56N
LONG: 130 45 45W
TOWN/RANGE: T80S R97E
SECTION: 14
MERIDIAN: Copper River
DIRECTIONS:Nakat Inlet 2 miles from head of inlet, west side, up stream 120 meters.
GENDESC:Creekside mossbank open PICEA SITCHENSIS/ALNUS RUBRA forest
ELEVATION: 5M
MANAME: Tongass National Forest
Ketchikan Area - Tongass National Forest
Misty Fiords National Monument Wilderness - Tongass
COMMENTS: Collected by Duffy and J.DeLapp 93-320
SPECIMENS: 1993 DELAPP, JOHN; DUFFY, MIKE. 93-0320. ALA

014

PLATANThERA CHORISIANA

GRANK: G2G3
SRANK: S2
SURVEYSITE: NAKAT INLET MUSKEG, MISTY FIORDS
QUADNAME: PRINCE RUPERT D3
LAT: 54 55 51N
LONG: 130 45 34W
TOWN/RANGE: T80S R97E
SECTION: 14
MERIDIAN: Copper River
DIRECTIONS:Southern Misty Fiords, west side of Nakat Inlet, 2 miles south of inlet head, in open muskeg slope south of stream. Survey site #M93-22.
GENDESC: Woodland muskeg.
ELEVATION: 75M
MANAME: Tongass National Forest

Ketchikan Ranger District - Tongass National Fores
Misty Fiords National Monument Wilderness - Tongass

COMMENTS: Collected by Mike Duffy and John DeLapp during the 1993 USFS Misty
Fiords National Monument / AKNHP rare plant survey. (collection
number 93-0349).

SPECIMENS: 1993 DELAPP, JOHN; DUFFY, MIKE. 93-0349. ALA

**APPENDIX D: ELEMENT OCCURRENCES OF CAREX LENTICULARIS VAR.
DOLIA SOUTH OF JUNEAU**

001

CAREX LENTICULARIS VAR DOLIA

GRANK: G5T2
SRANK: S2
SURVEYSITE: MT. ROBERTS
QUADNAME: JUNEAU B1
LAT: 58 16 44N
LONG: 134 19 55W
TOWN/RANGE: T41S R68E
SECTION: 32
MERIDIAN: Copper River
DIRECTIONS: Mt. Roberts.
GENDESC: Snowpatch in snowbed meadow.
ELEVATION: 610M
MANAME: SEALASKA CORPORATION
COMMENTS: Occurrence based on ALA herbarium specimen: L.A. Viereck
4802; det. by F.J. Hermann, 1967.
SPECIMENS: 1959 VIERECK, L.A. 4802. ALA

006

CAREX LENTICULARIS VAR DOLIA

GRANK: G5T2
SRANK: S2
SURVEYSITE: MENDENHALL GLACIER
QUADNAME: JUNEAU B2
LAT: 58 25 41N
LONG: 134 34 41W
TOWN/RANGE: T40S R66E
SECTION: 06
MERIDIAN: Copper River
DIRECTIONS: About ten miles north of Juneau near west shore of lake at the face of
Mendenhall Glacier, on flats next to small stream between glacier
and visitor center.
GENDESC: Open area with silt flats and glacially scoured rock areas.
ELEVATION: 15M

MANAME: Tongass National Forest
Chatham Area - Tongass National Forest
Juneau Ranger District - Tongass National Forest
COMMENTS: Occurrence based on WTU herbarium specimen 282685: "CAREX
ENANDERI" Hult., Mary Clay Muller 4334, 9 JUL 1981." With
unsigned annotation: "CAREX LENTICULARIS var. DOLIA."
SPECIMENS: 1981 MULLER, M.C. 4334. WTU

007

CAREX LENTICULARIS VAR DOLIA

GRANK: G5T2
SRANK: S2
SURVEYSITE: BAILEY BAY, CLEVELAND PENINSULA
QUADNAME: KETCHIKAN D5
LAT: 55 59 06N
LONG: 131 39 29W
TOWN/RANGE: T68S R89E
SECTION: 09
MERIDIAN: Copper River
DIRECTIONS: Tongass National Forest, about 45 miles NNE of Ketchikan on Cleveland
Peninsula, in vicinity of hot springs 0.25 miles up Spring Creek from
Lake Shelokum, 0.5 miles NE of Bailey Bay at base of hill where
springs occur.
GENDESC: At base of hill slope where hot springs occur (open granite), in meadow
where hot water reaches floodplain.
ELEVATION: 122M
MANAME: Tongass National Forest
Ketchikan Area - Tongass National Forest
Ketchikan Ranger District - Tongass National Forest
COMMENTS: Occurrence based on WTU herbarium specimen 289137: "CAREX
ENANDERI" Hult., Mary Clay muller 4905, 29 JUL 1982." With the
following unsigned annotation: "CAREX LENTICULARIS var.
DOLIA." Specimen has immature fruits.
SPECIMENS: 1982 MULLER, M.C. 4905. WTU

009

CAREX LENTICULARIS VAR DOLIA

GRANK: G5T2
SRANK: S2
SURVEYSITE: CHICKAMIN GLACIER
QUADNAME: BRADFIELD CANAL A1

LAT: 56 03 54N
LONG: 130 16 23W
TOWN/RANGE: T67S R98E
SECTION: 16
MERIDIAN: Copper River
DIRECTIONS: Above timberline, Chickamin Glacier, Texas Creek Summit.
GENDESC: Open habitat above timberline.
ELEVATION: 82M
MANAME: Tongass National Forest
Ketchikan Area - Tongass National Forest
Misty Fiords National Monument - Tongass National

011

CAREX LENTICULARIS VAR DOLIA

GRANK: G5T2
SRANK: S2
SURVEYSITE: REVILLAGIGEDO ISLAND ALPINE AREA
QUADNAME: KETCHIKAN C4
LAT: 55 30 32N
LONG: 131 11 40W
TOWN/RANGE: T73S R94E
SECTION: 30
MERIDIAN: Copper River
DIRECTIONS: Revillagigedo Island alpine area, above Marble Creek. Survey site #M93-42.
GENDESC: Wet gravelly area.
ELEVATION: 1040M
MANAME: Tongass National Forest
Ketchikan Area - Tongass National Forest
Misty Fiords National Monument - Tongass National
COMMENTS: Collected by M. Duffy during 1993 USFS Region Ten / AKNHP rare plant survey (collection number 93-0867). Specimen identified by D. Murray as CAREX ENANDERI.
SPECIMENS: 1993 DUFFY, MIKE. 93-0867. ALA

012

CAREX LENTICULARIS VAR DOLIA

GRANK: G5T2
SRANK: S2
SURVEYSITE: SHAKES LAKE, STIKINE RIVER
QUADNAME: PETERSBURG C1

LAT: 56 44 46N
LONG: 132 07 59W
TOWN/RANGE: T59S R84E
SECTION: 23
MERIDIAN: Copper River
DIRECTIONS:Stikine River, Shakes Lake, south end-low terminal moraine. Survey site #R93-24.
GENDESC:Low forb / dwarf willow meadow - very much like high alpine tundra.
ELEVATION: 15M
MANAME: Tongass National Forest
Wrangell Ranger District - Tongass National Forest
COMMENTS:Collected by Mike Duffy during 1993 USFS Region Ten /AKNHP rare plant survey (collection number 93-900). Specimen identified by D. Murray as CAREX ENANDERI.
SPECIMENS: 1993 DUFFY, MIKE. 93-0900. ALA

APPENDIX E: SPECIES LISTS FOR MAHONEY LAKES AREA

Lower Mahoney Species List:

Division LYCOPHYTA:

LYCOPODIACEAE

Huperzia selago (L.) C. Martius (=Lycopodium selago L.)

Lycopodium annotinum L.

Lycopodium clavatum L. ssp. *clavatum*

Division PTEROPHYTA:

ADIANTACEAE (includes CRYPTOGRAMMACEAE and HYPOLEPIACEAE)

Adiantum pedatum L. var. *aleuticum* Rupr.

Pteris aquilina L. ssp. *lanuginosa* Bong. (=Pteridium aquilinum (L.) Kuhn ssp.

lanuginosum (Bong.) Hult.

ASPENIACEAE (includes ASPIDIACEAE and ATHYRIACEAE)

Athyrium filix-femina (L.) Roth ssp. *cyclosorum* (Rupr.) Christens

Cystopteris fragilis (L.) Bernh.

Dryopteris dilatata (Hoffm.) A.Gray

Gymnocarpium dryopteris (L.) Newm.

BLECHNACEAE

Blechnum spicant (L.) Roth

POLYPODIACEAE

Polypodium vulgare L. ssp. *occidentale* (Hook.) Hult.

THELYPTERIDACEAE

Thelypteris phegopteris (L.) Solsson

Division CONIFEROPHYTA:

CUPRESSACEAE

Thuja plicata D.Don

PINACEAE

Picea sitchensis (Bong.) Carr.

Tsuga heterophylla (Raf.) Sarg.

Division ANTHOPHYTA: MONOCOTYLEDONAE:

ARACEAE

Lysichiton americanus Hult. & St. John

CYPERACEAE

Carex mertensii Prescott

JUNCACEAE

Luzula parviflora (Ehrh.) Desv.

LILIACEAE

Maianthemum dilatatum (How.) Nels. & Macbr.

Streptopus amplexifolius (L.) DC.

ORCHIDACEAE

Listera caurina Piper

Listera cordata (L.) R. Br.

POACEAE (=GRAMINAE)

Calamagrostis canadensis (Michx.) Beauv.

Division ANTHOPHYTA: DICOTYLEDONAE:

APIACEAE (=UMBELLIFERAE)

Conioselinum pacificum (S. Wats.) Coult. & Rose (=C. chinense (L.) BSP.)

ARALIACEAE

Oplopanax horridum (Smith) Miquel (=Echinopanax horridum (Sm.) Decne. & Planch.)

ASTERACEAE (=COMPOSITAE)

Achillea borealis Bong.

BETULACEAE

Alnus rubra Bong. (=A. oregona Nutt.)

BRASSICACEAE (=CRUCIFERAE)

Cardamine umbellata Greene

CAMPANULACEAE

Campanula rotundifolia L.

CAPRIFOLIACEAE

Linnaea borealis L.

CORNACEAE

Cornus canadensis L.

EMPETRACEAE

Empetrum nigrum L.

ERICACEAE

Cladothamnus pyrolaeiflorus Bong.

Gaultheria shallon Pursh

Menziesia ferruginea Sm.

Vaccinium alaskaense How.(=V. alaskensis How.)

Vaccinium parvifolium Sm.

GROSSULARIACEAE (from SAXIFRAGACEAE)

Ribes bracteosum Dougl.

ONAGRACEAE

Epilobium ciliatum Raf. ssp. *adenocaulon* (Hausk.) Hoch & Raven (=E. *adenocaulon* Hausk.)

POLYGONACEAE

Bistorta vivipara (L.) Gray (=Polygonum *vivparum* L.)

Rumex fenestratus Greene

PORTULACAEAE

Claytonia parvifolia Moq. ssp. *flagellaris* (Bong.) Hult.

PYROLACEAE

Moneses uniflora (L.) Gray

Orthilia secunda (L.) House (=Pyrola *secunda* L. ssp. *secunda*)

Pyrola asarifolia Michx. var. *purpurea* (Bunge) Fern.

RANUNCULACEAE

Aquilegia formosa Fisch.

Coptis aspleniifolia Salisb.

ROSACEAE

Aruncus sylvester Kostel.

Geum macrophyllum Willd. ssp. *macrophyllum*

Rubus pedatus Sm.

Rubus spectabilis Pursh

Sanguisorba stipulata Raf.

SAXIFRAGACEAE

Heuchera glabra Willd.

Saxifraga nelsoniana D. Don ssp. *pacifica* (Hult.) Hult. (=S. *punctata* L. ssp. *pacifica*)

VIOLACEAE

Viola glabella Nutt.

Upper Mahoney Lake Species List

Division LYCOPHYTA:

LYCOPODIACEAE

Lycopodium clavatum L. ssp. *clavatum*

Lycopodium sabinaefolium Willd. var. *sitchense* (Rupt.) Fern.

SELAGINELLACEAE

Selaginella selaginoides (L.) Link

Division PTEROPHYTA:

ADIANTACEAE (includes CRYPTOGRAMMACEAE and HYPOLEPIDACEAE)

Adiantum pedatum L.

ASPLENIACEAE (includes ASPIDIACEAE and ATHYRIACEAE)

Athyrium distentifolium Tausch ssp. *americanum* (Maxon) Hult. ?

Athyrium filix-femina (L.) Roth ssp. *cyclosorum* (Rupr.) Christens

Cystopteris fragilis (L.) Bernh.

BLECHNACEAE

Blechnum spicant (L.) Roth

POLYPODIACEAE

Polypodium vulgare L. ssp. *occidentale* (Hook.) Hult.

THELYPTERIDACEAE

Thelypteris phegopteris (L.) Solsson

Division CONIFEROPHYTA:

CUPRESSACEAE

Thuja plicata D. Don

PINACEAE

Picea sitchensis (Bong.) Carr.

Tsuga mertensiana (Bong.) Sarg.

Division ANTHOPHYTA: MONOCOTYLEDONAE:

CYPERACEAE

Carex anthoxantha Presl.

Carex lenticularis Michx. var. *dolia* (M.E. Jones) L.A. Standley (includes *C. enanderi* Hult.)

Carex macrochaeta C.A. Mey.

Carex mertensii Prescott
Carex nigricans C.A. Meyer
Eriophorum angustifolium Honck.

JUNACEAE

Juncus drummondii E. Mey.
Juncus mertensianus Bong.
Luzula parviflora (Ehrh.) Desv.

LILIACEAE

Streptopus amplexifolius (L.) DC.
Tofieldia glutinosa (Michx.) Pers. ssp. *brevistyla* A. Hitchc.
Veratrum viride Ait. ssp. *eschscholtzii* (Gray) Loeve & Loeve

ORCHIDACEAE

Platanthera chorisiana (Cham.) Reichb.
Platanthera dilatata Pursh

POACEAE (=GRAMINAE)

Agrostis alaskana Hult.
Calamagrostis canadensis (Michx.) Beauv.
Deschampsia caespitosa (L.) P. Beauv.
Elymus glaucus Buckl.
Poa paucispicula Scribn. & Merr.
Podagrostis thurberiana (Hitchc.) Hult.? (sent to ALA)
Vahlodea atropurpurea (Wahlenb.) E. Fries ssp. *latifolia* (Hook.) Pors.

Division ANTHOPHYTA: DICOTYLEDONAE:

APIACEAE (=UMBELLIFERAE)

Angelica lucida E. Nels.
Conioselinum pacificum (S. Wats.) Coult. & Rose (= *C. chinense* (L.) BSP.)
Heracleum lanatum Michx.

ARALIACEAE

Oplopanax horridum (Smith) Miquel (= *Echinopanax horridum* (Sm.) Decne. & Planch.)

ASTERACEAE (=COMPOSITAE)

Achillea borealis Bong.
Arnica lanceolata Nutt. (= *A. amplexicaulis* Nutt.)
Arnica latifolia Bong.
Artemisia arctica Less. ssp. *arctica*
Aster subspicata Nees
Erigeron peregrinus (Pursh) Greene ssp. *peregrinus*
Hieracium gracile Hook. var. *alaskanum* Zahn
Petasites nivalis E. Greene (= *P. hyperboreus* Rydb.)
Senecio triangularis Hook.

BETULACEAE

Alnus sinuata (Regel) Rydb. (= *A. crispa* (Ait.) Pursh ssp. *sinuata* (Regel) Hult.)

BRASSICACEAE (=CRUCIFERAE)

Arabis lyrata L. ssp. *kamchatica* (Fisch.) Hult.

CAMPANULACEAE

Campanula rotundifolia L.

CORNACEAE

Cornus canadensis L.

DROSERACEAE

Drosera rotundifolia L.

EMPETRACEAE

Empetrum nigrum L.

ERICACEAE

Cassiope lycopodioides (Pall.) D. Don ? (sent to ALA)

Cassiope mertensiana (Bong.) D. Don

Cassiope stelleriana (Pall.) DC.

Cladothamnus pyrolaeiflorus Bong.

Menziesia ferruginea Sm.

Phyllodoce aleutica (Spreng.) Heller ssp. *glanduliflora* (Hook.) Hult.

Vaccinium alaskaense How. (= *V. alaskensis* How.)

Vaccinium caespitosum Michx.

Vaccinium ovalifolium Sm.

Vaccinium uliginosum L. ssp. *alpinum* (Bigel.) Hult.

FABACEAE (=LEGUMINOSAE)

Lupinus nootkatensis Donn

GENTIANACEAE

Fauria crista-galli (Menzies) Makino

Gentiana douglasiana Bong.

Gentiana platypetala Griseb.

Menyanthes trifoliata L.

GROSSULARIACEAE (from SAXIFRAGACEAE)

Ribes bracteosum Dougl.

HALORAGACEAE

Hippuris montana Ledeb.

ONAGRACEAE

Epilobium sp.

POLYGONACEAE

Oxyria digyna (L.) Hill

PRIMULACEAE

Dodecatheon jeffreyi Van Houtte

RANUNCULACEAE

Anemone narcissiflora L.

Aquilegia formosa Fisch.

Caltha leptosepala DC.
Caltha palustris L.
Coptis aspleniifolia Salisb.
Coptis trifolia (L.) Salisb.

ROSACEAE

Aruncus sylvester Kostel.
Geum calthifolium Menz.
Luetkea pectinata (Pursh) Ktze.
Rubus pedatus Sm.
Rubus spectabilis Pursh
Sanguisorba stipulata Raf.
Sorbus sitchensis Roem.

SAXIFRAGACEAE

Heuchera glabra Willd.
Leptarrhena pyrolifolia (D. Don) Ser.
Parnassia palustris L. ssp. *neogaea* (Fern.) Hult.
Saxifraga ferruginea Graham
Saxifraga lyalli Engler ssp. *hultenii* (Cald. & Sav.) Cald. & Sav.
Saxifraga tolmiei Torr. & Gray

SCROPHULACEAE

Castilleja parviflora Bong.
Pedicularis ornithorhyncha Benth.
Veronica serpyllifolia L.

VALERIANACEAE

Valeriana sitchensis Bong.

VIOLACEAE

Viola epipsila Ledeb. ssp. *repens* (Turca) Beck
Viola glabella Nutt.